FOURTH QUARTER 2015
OPERATION AND MAINTENANCE REPORT

MODESTO GROUNDWATER SUPERFUND SITE
MODESTO, CALIFORNIA

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____ May 26, 2016

John McGuire
Project Manager
RORE, Inc.

Date

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LIST OF ACRONYMS AND ABBREVIATIONS

ALS	ALS Laboratory Group
ASTM	American Society for Testing and Materials
bgs	below ground surface
BOD	biochemical oxygen demand
City	City of Modesto
cf	cubic feet
CPT	cone penetrometer test
DQO	data quality objective
ELAP	Environmental Laboratory Accreditation Program
EPA	United States Environmental Protection Agency
Eurofins	Eurofins Air Toxics, Inc.
EW	extraction well
FB	field blank
FD	field duplicate
FN	Normal Sample
ft/ft	foot per foot
GAC	granular-activated carbon
GEL	GEL Laboratories, LLC
gpd	gallons per day
gpm	gallons per minute
GWTS	groundwater treatment system
ID	identification
IX	ion exchange
J	estimated concentration
lbs	pounds
LCS	laboratory control sample
LDC	Laboratory Data Consultants, Inc.
LGAC	liquid-phase granular-activated carbon
MB	method blank
MCL	maximum contaminant level
MDL	method detection limit
msl	mean sea level
MS	matrix spike
MSD	matrix spike duplicate
Municipal Supply Well	City of Modesto Municipal Water Supply Well
MWH	MWH Americas, Inc.
O&M	operation and maintenance

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

PARCC	precision, accuracy, representativeness, completeness, and comparability
PCE	tetrachloroethene
pCi	picocuries
pCi/L	picocuries per liter
PDB	passive diffusion bags
PID	photo ionization detector
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
SP	sample port
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
µg/m^3	micrograms per cubic meter
4Q15	fourth quarter 2015
3Q15	third quarter 2015
2Q15	second quarter 2015
1Q15	first quarter 2015
3Q14	third quarter 2014
2Q14	second quarter 2014
1Q14	first quarter 2014
4Q13	fourth quarter 2013
3Q13	third quarter 2013
1Q13	first quarter 2013
4Q12	fourth quarter 2012
3Q12	third quarter 2012
4Q08	fourth quarter 2008

1.0 INTRODUCTION

This *Fourth Quarter 2015* (4Q15) *Quarterly Operation and Monitoring Report* for the Modesto Groundwater Superfund Site, in Modesto, California, covers the reporting period of 01 October through 31 December 2015, 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. For readability purposes, all figures and tables are included at the end of the report.

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 its Municipal Water Supply Well (Municipal Supply Well) 11 (Figure 1-2) at the corner of Magnolia and Mensinger Avenues. Laboratory analysis of the Municipal Supply 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 (µg/L). PCE is an industrial solvent commonly used in dry cleaning and was determined to have originated at Halford's Cleaners, approximately 1,000 feet from Municipal Supply Well 11.

Municipal Supply Well 11 was taken out of service by the City in 1984 and was reactivated in April 1987 when levels of PCE and other chlorinated solvents were not detected at concentrations above MCLs. In February 1989, Municipal Supply 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 Supply Well 11 was returned to service in June 1991 and operated until October 1995, when the City indefinitely deactivated the well due to detections of naturally occurring uranium above the state MCL of 20 picoCuries (pCi) per liter.

The Modesto Groundwater Superfund Site was placed on the United States Environmental Protection Agency (EPA) National Priorities List on 31 March 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 sample results, 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 16 May 2000, and 12 June 2000, respectively, to remediate the source area and contain the groundwater contamination plume. The GWTS included extraction well (EW)-01. EW-01 failed in November 2004. It was replaced with a new extraction well (EW-01R), which became operational in August 2006.

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) 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 a source area. SVE-01 was taken offline and is monitored in the quarterly sampling program.

The groundwater monitoring well network was expanded in 2008, 2011, and 2013. In 2008, 16 additional groundwater monitoring wells were installed to evaluate the lateral and vertical extents of the groundwater plume. Subsection 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 (MW-21A through MW-29B) 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], 2011) describes these installations and includes well construction and boring logs.

Eight additional groundwater monitoring wells (MW-30A through MW-35B) were installed between June and August 2013 to define PCE concentrations in the A, B, and C Zones. Nested wells MW-32B and MW-32C and well MW-35B were installed to serve as guard wells for Municipal Supply Wells 6 and 7, respectively (URS, 2013a).

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 included 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 operation and maintenance (O&M) responsibility of the groundwater treatment system for the site was transferred from the EPA to the California Department of Toxic Substances Control.

An investigation was performed in June 2015 to determine if 1,4-dioxane had been released from the site. Seven wells were sampled near the source area and downgradient to determine if concentrations had potentially migrated toward operating Municipal Supply Wells 6 and 7. There were no 1,4-dioxane detections at any of the wells sampled.

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 one mile of the Halford's Cleaners site. The Elwood's plume (south of the site) is 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 Supply 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. Groundwater monitoring data from September 2008 showed that PCE was 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 was 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 one 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 and monitoring 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 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 the treatment system process and instrumentation diagrams (P&IDs) for the GWTS and SVE system.

Appendix B provides laboratory analytical data tables.

Appendix C provides laboratory data validation reports.

Appendix D provides system uptime and shutdown tables.

Appendix E provides O&M process logs and groundwater/soil vapor sampling field data logs.

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

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

Appendix H provides historical PCE soil vapor concentration trends in indoor air, sub-slab, and soil vapor monitoring wells.

2.0 DESCRIPTION OF REMEDIAL SYSTEM

The Modesto Groundwater Superfund Site GWTS and SVE systems are behind Halford's Cleaners and between an auto parts 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. EW-02 operated at approximately 46 gallons per minute (gpm) from September 2012 to July 2013 after it was installed to remove PCE mass that had migrated downgradient of EW-01R. However, PCE concentrations at monitoring wells near EW-01R began increasing, and in 1Q13 they exceeded PCE concentrations near EW-02. The observed increase in PCE concentrations near EW-01R may have been the result of extraction well EW-01R no longer removing the PCE mass in that portion of the plume after its shutdown in 3Q12, when EW-02 began operating. Therefore, EW-01R was returned to service on 22 July 2014 and has operated in conjunction with EW-02 to increase mass removal. EW-01R and EW-02 operated during the entire 4Q15 quarter. 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. Treatment system process and instrumentation diagrams are presented in Appendix A. The design flow rate of the system is 50 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 discharge 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, 2013b), which details the operating equipment (manufacturers, models, standard settings, inspection frequency, troubleshooting, etc.).

The groundwater monitoring well network consists of 48 monitoring 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 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. Figure 2-3 shows locations of SVE wells, vapor monitoring wells, and the SVE system conveyance piping configuration in the Halford's Cleaners Area. Appendix A includes SVE system P&ID diagrams.

The three extraction wells in operation (SVE-02, SVE-03, and SVE-04) during 4Q15 are approximately three to five 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. Samples were collected from all nine monitoring points and extraction wells on 23 and 24 November 2015.

To allow for continuous, 24-hour operation, the SVE system operating parameters are controlled by the on-site programmable logic controller. The design flow rate of the system 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 SVE system components (except the VGAC vessel) are contained with 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, 2013c), 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 for Long-Term Monitoring, Site Investigations, and Soil Vapor Extractions, Modesto Groundwater Superfund Site* (2013 Sampling and Analysis Plan [SAP]) (URS, 2013d). Tables B-2, B-3, and B-4 (Appendix B) include sample locations and associated analytical test methods, phase (water, vapor, etc.), and sample dates of sampling activity for the second quarter event.

The quarterly sampling program consists of two types of sampling: site sampling (groundwater and soil vapor) and SVE system sampling. EPA manages both site sampling and SVE system sampling. The State of California manages the GWTS sampling program.

3.1 Site Sampling and Monitoring

Site sampling to monitor groundwater includes collecting groundwater samples from the network of 48 groundwater monitoring wells and 2 groundwater extraction wells for analysis by EPA Method E524.2. Site sampling to monitor the vadose zone includes collecting vapor samples from the three 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 3Q15.

3.1.1 Groundwater Sampling and Monitoring

Blaine Technical Services, Inc. personnel measured depths to groundwater on 23 November 2015, and collected groundwater samples for volatile organic compounds (VOCs) on 23, 24, and 25 November 2015, and 9 December 2015 where they measured depths to groundwater a second time (Appendix E). Depth-to-groundwater measurements and groundwater samples were collected from 48 groundwater monitoring wells and 2 extraction wells to evaluate changes in the depth to water, to evaluate influence of groundwater extraction on the PCE plume, to estimate the extent of contamination, to determine horizontal flow directions, and to determine plume capture (the portion of a groundwater plume that is expected to flow into an extraction well, assuming it continues operating consistently for a period of time).

Groundwater elevations are also used to evaluate potential vertical groundwater flow directions and to develop groundwater elevation contour maps. Groundwater elevations calculated from water levels measured using an electronic water level meter at A, B, and C Zone wells during 4Q15 were contoured using the Inverse Distance Weighted tool in ArcGIS 10.1 and adjusted using professional hydrogeologic judgment.

Groundwater samples were collected using polyethylene based passive diffusion bags (PDB) in all 48of the monitoring wells samples. The samples from the operating extraction wells (EW-02 and EW-01R) were collected from the dedicated EW sample ports (SP). All groundwater samples were analyzed for VOCs using EPA Method E524.2; Table B-2 (Appendix B) presents analytical results from the 4Q15 sampling event.

All groundwater monitoring and sampling during 4Q15 was performed and recorded in in accordance with the procedures described in the 2013 SAP (URS, 2013d), with the following exceptions. Eight groundwater monitoring wells have been added to the monitoring and sampling program detailed in the 2013 SAP. A photoionization detector (PID) was not deployed during the 4Q15 sampling event to screen the monitoring wells, samples or ambient air quality. Field QC sampling in the form of duplicate samples, field blanks and trip blanks were not collected or submitted with groundwater samples.

Water purged from the groundwater monitoring wells during sampling was transferred through a bag filter into the GWTS equalization tank.

3.1.2 Soil Vapor Sampling and Monitoring

Soil vapor samples were collected by RORE, Inc. from the three SVE and nine vapor monitoring wells on 23 and 24 November 2015 using 400-millilter Summa canisters (Appendix E). SVE and vapor monitoring wells were purged and sampled in accordance with the sampling procedures described in the 2013 SAP (URS, 2013d), with the following exceptions. A PID was not deployed during the 4Q15 sampling events to screen the sampling points and ambient air quality. All samples were analyzed using EPA Method TO15; Table B-4 (Appendix B) presents analytical results from the 4Q15 sampling event.

Air quality samples were collected by RORE, Inc. from the ten indoor air and sub-slab monitoring points on 23 and 24 November 2015 using 400-millilter or 6-liter Summa canisters (Appendix E). Indoor air and sub-slab sample analytical results collected during 4Q15 are shown in Table B-4 (Appendix B), included on Figure 4-11, and on Table G-3, which also includes historical data. Appendix H presents time series plots of indoor air, sub-slab, and soil gas data. Indoor air and sub-slab monitoring points were purged and sampled in accordance with the sampling procedures described in the 2013 SAP (URS, 2013d), with the following exceptions. A PID was not deployed during the 4Q15 sampling events to screen the sampling points and ambient air quality. All samples were analyzed using EPA Method TO15 SIM; Table B-4 (Appendix B) presents analytical results from the 4Q15 sampling event.

3.2 System Sampling and Monitoring

Compliance sampling and monitoring of the GWTS system at the Modesto Groundwater Superfund Site were performed in accordance with the City of Modesto 2013 Groundwater Discharge Permit GW0098 (City of Modesto, 2013), and the 2010 SAP (URS, 2010). Compliance samples were collected to satisfy City regulatory requirements, thereby meeting the City's discharge limits to the sewer. All of the treatment system effluent samples collected during the reporting period were analyzed and demonstrate that constituents in the discharge were below maximum allowable limits.

3.2.1 Groundwater System Sampling and Monitoring

Compliance monitoring samples for the GWTS are collected monthly, quarterly, and annually from the system influent and effluent as the system is operating. System effluent samples are analyzed monthly for VOCs (Method E524.2), total dissolved solids (TDS) (Standard Method [SM] 2540C), total suspended solids (TSS) (SM2540D), biochemical oxygen demand (BOD) (SM5210B), quarterly for total uranium (American Society for Testing and Material [ASTM] D5174), and annually for bioassay. Performance samples are collected monthly to monitor and assess the performance and efficiency of the air stripper, LGAC, IX media, and VGAC. 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 and analyzed using Method ASTM D5174. The vapor (airstripper off-gas) performance samples are collected at the VGAC influent and effluent (stack) and analyzed using Method TO15. Figures 1-1 and 1-2 in Appendix A illustrate the sampling port locations for the GWTS. Table B-3 (Appendix B) presents analytical data tables for the 4Q15 sampling event.

3.2.2 Soil Vapor System Sampling and Monitoring

Only system performance samples are collected at the SVE system. Samples are typically collected at the pre-GAC and stack SPs to monitor VGAC usage, or at the SVE inlet to establish the total VOC concentrations (from all three SVE wells) at system start-up prior to air flow temperature, and velocity change. The SVE inlet is the sampling location prior to the dilution air valve and the blower, while the pre-GAC sampling location is between the blower and the VGAC unit. Samples collected are analyzed by EPA Method TO15. Figure 1-3 in Appendix A illustrates the sampling port locations for the SVE system. During 4Q15 operation and monitoring of the SVE system was not performed and performance sampling was not conducted.

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4.0 PERFORMANCE EVALUATION

Subsections 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 current extent of contamination and the hydraulic gradients affecting plume migration directions. 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 4Q15. Appendix B provides a complete set of validated analytical data for groundwater collected during the 4Q15 reporting period. Table B-2 summarizes the sample results from monitoring wells and SVE system performance samples. Table B-3 summarizes results for the groundwater treatment system, including EW-02 and EW-01R (listed as GWTS-INF). Table B-4 summarizes vapor samples results (indoor air, sub-slab, and soil vapor). Appendix C includes the laboratory data validation reports for this reporting period's analytical data.

4.1 Site Performance

Subsection 4.1 provides 4Q15 results of the groundwater and soil vapor well sampling events. Figures 4-1, 4-2, and 4-3 show the stratigraphic conceptual models in the southeast to northwest (Model A-A´), west to east (Model B-B´), and southwest to northeast (Model C-C´) directions, respectively.

Subsection 4.1.2 presents the soil vapor sampling results, Subsection 4.1.3 presents an analysis of vertical groundwater gradients, and Subsection 4.1.4 provides the EW-01R and EW-02 capture zone analysis.

4.1.1 Groundwater Monitoring and Sampling Results

Groundwater elevations have increased an average of approximately 0.04 feet between 3Q15 and 4Q15. Based on water levels measured on 23 November 2015, groundwater elevations ranged from 40.13 feet mean sea level (msl) at MW-16A to 44.45 feet msl at MW-30A in the A Zone. Groundwater elevations ranged from 39.97 feet msl at MW-33B to 44.17 feet msl at MW-30B in the B Zone, and from 38.91 feet msl at MW-16C to 40.61 feet msl at MW-04C in the C Zone.

Groundwater elevations decreased between 3Q15 and 4Q15 at 20 of the 24 A Zone wells; there was an average decrease in the A Zone of 0.39 foot. Depths at the B Zone wells decreased an average of 0.10 foot between 3Q15 and 4Q15; water elevations at five of the six C Zone wells increased by an average of 2.05 feet. Appendix G presents historical and current water level measurements and analytical data.

Figure 4-4 shows groundwater elevations trends at nine A Zone wells. These wells were selected to provide representative groundwater elevations across the A Zone plume. As shown in Figure 4-4, groundwater elevations have generally decreased between 3Q15 and 4Q15. Additionally, historical groundwater elevations for the older wells (MW-10A through MW-15A and MW-20A) indicate that the groundwater table at the site was deeper in 4Q15 than in August 2001 when groundwater measurements began at these wells (Appendix G-2). The deeper water table is likely due to drought conditions that prevail in Central California and over-pumping that have occurred throughout the Central Valley in recent years.

Figures 4-5, 4-6, and 4-7 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, B, and C Zones flows southeast across the site. In the vicinity of EW-02 and EW-01R, groundwater flows toward the groundwater surface depression created by the operation of these wells in A Zone (Figure 4-5). In the vicinity of MW-27B and MW-35B, B Zone groundwater flows in a more eastern direction, likely due to the groundwater depression created by the operation of Municipal Supply Well 7 (Figure 4-6).

The average horizontal hydraulic gradient parallel to the direction of regional groundwater flow in the A Zone was approximately 0.0016 foot per foot (ft/ft) to the southeast in 4Q15 (Figure 4-5). The approximate B Zone horizontal hydraulic gradient was 0.0012 ft/ft to the southeast in 4Q15 (Figure 4-6). Groundwater in the C Zone was flowing southwest with a horizontal gradient of approximately 0.0011 ft/ft in 4Q15 (Figure 4-7). It is RORE's understanding that Municipal Supply Well 7 was in operation at that time.

In general, the gradient direction in the C Zone has been observed to be more westerly during the second quarters (either southwest or south-southwest) and more easterly during the fourth and first quarters (southeast or south-southeast). The gradient direction was southeast in 4Q15. As discussed in previous groundwater reports for the site, the gradients in this deeper zone are strongly influenced by regional municipal 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). Subsequent municipal pumping data is not made available to RORE.

To evaluate the potential hydraulic influence on the extents of PCE plumes from the operation of Municipal Supply Wells 6 and 7, URS installed transducers in six A Zone, five B Zone, and three C Zone monitoring wells between 28 June and 7 December 2011. Evaluation of the data collected using the transducers indicated that municipal supply well pumping has a greater effect on C Zone water levels than on A or B Zone levels, and pumping at these municipal supply 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 most likely would be influenced by municipal supply well pumping because Municipal Supply Wells 6 and 7 are southeast and southwest, respectively, of the southern boundary of the plume (Figures 4-6 and 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 supply well pumping is influencing plume migration is that PCE concentrations exceeding the MCL were reported in samples collected at MW-16C in 1Q13 through 3Q13 and again in 2Q14, 3Q14, 2Q15 through 4Q15 after having results less than the MCL from 4Q08 to 4Q12. In 4Q15, the PCE concentration at MW-16C is 16 µg/L. Increased PCE concentrations in the C Zone correlate with increased pumping during drier months. Subsection 4.1.1.1 provides details of the PCE reported in the C Zone.

4.1.1.1 PCE

In 4Q15, PCE was detected at concentrations exceeding the 5 µg/L MCL at EW-01R, EW-02, and 37 monitoring wells. PCE concentrations are shown on Figures 4-5, 4-6, and 4-7 for the A, B, and C Zones, respectively, and as composite plumes on Figure 4-8. The distribution of PCE concentrations greater than 5 µg/L in groundwater is illustrated with isoconcentration contour lines (lines of equal concentration). The distribution of PCE concentrations is also illustrated on generalized geologic cross-sections that dissect the site along southeast to northwest (A-A', Figure 4-9) and west to east (B-B', Figure 4-10) lines. Table B-2 (Appendix B) includes current quarterly groundwater monitoring well analytical results. Figures G-4(a) through G-4(av) (Appendix G-4) show PCE time series plots for monitoring wells MW-01A through MW-35B.

A Zone

As depicted on Figure 4-5, the PCE MCL plume is approximately 1,800 feet long, parallel to the primary hydraulic gradient direction, and approximately 950 feet wide in the east-west, cross-gradient direction. The northwest-southeast axis of the A Zone plume parallels the primary gradient direction.

From 3Q15 to 4Q15, PCE concentrations decreased at four wells screened in the A Zone, none to less than the PCE MCL. PCE concentrations decreased by approximately 30 percent at MW-03A between 3Q15 and 4Q15 from 130 µg/L to 87 µg/L, also PCE concentrations decreased from 78 µg/L to 65 µg/L at EW-02, and from 17 µg/L to 5.1 µg/L at MW-08A. PCE concentrations increased at fourteen wells screened in the A Zone including from 87 µg/L to 120 µg/L at MW-20A and from 39 µg/L to 60 µg/L at MW-05A and from 4.9 µg/L to 5.8 µg/L at MW-12A; therefore, the southern portion of the plume in the area of MW-20A now has concentrations greater than 100 µg/L, the northern portion of the plume with concentrations greater than 50 µg/L has increased in size to the north around MW-05A, and the eastern portion of the plume with concentrations greater than 5 µg/L has increased in size to the east around MW-12A (Figure 4-5). In summary, the dimensions of the main MCL plume are slightly larger between 3Q15 and 4Q15. PCE concentrations have fluctuated seasonally at MW-31A and MW-13A from just above to below the MCL, resulting in the PCE plume being undefined during quarters when the PCE results were greater than the MCL. In 4Q15, PCE results at MW-13A (1.9 µg/L) and MW-31A (2.1 µg/L) were less than the MCL; therefore, the western portion of the plume is defined (Figure 4-5).

PCE was detected historically in Municipal Supply Wells 14 and 8, approximately 2,375 feet (0.45 mile) west and 5,320 feet (1.0 mile) west-southwest, respectively, of Halford's Cleaners (Figure 1-2). Municipal Supply Wells 8 and 14 have been offline since 2007 and 2006, respectively (MWH, 2010b); however, the plume may have been drawn toward Municipal Supply Wells 8 or 14 before they were shut down. Municipal Supply Well 17, more than 3,500 feet northwest of the monitoring wells, has remained in consistent operation and may have some 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, MW-23A, MW-30A, and MW-31A and had an open borehole from 204 to 232 feet bgs at the time of construction. There are no wells positioned to provide data that would indicate whether the hydraulic influence of pumping at Municipal Supply Well 17 is affecting the PCE plume. However, the well is in the opposite direction from the predominant gradient direction and the distance between it and the behavior of water levels in monitoring wells near the plume makes it unlikely that the hydraulic influence is measurable in the Halford's plume area. Municipal Supply Wells 6 and 7 are closer to the plume than Municipal Supply 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 Supply Wells 6 and 7 were operating. Municipal Supply Well 6 is screened in the A and B Zones and, though Municipal Supply Well 7 is screened below the A Zone (in the B Zone), pumping at Municipal Supply Wells 6 and 7 may be affecting the migration of the A Zone plume.

The sewer line running beneath Griswold Avenue adjacent to MW-23A could contribute to the PCE detections at 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 1985 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 (Figure 4-10). Westerly flow and releases along the Griswold Avenue sewer line may account for the PCE concentrations of between 5 and 50 µg/L reported at the wells in previous quarters in the west portion of the A Zone plume such as MW-23A. The sewer line extends to Enslen Avenue, south on Enslen Avenue, then west on Coldwell Avenue (Figure 4-5).

B Zone

Figure 4-6 depicts the B Zone PCE plume and potentiometric surface contours. In 4Q15, PCE was detected above the MCL at 13 of the 18 B Zone wells. PCE concentrations increased from less than to greater than the PCE MCL between 3Q15 and 4Q15 at two wells screened in the B Zone; therefore, the plume increased in size between 3Q15 and 4Q15 in the B Zone (Figure 4-6). The concentrations at three of the wells screened in the B Zone MW-17B, MW-24B and MW-25B increased to 71 µg/L, 74 µg/L and 86 µg/L respectively; therefore, the portion of the plume with concentrations above 50 µg/L increased in size in the B Zone to the southeast around MW-25B (Figure 4-6). The concentrations at two of the wells screened in the B Zone MW-34B and MW-33B increased to above 5 µg/L; therefore, the portion of the plume with concentrations above PCE MCL increased in size to the west and to the southeast around MW-33B (Figure 4-6). The main MCL plume in the B Zone is larger than in 3Q15; in 4Q15, the PCE MCL plume in the B Zone is still not delineated. The plume is approximately 3,000 feet long and generally parallel to the predominant gradient direction (northwest/southeast) and has a width of approximately 2,500 feet (Figure 4-6).

Data from the B Zone wells indicate that the hydraulic axis of the plume trends northwest to southeast. The B Zone plume shape likely has been hydraulically influenced by pumping at municipal supply 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 influence when Municipal Supply Wells 6 and 7 were operating. The maximum observed water level changes were -0.24 and -0.19 foot at MW-09B and MW-17B, respectively, when pumping at Municipal Supply Well 6 was evaluated and -0.19 and -0.32 foot at MW-16B and MW-19B, respectively, when pumping at Municipal Supply Well 7 was evaluated. Municipal Supply Well 6 is screened in the A and B Zones and Municipal Supply Well 7 is screened in B Zone; therefore, pumping at Municipal Supply Wells 6 and 7 may be hydraulically influencing the B Zone plume.

Prior to 3Q13, the PCE plume in the B Zone was undefined in the northern, western, and southeastern directions. In 3Q13, MW-30B and MW-34B were installed to define the plume in the northern and western directions, respectively, and MW-32B and MW-33B were installed to define the plume in the southeastern direction. PCE concentrations at MW-19B, MW-26B, MW-27B, MW-30B and MW-32B, in 4Q15 were less than the MCL (of 5 µg/L) or not detected; therefore, the plume appears to be delineated in the northwestern, southern, northeastern and east-southeastern directions (Figure 4-6). Historically the PCE plume was not fully delineated west of MW-34B because PCE concentrations exceeded the MCL since MW-34B was constructed; the 3Q15 PCE concentration at MW-34B was 4.6 µg/L, thus showing an increasing trend.

MW-35B was installed as a guard well for Municipal Supply Well 7. PCE concentrations at MW-35B, which exceeded the MCL from 4Q13 to 1Q15, decreased to 2.3 µg/L, less than the MCL, in 2Q15. A potential explanation for the decrease in concentration at MW-35B is less pumping at Municipal Supply Well 7. Pumping rates for Municipal Supply Well 7 are not provided. However, data from nearby site wells suggest that the hydraulic influence from Municipal Supply Well 7 may have been less in 2Q15 than in 3Q15 and 4Q15. PCE concentrations at MW-35B increased to 6.7 µg/L, just above the MCL, in 3Q15, suggesting an increase in pumping at Municipal Supply Well 7. A potential explanation for the fluctuation in concentration at MW-35B is variation in pumping at Municipal Supply Well 7 and Municipal Supply Well 8 has caused an increase in MW-35B. In previous quarters, decreases in PCE concentration at well MW-35B have been tied to higher than average water elevations at B Zone wells near Municipal Supply Well 7. The increase in PCE concentration observed at well MW-35B in 3Q15 combined with the change in water elevations at the wells near Municipal Supply Well 7 (MW-26B and MW-27B) being consistent with average water elevations at B Zone wells possibly indicates that the hydraulic influence from Municipal Supply Well 7 may have been more in 3Q15 than in 2Q15.

C Zone

Figure 4-7 shows groundwater elevation contours and PCE concentration data for the C Zone. The PCE concentration decreased from 26 to 16 µg/L at MW-16C between 3Q15 and 4Q15; therefore, the PCE MCL plume was being drawn into the C Zone because of vertical hydraulic gradients. Concentrations have been fluctuating above and below the MCL at MW-16C since 1Q13; the 3Q15 concentration of 26 µg/L is the highest that has been detected in this well (Figure G-4[v]).

4.1.1.2 Other VOCs

No additional VOCs were detected above their respective MCLs in 4Q15.

4.1.2 Soil Vapor Sampling Results

Samples were collected from three operating SVE wells on 23 November 2015. Analytical results listed in Table B-4 (Appendix B) are summarized below and included on Figure 4-11:

- SVE-02 (screened interval 7 to 12 feet bgs): PCE concentration at 2.5 parts per billion by volume (ppbv) in 4Q15 (23 November 2015) (range during 2013 was 8.2 to 30 ppbv).
- SVE-03 (screened interval 13 to 23 feet bgs): PCE concentration at 210 ppbv in 4Q15 (23 November 2015) (range during 2013 was less than 2.1 to 49 ppbv).
- SVE-04 (screened interval 28 to 38 feet bgs): PCE concentration at 2.3 ppbv in 4Q15 (23 November 2015) (range during 2013 was less than 2.0 to 16 ppbv).

Samples were collected from the ten indoor air and sub-slab monitoring points on 23 November 2015. Analytical results listed in Table B-4 (Appendix B) are summarized below and included on Figure 4-11. Indoor air sample results indicate that PCE concentrations decreased in 4Q15 (Appendix H). The maximum decreases in PCE indoor air concentrations at a single sampling location were at 939-IA-01 (The Parts House) from 7.0 to 0.92 micrograms per cubic meter (µg/m^3) and at sample location 941-IA-01 (Halford's Cleaners) from 4.1 to 2.9 µg/m^3. The sub-slab ventilation system appears to be effective in keeping sub-slab concentrations from increasing to a level that indoor air concentrations are minimally affected by vapor intrusion. The decrease indicates that operation of the SVE system during prior years may have contributed in keeping indoor air concentrations in the acceptable cancer risk range of 1 in one million (2.0 µg/m^3).

Well logs indicate that fine-grained silts make up much of the subsurface deposits near the SVE wells and DP-05A where much of the residual PCE mass is likely to be. This mass seems to be confined to a relatively small area on the northwest corner of the Halford's Cleaners building near the SVE wells. Indoor air sample results collected during 4Q15 are shown in Table B-4 (Appendix B) and Table G-3, which also includes historical data. Appendix H presents time series plots of indoor air, sub-slab, and soil gas data.

4.1.3 Analysis of Vertical Groundwater Gradients

Vertical hydraulic gradients were calculated using 4Q15 data at one well pair with screens in the A Zone, nine well pairs with screens in the A or B Zones, and six well pairs with screens in the B or C Zones. Wells are chosen to be paired for vertical hydraulic gradient calculation based on their proximity to each other; selected wells are either within the same well cluster (MW-16A/MW-16B and MW-16B/MW-16C), or are located within 10 feet of each other (MW-8A/MW-9B and MW-21A/MW-25B) (Figure 2-2). Table 4-1 summarizes the vertical hydraulic gradients for each well pair for 4Q15. For comparison, Table 4-1 also lists vertical hydraulic gradients calculated for 3Q15 and 2Q15 and the vertical distance between paired well screens. Figures 4-9 and 4-10 also depict the direction of vertical hydraulic gradients between well pairs along cross-sectional planes.

There was a potential for an upward hydraulic gradient between one well pair screened in the A Zone. There was a potential for a downward hydraulic gradient between eight A Zone-B Zone well pairs, and all six B Zone-C Zone well pairs indicated a potential for a downward hydraulic gradient. One well pair screened in the A Zone indicated no vertical hydraulic gradient; the groundwater level elevation was the same in both shallow and deep wells.

Well pairs MW-16A/MW-16B, MW-16B/MW-16C, and MW-32B/MW-32C all indicate potentials for downward hydraulic gradients from both the A to the B Zone and the B to the C Zone which are in the range of 0.0005 to 0.0029. These downward gradients likely are caused by the hydraulic influence of pumping at Municipal Supply Well 6; downward hydraulic gradients from the more contaminated B Zone can contribute to the increase in PCE concentrations at the C Zone well MW-16C discussed in Subsection 4.1.1.1.

The vertical hydraulic gradient calculated using well pair MW-4A/MW-4B indicated the potential for an upward hydraulic gradient in 4Q15; this well pair has indicated an upward hydraulic gradient during 2Q15, 1Q15, and 2Q14, and a downward hydraulic gradient during 3Q15. The change in vertical hydraulic gradient might explain the apparent fluctuation of PCE contaminant between the A and B Zones near well pair MW-4A/MW-4B between 2Q15 and 4Q15 (Figure 4-5, 4-6, 4-9 and 4-10).

4.1.4 Extraction Well Capture Zone Analyses

Figures 4-9 and 4-12 show estimated groundwater plume capture from extraction wells EW-01R and EW-02. The flow rates are approximately 24 and 25 gpm, respectively, with a total flow rate of approximately 49 gpm, which did not exceed the maximum flow rate (50 gpm) allowed in the City of Modesto 2013 Groundwater Discharge Permit GW0098 (City of Modesto, 2013).

Two lines of evidence (groundwater elevation contours developed with 4Q15 data and particle tracks developed with the site's groundwater model, MODFLOW) were used to estimate the extent of capture at EW-01R and EW-02 presented on Figure 4-9 and Figure 4-12.

Figure 4-12 shows the estimated combined capture zone as a curved line consisting of the estimated stagnation points near EW-02. The extent of capture in the A Zone estimated with the MODFLOW model's simulation of pumping at approximately 50 gpm at EW-01R and EW-02 is shown as the sweep of groundwater flow lines toward the well based on reverse particle tracking (i.e., particles released at the well and modeled backward to determine their starting points). The downgradient extent of capture is interpreted to extend to approximately 50 feet upgradient of MW-10A.

Figure 4-9 shows the estimated vertical extent of capture by EW-01R and EW-02. The downgradient extent of capture depicted in cross-sectional view is based on both the empirical and modeled lines of evidence. The vertical capture zone extent below the extraction well screens is an estimate based on water level data, modeling, and vertical hydraulic gradients. Vertical hydraulic gradients calculated using 4Q15 groundwater elevation data from wells near EW-02 (MW-04A/MW-04B) were upward from the B to the A Zone. The estimated capture zone has been drawn below the bottom of the screened interval of EW-02.

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 2010 SAP (URS, 2010) and the City of Modesto 2013 Groundwater Discharge Permit GW0098 (City of Modesto, 2013). Resin profile samples were collected in October, November and December 2015.

System performance is based on current and historical analytical results. System performance sampling helps evaluate the remedial progress of the GWTS and enables the system operator and engineer to evaluate when a media change-out is necessary. Treatment system effluent samples collected during the reporting period for vapor emissions and sewer discharge were below maximum allowable discharge limits (Tables 4-7 and 4-8).

4.2.1 GWTS Results

During 4Q15, the GWTS operated for approximately 2,204 hours (out of 2,208 hours possible during the quarter), an uptime of approximately 99.8 percent (Appendix D). Table 4-4 presents GWTS shutdown summaries for October, November, and December, respectively. Appendix E provides the O&M process logs, and Appendix F provides history of the O&M performed on the GWTS

The GWTS treated a total of approximately 6.0 million gallons of water and removed approximately 4.1 pounds of PCE during this reporting period. Total gallons treated during the quarter indicate that average discharge to the sewer was approximately 66,124 gallons per day (gpd), less than the 72,000 gpd (average) discharge limit. From August 2001 through 3Q15, the system has treated approximately 275 million gallons of water and has removed approximately 676 pounds of PCE. Figure 4-13 is a graph illustrating the cumulative PCE mass removed by the GWTS since it began operation in August 2001.

Performance samples for the LGAC were collected post air stripper (LGAC inlet), LGAC mid-bed, and LGAC effluent (GWTS effluent) and analyzed for VOCs (Method 524.2). Sample results from 4Q15 (Table 4-2) at the mid-bed indicated breakthrough; PCE concentrations were comparable to the LGAC influent; therefore, a carbon change-out of the lead LGAC vessel was performed 23 November 2015.

Performance samples were also collected and analyzed for uranium (Method D5174) at the IX influent, mid-bed, and IX effluent. During 4Q15, no breakthrough (uranium concentrations in the mid-bed sample) was reported. Therefore, no resin change-outs are scheduled.

Resin change-outs have been performed approximately annually to avoid accumulating high uranium concentrations in the resin and, therefore, avoid disposal of the resin as low-level radioactive waste. However, due to changes in the disposal facility’s acceptance criteria, the resin no longer meets the requirements even though the treatment process has not changed. Profile samples of the resin, therefore, have been collected since the resin change out in June 2015 to evaluate when the uranium concentrations exceed the new requirement of 500 milligrams per kilogram. This concentration was exceeded in three months; therefore, all subsequent disposal requirements are governed by the resin being listed as low-level radioactive waste. Resin profile sample results are presented in Table B-3. Tables 4-5 and 4-6 identify the change-out dates for treatment media (carbon and resin, respectively) used at the GWTS.

Samples of process vapor are collected at the VGAC inlet and outlet locations to evaluate VGAC performance and contaminant loading. Table 4-7 summarizes vapor PCE results for this reporting period.

The influent vapor PCE (GWTS Pre-GAC) concentrations were 150, 160, and 160 ppbv during October, November, and December, respectively. The effluent vapor PCE (GWTS Stack) concentrations were 5.5, 3.0, and 6.9 ppbv during October, November, and December, respectively. Vapor samples are collected monthly at the VGAC inlet and outlet and analyzed for VOCs (EPA Method TO [toxic organics] 15). Change-outs are evaluated on a monthly basis.

During the 4Q15 reporting period, the GWTS pumped and treated groundwater from both EW-02 and EW-01R; the combined average flow rate for both EW-02 and EW-01R during 3Q15 was 46.7 gpm. The influent PCE concentrations were 76, 82, and 89 µg/L during October, November, and December, respectively. The PCE sewer discharge limit (0.5 µg/L) was met in each month of the quarter, as indicated by effluent sample results in Table 4-2, which summarizes all GWTS PCE results for the system during 4Q15. In addition to VOCs, samples were also analyzed for uranium. The 4Q15 influent uranium concentration was 54.6 pCi/L.; Table 4-3 presents all GWTS uranium sample results for 4Q15. The associated effluent uranium concentration was 12.8 pCi/L, which is less than the compliance concentration of 20 pCi/L. All other constituent concentrations monitored under the requirements listed in the GWTS O&M Manual were less than discharge limits at the GWTS effluent, SP-07, during each month of the quarter. Table B-3 (Appendix B) provides a summary of treatment system analytical results for 4Q15.

4.2.2 SVE System Results

The SVE system was brought online on 8 April 2015 and operated continuously up to 24 November 2015; a malfunction with the SVE system blower necessitated the SVE system be taken offline on 24 November 2015. During 4Q15 operation and maintenance of the SVE system was not performed and performance sampling was not conducted.

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, 4-9, and 4-12). Based on 4Q15 data, the extent of the plume is approximately 1,800 feet long, parallel to the primary gradient direction, and approximately 950 feet wide in the east-west, cross-gradient direction (Figure 4-5). In the B Zone, the plume is approximately 3,000 feet long, parallel to the primary gradient direction (northwest/southeast), and approximately 2,500 feet wide (Figure 4-6). PCE was reported at one C Zone well in 4Q15; therefore, a small plume exists in the C Zone centered on MW-16C (Figure-4-7).

Data collected in 4Q15 indicate that the PCE plume appears to be not fully delineated laterally in the A Zone; however, vertically the PCE plume is not fully delineated in the area of MW-05A/MW-09B. Concentrations at MW-31A and MW-13A have fluctuated above and below the MCL from quarter to quarter (Figures G-4[aq] and G-4[q] [Appendix G]). Concentrations exceeded the MCL in three of four events between 1Q14 and 1Q15 at both MW-13A and MW-31A ranging between 1.6 and 18 µg/L and 1.2 to 8 µg/L, respectively. Therefore, an additional well screened in the A Zone was recommended in reports for those quarters as possibly needed west-southwest of MW-31A to define A Zone concentrations in this direction. However, concentrations at these wells were less than the MCL in 3Q15 and 4Q15. Because of continued results that are less than the MCL at these and other A Zone wells, the plume appears to be shrinking from the previous quarters. From 3Q15 to 4Q15, PCE concentrations decreased at four wells screened in the A Zone, none to less than the PCE MCL. PCE concentrations decreased by approximately 30 percent at MW-03A between 3Q15 and 4Q15; the northeastern portion of the plume with concentrations greater than 100 µg/L was eliminated. PCE concentrations increased at 15 wells screened in the A Zone including from 7.7 µg/L to 17 µg/L at MW-23A; resulting in a second portion of the PCE MCL plume centered on MW-23A present west of the main PCE MCL plume. PCE concentrations increased at MW-20A; resulting in a section of the plume with concentrations greater than 100 µg/L. PCE concentrations also increased at MW-05A; resulting in an increase in northwestern portion of the plume with concentrations greater than 50 µg/L.

Both EW-01R and EW-02 operated during 4Q15. After EW-02 was constructed and placed online in 3Q12, EW-01R was shut down. While EW-01R was operating before EW-02 was placed online, PCE concentrations at MW-03A (near EW-01R) and MW-04A (near EW-02) were 44 µg/L and 1,200 µg/L, respectively, in 3Q12. After EW-01R was shut down and EW-02 was operated from 3Q12 to 3Q14, concentrations increased at MW-03A to 420 µg/L 2Q14. Concentrations at MW-04A decreased initially to 130 µg/L in 4Q12 after EW-02 was placed online, then increased steadily to a 300 µg/L in 2Q14. Because of the increases at MW-03A, EW-01R was returned to service in 3Q14 and both wells were operated concurrently. Since both EW-01R and EW-02 began being operated in 3Q14, concentrations at both MW-03A and MW-04A have generally decreased. From 3Q15 to 4Q15, PCE concentrations in groundwater have decreased from 120 to 87 µg/L at MW-03A and increased from 9.2 to 24 µg/L at MW-04A.

Because of increases in PCE concentrations from less than to greater than the MCL at two wells in the B Zone, the plume exceeding the MCL is larger to the west and to the southeast than during 3Q15 and undefined in the north (near MW-09B), in the southeast (near MW-33B), in the east (near MW-16B) and west (near MW-34B). MW-34B was installed to delineate the western plume extent; however, the PCE result at this well has frequently exceeded the MCL since its installation in 3Q13, indicating that the plume extends west of MW-34B. Wells screened in the B Zone may be needed west and southwest of MW-34B to define B Zone concentrations in these directions. The PCE concentration at MW-35B (6.8

μg/L), installed as a guard well for Municipal Supply Well 7, was greater than the MCL in 4Q15; Municipal Supply Well 7 should be sampled for PCE to monitor for the potential that concentrations detected at MW-35B have reached it. The vertical gradients near well pair MW-4A/MW-4B indicated the potential for a upward gradient in 4Q15; this and the PCE results in well pair MW-4A/MW-4B suggests upward migration of PCE contaminant between the A and B Zones in 4Q15.

PCE exceeded the MCL in the C Zone at MW-16C in 4Q15. The downward gradients from the A Zone to the B Zone, from the B Zone to the C Zone, and variable concentrations at MW-16C are likely to be influenced by pumping at Municipal Supply Well 6, located approximately 1,500 feet southeast of MW-32C. PCE has never been detected at either MW-32B or MW-32C, which were installed downgradient of MW-16C as guard wells to Municipal Supply Well 6. However, vertical gradients indicate groundwater at MW-32B and MW-32C has the potential for downward flow and plume migration from the B Zone to the C Zone. Therefore, decreasing the flow rates at Municipal Supply Wells 6 and 7 should be considered to reduce the potential for affecting PCE plume migration, and PCE concentrations should continue to be monitored at Municipal Supply Wells 6 and 7 (URS, 2012c).

Additional monitoring wells 36A, 37B, 38B, 39B, and 40B are being installed to delineate the extents of then plume in the A and B Zones and to determine the potential for comingling of the Halford's and Elwood's plumes. Additionally, groundwater extraction wells may be needed to prevent migration of the plume toward downgradient water supply wells. The greatest threat of PCE impacting a municipal supply well is in the area southwest of MW-35B, where the plume appears to be migrating toward Municipal Supply Well 7. Increased extraction and other remediation alternatives (i.e., in situ treatment) should be evaluated.

During 4Q15, the GWTS operated approximately 99.8 percent of the time, treated more than 6.0 million gallons of contaminated groundwater, and removed approximately 4.1 pounds of PCE. The GWTS was compliant with permit requirements. During 4Q15, the GWTS treated groundwater pumped from both EW-01R and EW-02 with an average flow rate of 48.4 gpm. Each extraction well currently provides approximately 50 percent of the flow. Continued operation of the GWTS is recommended and will optimize operations to maximize mass removal as appropriate. It is also recommended to continue sampling influent and effluent locations in accordance with the City of Modesto 2013 Groundwater Discharge Permit (City of Modesto, 2013). It is also recommended to evaluate new ways to operate the IX system to reduce disposal costs, which includes allowing the system to operate for longer periods of time between change outs. Continued evaluation of PCE concentrations in extraction wells EW-01R and EW-02 is recommended to establish the best extraction rate for each. Currently, the monitoring program recommends a 50/50 split in the flow between the two extraction wells.

5.2 SVE – Summary Observations and Recommendations

The operation of the SVE system has not remediated the entire PCE mass in the fine-grained soils near Halford's Cleaners after approximately five years, possibly suggesting that a different method of remediation may be warranted. Monthly sampling should be resumed to determine when the system could be shut down after the startup to maximize mass removal and minimize system operations. The following wells are recommended for sample collection: SVE-02, SVE-03, DP-03B, and DP-05A.

Based on the rebound time at the SVE wells and well DP-05A, pulsed operation is recommended for the SVE system; run for at least one month and shut down for five months. This schedule will allow for two operations per year and save operations costs over that time. Concentrations in the sub-slab and vapor wells tend to increase during the summer and fall; pulsed operation may be best incorporated during these higher recorded PCE concentrations to maximize mass removal. Pulsed operation may not remove the remaining diffusion limited mass; however, a pulse operation will decrease costs and mitigate sub-slab and indoor air PCE concentrations.

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6.0 QUALITY CONTROL SUMMARY REPORT

6.1 Introduction

This section summarizes QA/QC results for samples collected and data generated during the period of October through December 2015 (4Q15) at the Modesto Groundwater Superfund Site. Sampling activity protocols are provided in the 2010 SAP (URS, 2010) and 2013 SAP (URS, 2013d). 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 1 October and 31 December 2015, field samples, field duplicates (FDs), and field QC samples were collected for groundwater and vapor samples. Water samples were collected from the GWTS and existing monitoring wells. Vapor samples were collected from the GWTS and indoor air and sub-slab samples were collected. 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 Group (ALS) (formerly Columbia Analytical Services)

- TDS by SM2540C: 3 normal samples (FNs)
- TSS by SM2540D: 3 FN
- BOD by SM5210B: 3 FN
- VOCs in water by EPA Method E524.2: 13 FN, 1 FD, 3 trip blanks (TBs), and 1 matrix spike/matrix spike duplicates (MS/MSDs)

Eurofins/Air Toxics, Inc. (Eurofins)

- VOCs in air by EPA Method TO15: 6 FN and 1 FD

EPA Region 9 Laboratory

- VOCs in water by EPA Method E524.2: 50 FN and 3 MS/MSDs
- VOCs in air by EPA Method TO15: 17 FN and 2 FDs
- VOCs in air by EPA Method TO15 Selective Ion Monitoring: 5 FN and 1 FD

GEL Laboratories, LLC (GEL)

- Total uranium by Method ASTM D5174: 10 FN, 2 FD and 3 MS/laboratory duplicates
- Uranium by SW6020A: 3 FN

Aquatic Bioassay Consulting Laboratories, Inc.

- Title 22: 1 FN

Table B-2 (Long-Term Monitoring Groundwater), Table B-3 (GWTS) and Table B-4 (Indoor Air, Sub-slab, and Soil Vapor) (Appendix B) summarize these sample results.

Analytical chemistry services were provided by ALS in Kelso, Washington; Eurofins in Folsom, California; EPA Region 9 laboratory in Richmond, California; and GEL in Charleston, South Carolina. All laboratories are certified by the California Department of Health Services through the Environmental Laboratory Accreditation Program (ELAP) to perform hazardous waste analyses. GEL is currently in the process of recertification and has an interim California ELAP certification.

All EPA Region 9 analytical results were validated by Laboratory Data Consultants, Inc. (LDC) in Carlsbad, California, 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. All remaining data was reviewed 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 below:

- U: Indicates the compound or analyte was considered not detected due to external contamination.
- 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.
- J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however, the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.
- J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however, the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

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 subsections. Field and laboratory QC check results 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:

$$\text{RPD} = \frac{\lfloor X_1 - X_2 \rfloor}{\left[\left(X_1 + X_2 / 2\right)\right]} \times 100$$

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 TB, field blank (FB), and method blank (MB) samples. Additionally, 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

Completeness is defined as the percentage of measurements that are judged to be usable (i.e., which meet project-specific requirements) compared to the total number planned. The requirement for the quantitative assessment of completeness is 90 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 subsections summarize the data review process and results in terms of PARCC criteria, as defined in the 2010 SAP (URS, 2010) and 2013 SAP (URS, 2013d). 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**.** The criteria used for the evaluation are provided in the Quality Assurance Project Plan included in the 2010 SAP (URS, 2010) and 2013 SAP (URS, 2013d). Appendix C provides data validation findings. 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 for GWTP samples; however, TBs were inadvertently not collected for the 4Q15 groundwater monitoring program. Table B-3 (Appendix B) list TB 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 is quantitatively defined as the percentage of measurements that are determined useable compared to the total number of measurements planned. Completeness of data was evaluated by ensuring that all analytical requests were met, samples were received in proper condition, and all analyses were performed using the correct method within the appropriate holding times. Overall analytical completeness (96 percent) exceeded the project goal of 90 percent (URS, 2010). Details are provided in the data validation reports in Appendix C.

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. These results were verified to be present, but the reported concentrations could not be verified to be precise or accurate within specifications. There are no specific data quality concerns indicated by QC sample results.

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.

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TABLES

Table 4-1 Vertical Hydraulic Gradients: Fourth Quarter 2015

Well No.	Monitoring Zone	Groundwater Elevation (feet msl)	Vertical Well Screen Distance (feet)	4Q15 Vertical Gradient	3Q15 Vertical Gradient	2Q15 Vertical Gradient
MW-04A MW-04B	A B	41.18 41.44	66	0.0039	-0.0015	0.0023
MW-04B MW-04C	B C	41.44 40.61	83	-0.0100	-0.0428	-0.0447
MW-08A MW-09B	A B	41.97 41.70	74	-0.0036	-0.0107	-0.0061
MW-10A MW-10B	A B	41.26 41.26	80.5	0.0000	-0.0056	0.0005
MW-10B MW-10C	B C	41.26 40.40	67	-0.0128	-0.0494	-0.0626
MW-16A MW-16B	A B	40.13 40.09	53	-0.0008	-0.0011	-0.0011
MW-16B MW-16C	B C	40.09 38.91	97	-0.0122	-0.0397	-0.0296
MW-17A MW-17B	A B	40.87 40.79	52	-0.0015	-0.0092	-0.0052
MW-17B MW-17C	B C	40.79 39.54	93	-0.0134	-0.0434	-0.0421
MW-19A MW-19B	A B	40.62 40.04	46	-0.0126	-0.0180	-0.0184
MW-20A MW-20B	A B	40.60 40.39	76	-0.0028	-0.0059	-0.005
MW-20B MW-20C	B C	40.39 39.64	73	-0.0103	-0.0414	-0.0421
MW-21A MW-22A	A A	40.38 40.36	40	-0.0005	0.1260	0.0075
MW-21A MW-25B	A B	40.38 40.22	55	-0.0029	0.0102	0.0027
MW-30A MW-30B	A B	44.45 44.17	56	-0.0050	-0.0143	-0.0134
MW-32B MW-32C	B C	40.32 39.74	81	-0.0072	-0.0091	-0.0298

msl = mean sea level
MW = monitoring well
4Q15 = fourth quarter 2015
3Q15 = third quarter 2015
2Q15 = second quarter 2015
positive gradient = upward
negative gradient = downward

Table 4-2 GWTS PCE Sample Results: Fourth Quarter 2015

Sample Port	Location	Sample Date	pH	PCE (µg/L)
SP-01	GWTS Influent	10/8/2015	7.50	76
		11/5/2015	7.38	82
		12/8/2015	7.40	89
SP-03	LGAC Influent	10/8/2015	8.22	0.96
		11/5/2015	7.71	0.74
		12/8/2015	7.75	2.4 (2.4)
SP-04	LGAC Mid Bed	10/8/2015	8.12	1.0 (1.0)
		11/5/2015	7.62	1.0
		12/8/2015	7.62	0.090 J
SP-05	LGAC Effluent[a]	10/8/2015	8.04	<0.50
SP-07	GWTS Effluent	10/8/2015	7.69	<0.50
		11/5/2015	7.73	<0.50
		12/8/2015	7.53	<0.50

[a] Also is the ion exchange resin influent.

GWTS = groundwater treatment system
J = estimated concentration
LGAC = liquid-phase granular-activated carbon
Mid = middle
PCE = tetrachloroethene
SP = sample port
µg/L = micrograms per liter
< = not detected at or above reported value
( ) = field duplicate result

Table 4-3 GWTS Uranium Sample Results: Fourth Quarter 2015

Sample Port	Location	Sample Date	Uranium (pCi/L)
SP-01	GWTS Influent	10/8/2015	54.6 (62.9)
SP-05	Ion Exchange Influent	11/5/2015	52.6 (53.2)
		12/8/2015	54.7
SP-06	Ion Exchange Mid Bed	10/8/2015	<1.0
		11/5/2015	<1.0
		12/8/2015	<1.0
SP-07	GWTS Effluent	10/8/2015	12.8
SP-10	Ion Exchange Effluent	10/8/2015	<1.0
		11/5/2015	<1.0
		12/8/2015	<1.0

GWTS = groundwater treatment system
Mid = middle
pCi/L = picoCuries per liter
SP = sample port
( ) = field duplicate result
< = not detected at or above reported value

Table 4-4 GWTS Shutdown Summary: Fourth Quarter 2015

Date	Duration, Hours	Reason	
11/23/2015 – 11/23/2015	1.5	LGAC carbon media changeout	
12/16/2015– 12/16/2015	2.0	Performed effluent totalizer certification	
Total	3.5	Hours in quarter: 2,208	Percent operational: 99.8

GWTS = groundwater treatment system
LGAC = liquid-phase granular-activated carbon

Table 4-5 GWTS Carbon Change-Outs

Vessel ID	Media Type	Resin Change-out Date	Quantity
GAC-2	LGAC	12/15/2011	1,000 lbs
GAC-3	LGAC	12/15/2011	1,000 lbs
GAC-1	VGAC	1/9/2013	2,000 lbs
GAC-2	LGAC	1/9/2013	1,000 lbs
GAC-3	LGAC	1/9/2013	1,000 lbs
GAC-2	LGAC	10/10/2013	1,000 lbs
GAC-1	VGAC	12/19/2013	2,000 lbs
GAC-3	LGAC	12/19/2013	1,000 lbs
GAC-2	LGAC	5/22/2014	1,000 lbs
GAC-3	LGAC	11/13/2014	1,000 lbs
GAC-1	VGAC	12/24/2014	2,000 lbs
GAC-2	LGAC	6/3/2015	1,000 lbs
GAC-3	LGAC	11/23/2015	1,000 lbs

GAC = granular-activated carbon
GWTS = groundwater treatment system
ID = identification
lbs = pounds
LGAC = liquid-phase granular-activated carbon
VGAC = vapor-phase granular-activated carbon

Table 4-6 GWTS Ion Exchange Resin Change-Outs

Vessel ID	Resin Change-out Date	Quantity
IX-1	12/9/2010	30 cf
IX-2	2/24/2011	30 cf
IX-1	12/15/2011	30 cf
IX-2	12/15/2011	30 cf
IX-1	5/17/2012	30 cf
IX-2	7/5/2012	30 cf
IX-1	1/9/2013	30 cf
IX-2	6/13/2013	30 cf
IX-1	12/20/2013	30 cf
IX-2	5/22/2014	30 cf
IX-1	12/24/2014	30 cf
IX-2	6/3/2015	30 cf

cf = cubic feet
GWTS = groundwater treatment system
ID = identification
IX = ion exchange

Table 4-7 GWTS PCE Vapor Sample Results: Fourth Quarter 2015

Sample Port	Location	Sample Date	PCE (ppbv)
SP-08	GWTS Pre-GAC	10/8/2015	150
		11/5/2015	160
		12/8/2015	160
SP-09	GWTS Stack	10/8/2015	5.5 J (3.8 J)
		11/5/2015	3.0
		12/8/2015	6.9

GAC = granular-activated carbon
GWTS = groundwater treatment system
PCE = tetrachloroethene
ppbv = parts per billion by volume
J = estimated concentration
SP = sample port
( ) = field duplicate result

Table 4-8 GWTS Influent and Effluent Results: Fourth Quarter 2015													
Sample Identification	**Date**	**pH**	**Temp ºC**	**Conductivity (µmhos/cm)**	**TDS (mg/L)**	**TSS (mg/L)**	**BOD (mg/L)**	**Total U (pCi/L)**	**PCE (mg/L)**	**Toluene (mg/L)**	**TCE (mg/L)**	**Bioassay**
Maximum Allowable Discharge Limit		**5 - 12**	**60**	**NA**	**NA**	**NA**	**NA**	**20**	**0.005**	**0.15**	**NA**	**NA**
Compliance Monitoring												
GWTS Influent	10/8/2015	7.50	20.8	1070	NS	NS	NS	54.6	0.076	<0.0005	0.00008J	NS
	11/5/2015	7.38	18.8	1080	NS	NS	NS	NS	0.082	<0.0005	0.00007J	NS
	12/8/2015	7.40	19.3	1060	NS	NS	NS	NS	0.089	<0.0005	0.00006J	NS
GWTS Effluent	10/8/2015	7.69	21.3	1070	635	<5.0	<2.0	12.8	<0.0005	<0.0005	<0.0005	NS
	11/5/2015	7.73	18.1	1160	660	<5.0	<2.0	NS	<0.0005	<0.0005	<0.0005	NS
	12/8/2015	7.53	19.3	1050	607	<5.0	<2.0	NS	<0.0005	<0.0005	<0.0005	NS

mg/L = milligrams per liter

pCi/L = picoCuries per liter

NA = not applicable

NS = not sampled

J = estimated value

< = not detected at or above reported value

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FIGURES

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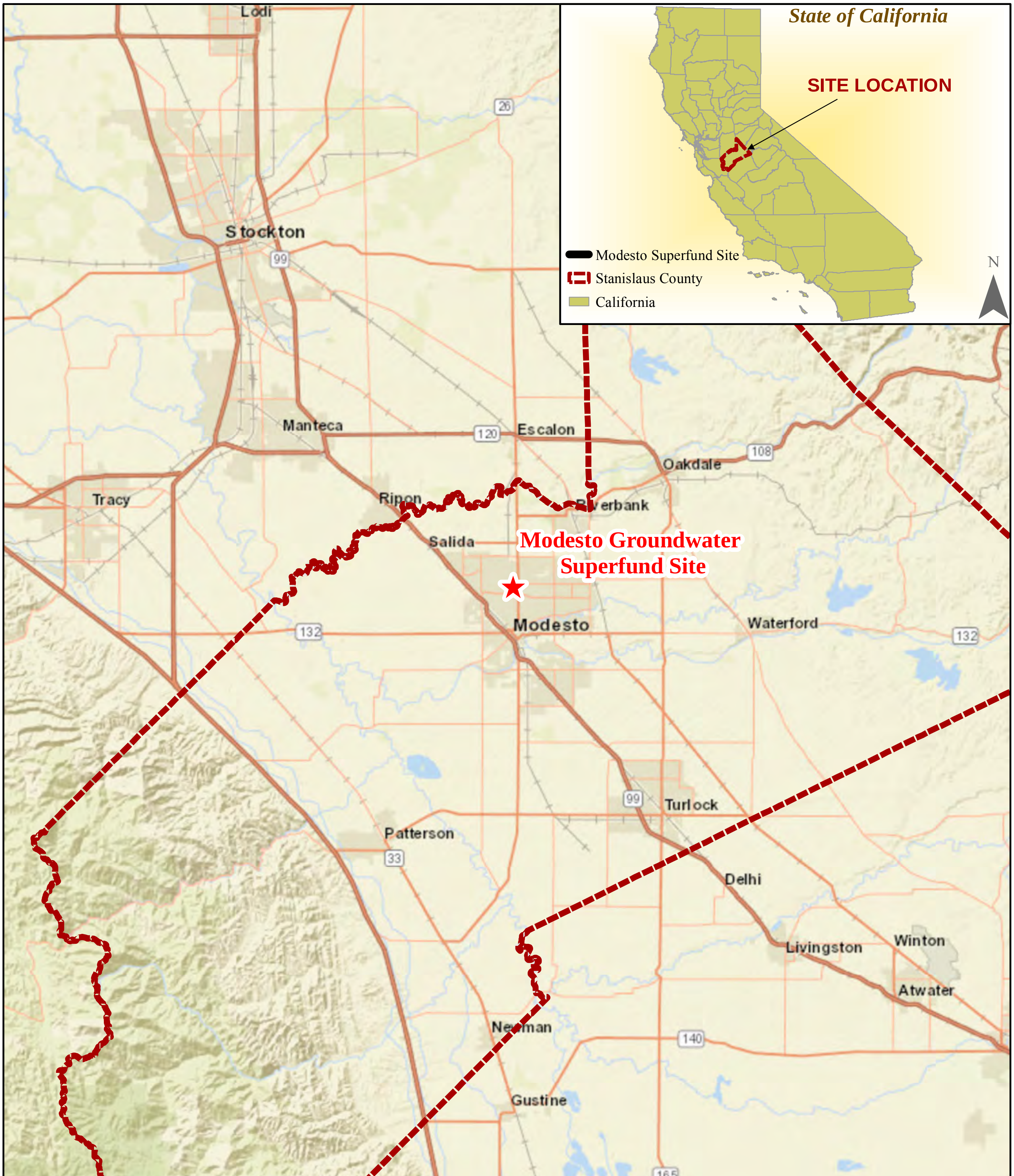

RORE

Figure 1-1
Site Location Map
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

May 2016

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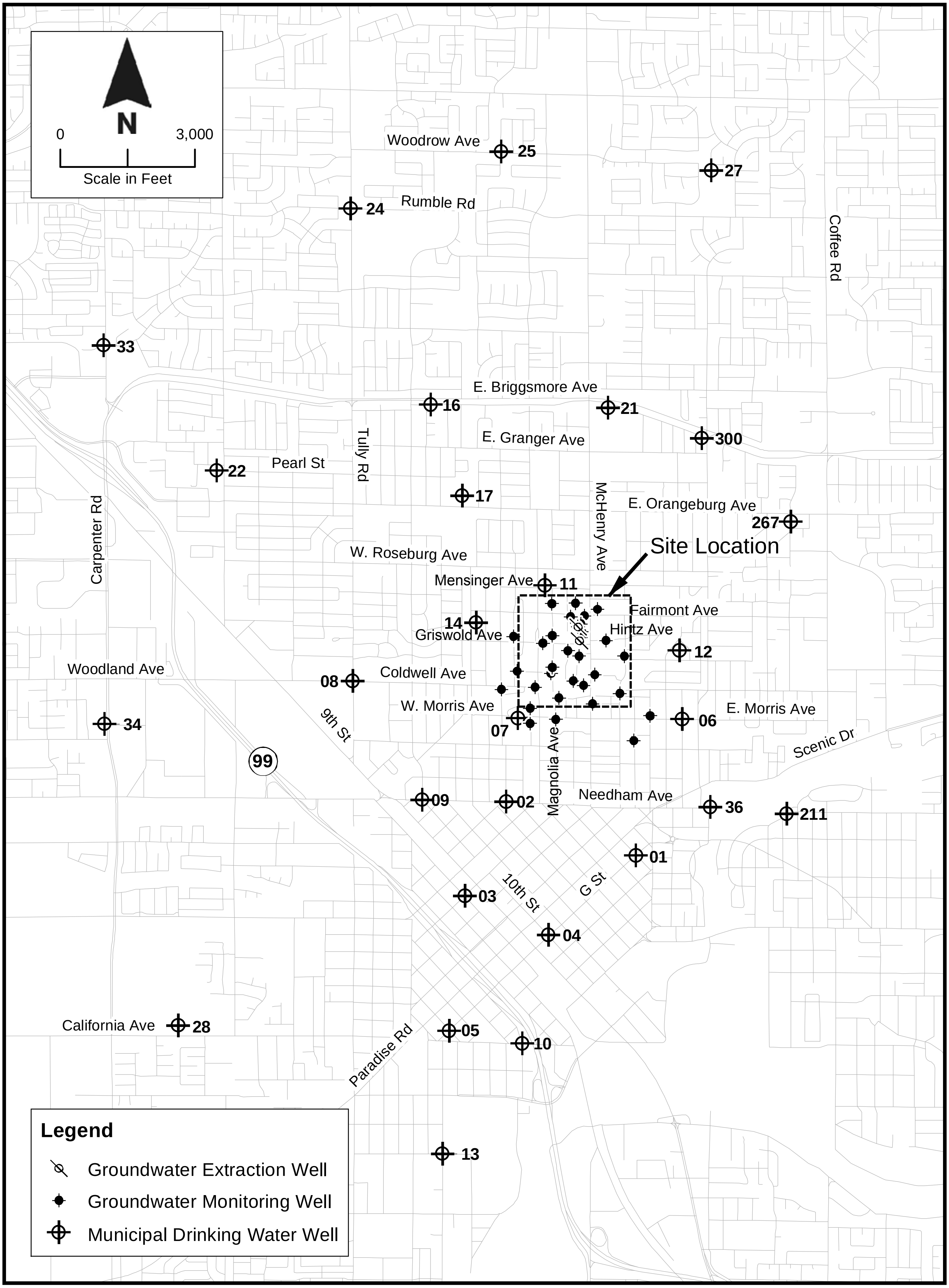

Source: URS 2013f

Figure 1-2 Municipal Well Locations Map
Modesto Groundwater Superfund Site

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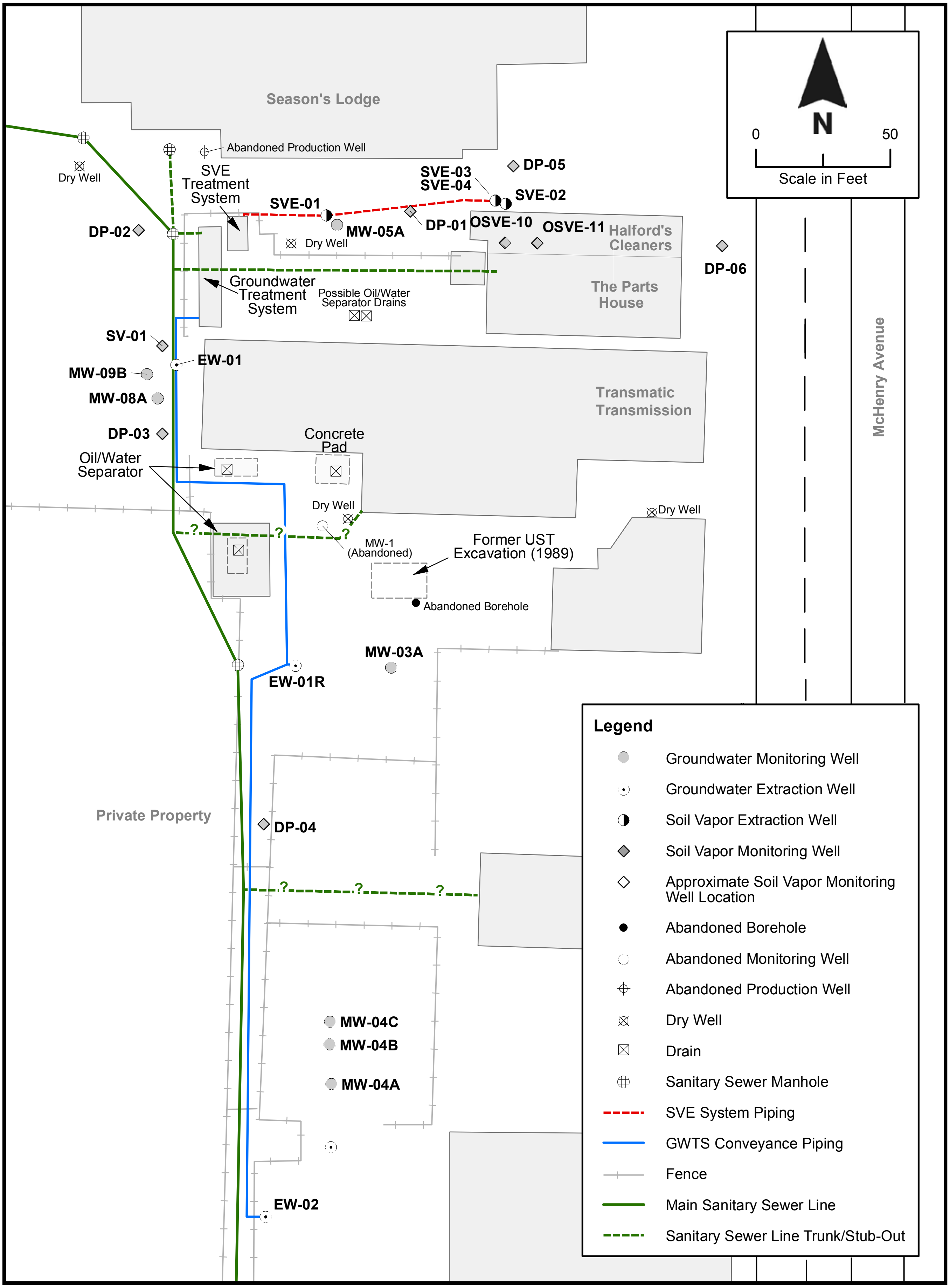

Source: URS 2013f

Figure 2-1 Site Layout Map Modesto Groundwater Superfund Site

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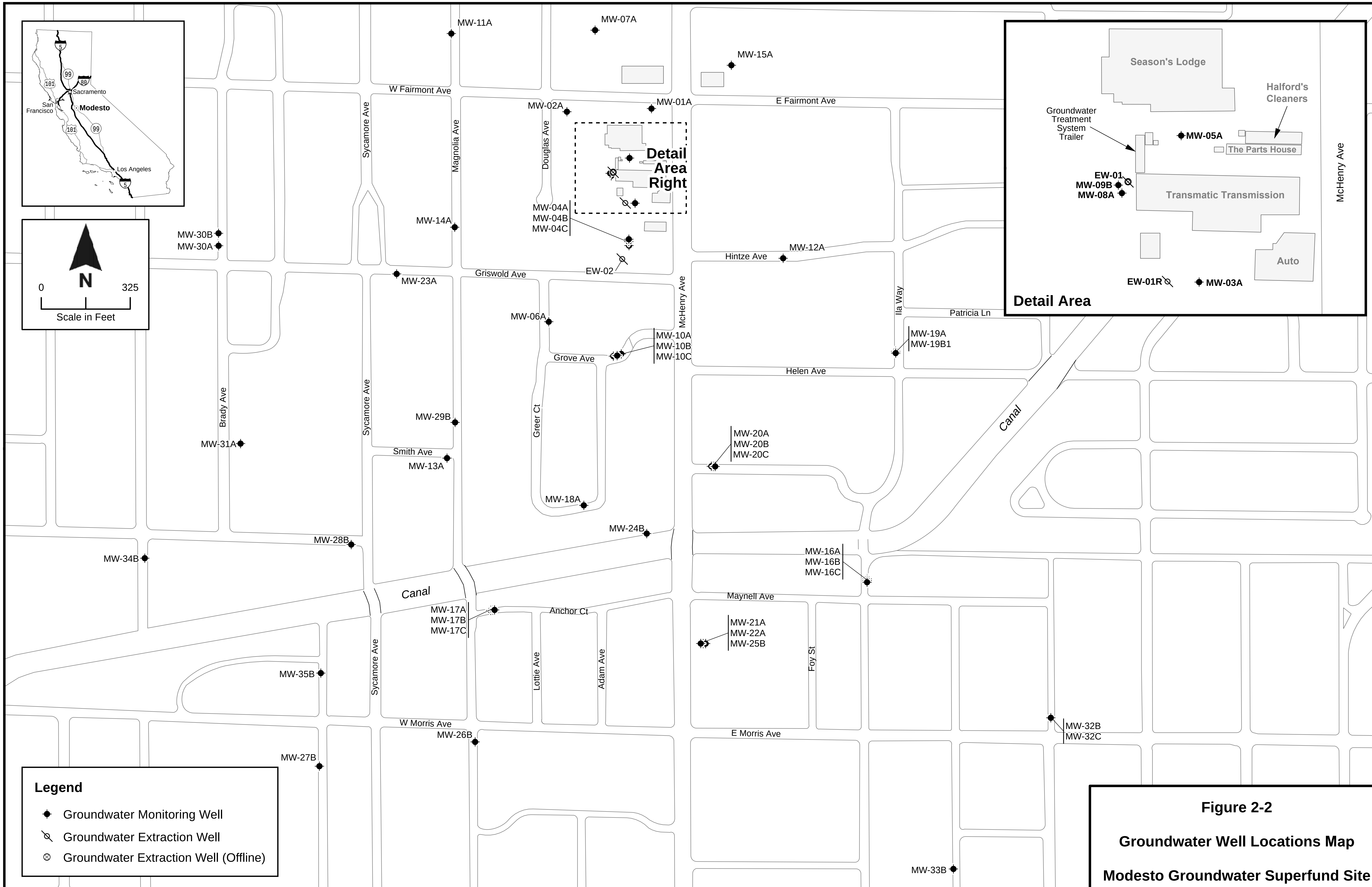

Figure 2-2

Groundwater Well Locations Map

Modesto Groundwater Superfund Site

Source: URS 2013f

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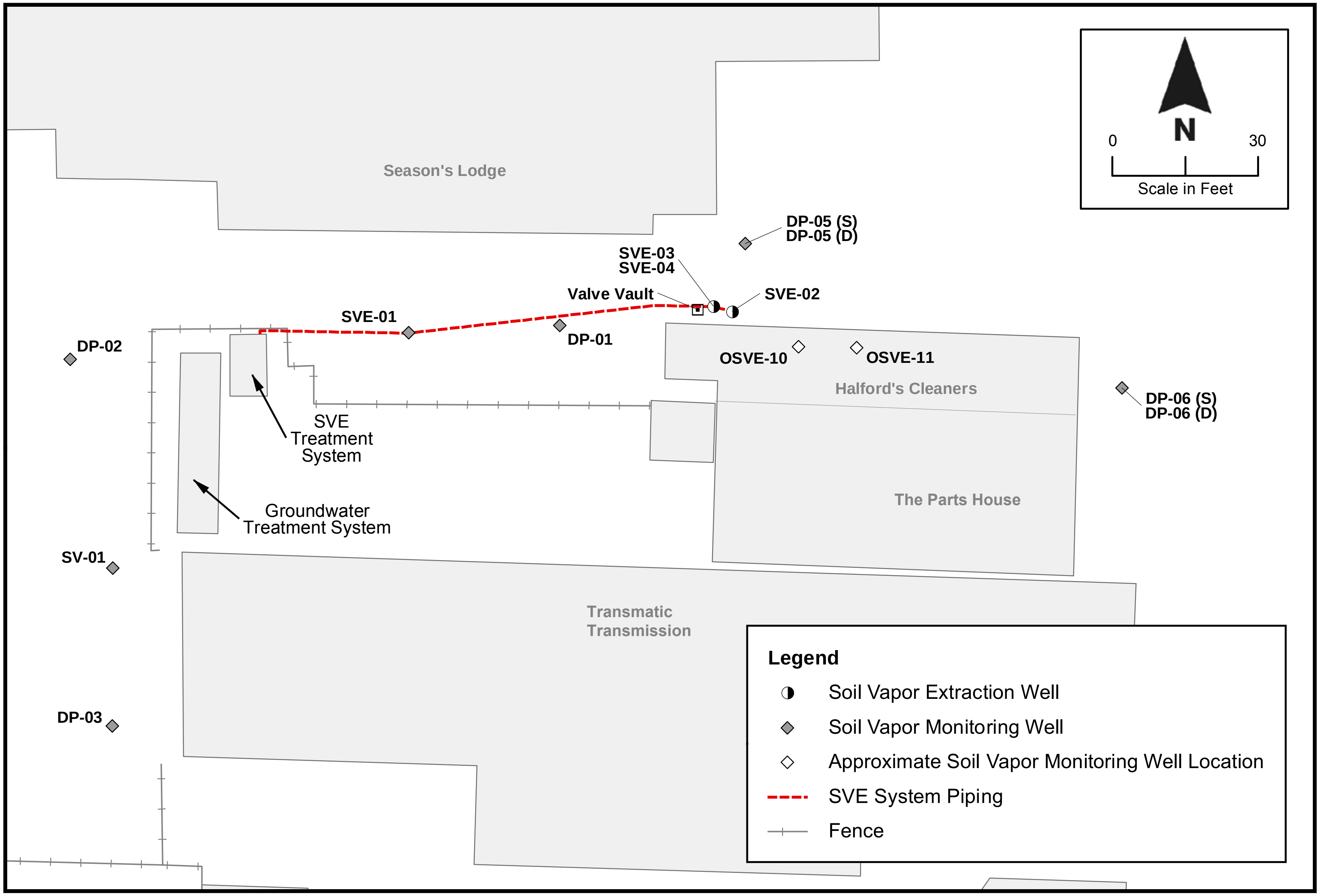

Source: URS 2013f

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

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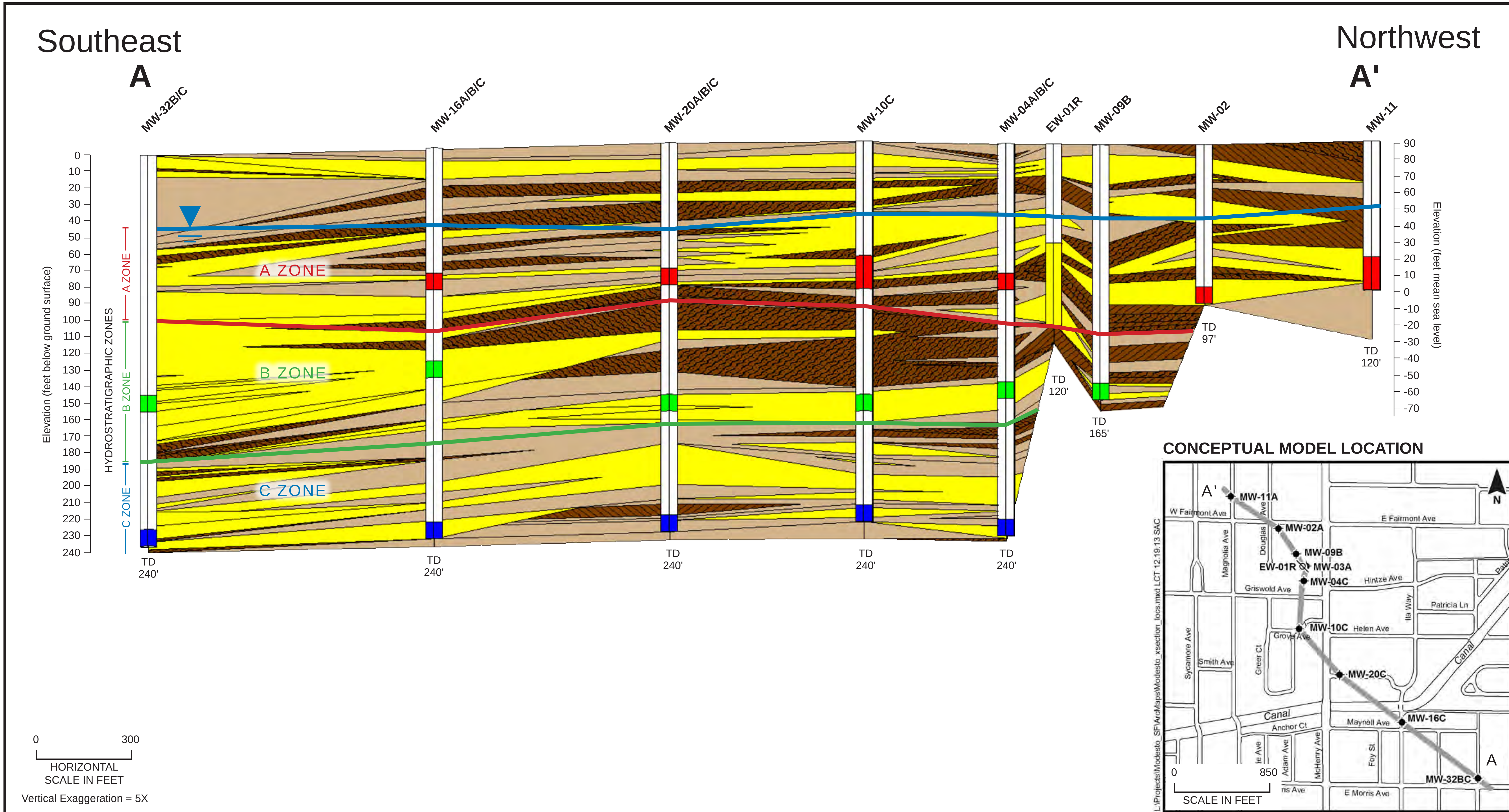

LEGEND

- Gravel, Gravelly Sand, Sand, Sand to Silty Sand
- Silty Sand to Silt
- Clayey Silt to Silty Clay

Approximate Water Table Surface (A Zone)

MW-20A/B/C
Groundwater Monitoring Well
- A Zone Screen
- B Zone Screen
- C Zone Screen

EW-01R
Groundwater Extraction Well
- B Zone Screen

URS

Figure 4-1
Stratigraphic Conceptual Model A-A'
Modesto Groundwater Superfund Site

Source: URS 2013f

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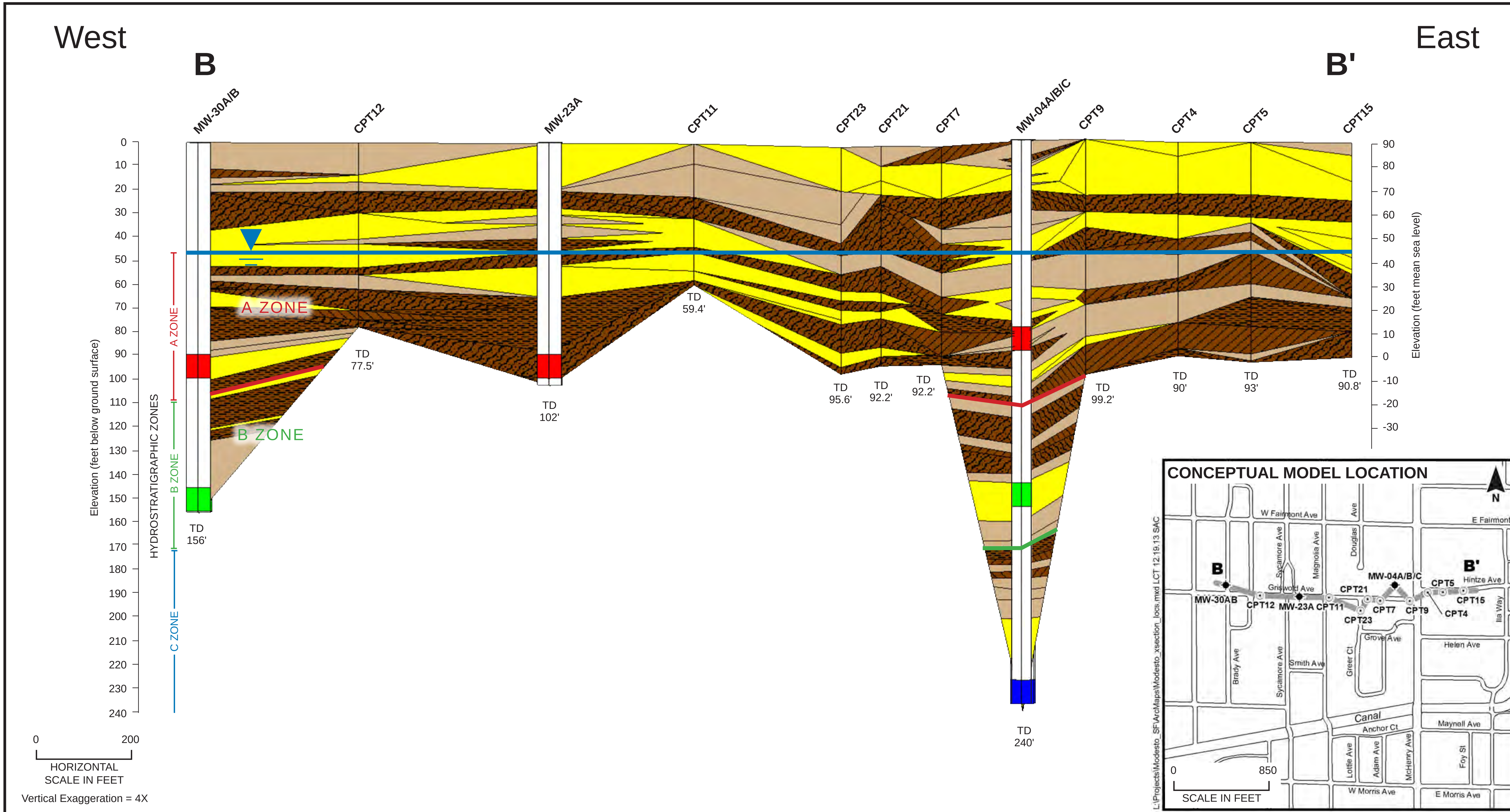

LEGEND

Gravel, Gravelly Sand, Sand, Sand to Silty Sand

Silty Sand to Silt

Clayey Silt to Silty Clay

Approximate Water Table Surface (A Zone)

MW-04A/B/C

Groundwater Monitoring Well

A Zone Screen

B Zone Screen

C Zone Screen

URS

Figure 4-2
Stratigraphic Conceptual Model B-B'
Modesto Groundwater Superfund Site

Source: URS 2013f

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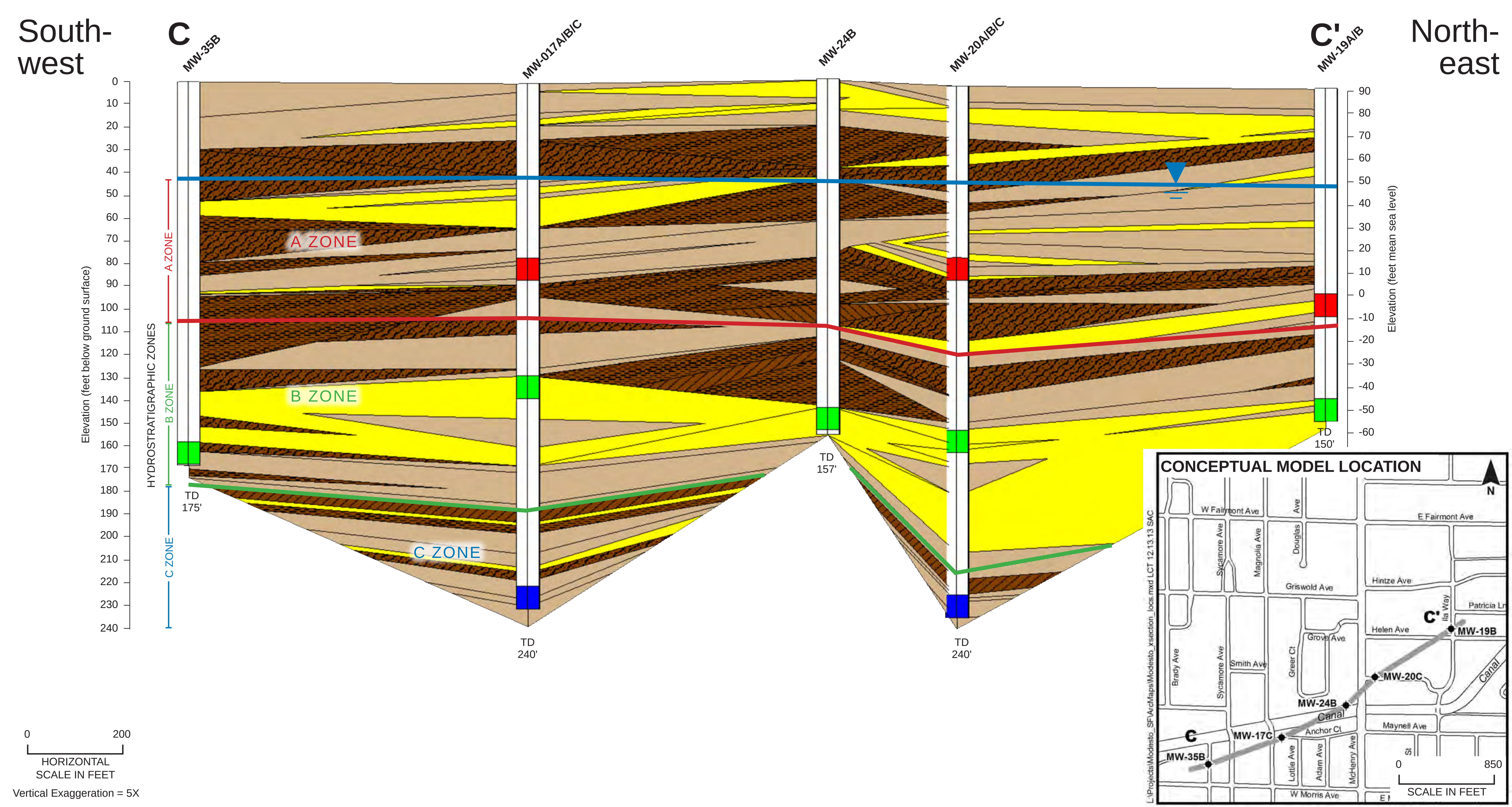

LEGEND

Yellow	Gravel, Gravelly Sand, Sand, Sand to Silty Sand
Tan	Silty Sand to Silt
Dark brown	Clayey Silt to Silty Clay

Approximate Water Table Surface (A Zone)

MW-17A/B/C
Groundwater Monitoring Well
A Zone Screen
B Zone Screen
C Zone Screen

URS

Figure 4-3
Stratigraphic Conceptual Model C-C'
Modesto Groundwater Superfund Site

Source: URS 2013f

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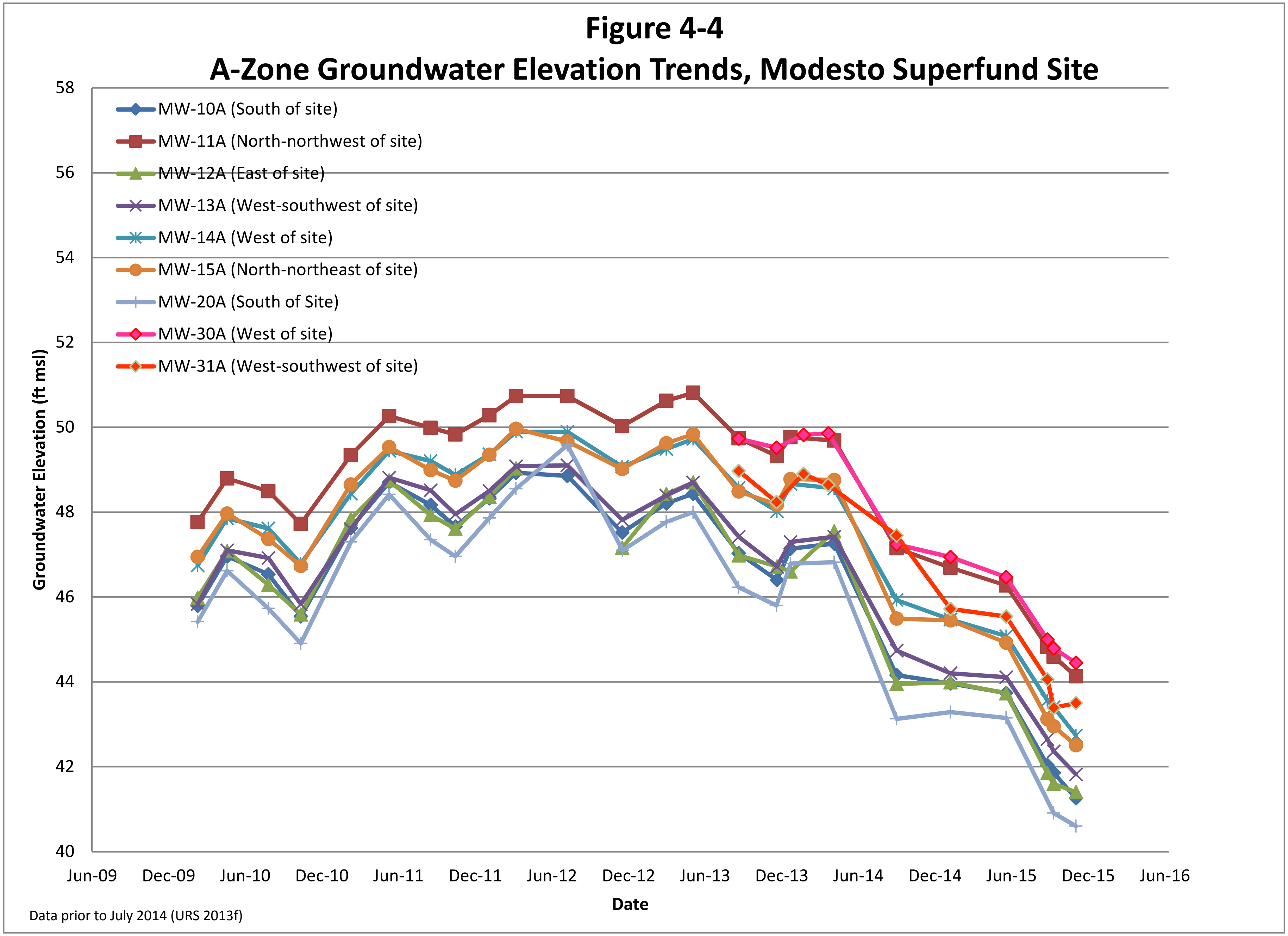
Figure 4-4
A-Zone Groundwater Elevation Trends, Modesto Superfund Site
MW-10A (South of site)
MW-11A (North-northwest of site)
MW-12A (East of site)
MW-13A (West-southwest of site)
MW-14A (West of site)
MW-15A (North-northeast of site)
MW-20A (South of Site)
MW-30A (West of site)
MW-31A (West-southwest of site)
Groundwater Elevation (ft msl)
58
56
54
52
50
48
46
44
42
40
Jun-09
Dec-09
Jun-10
Dec-10
Jun-11
Dec-11
Jun-12
Dec-12
Jun-13
Dec-13
Jun-14
Dec-14
Jun-15
Dec-15
Jun-16
Date
Data prior to July 2014 (URS 2013f)

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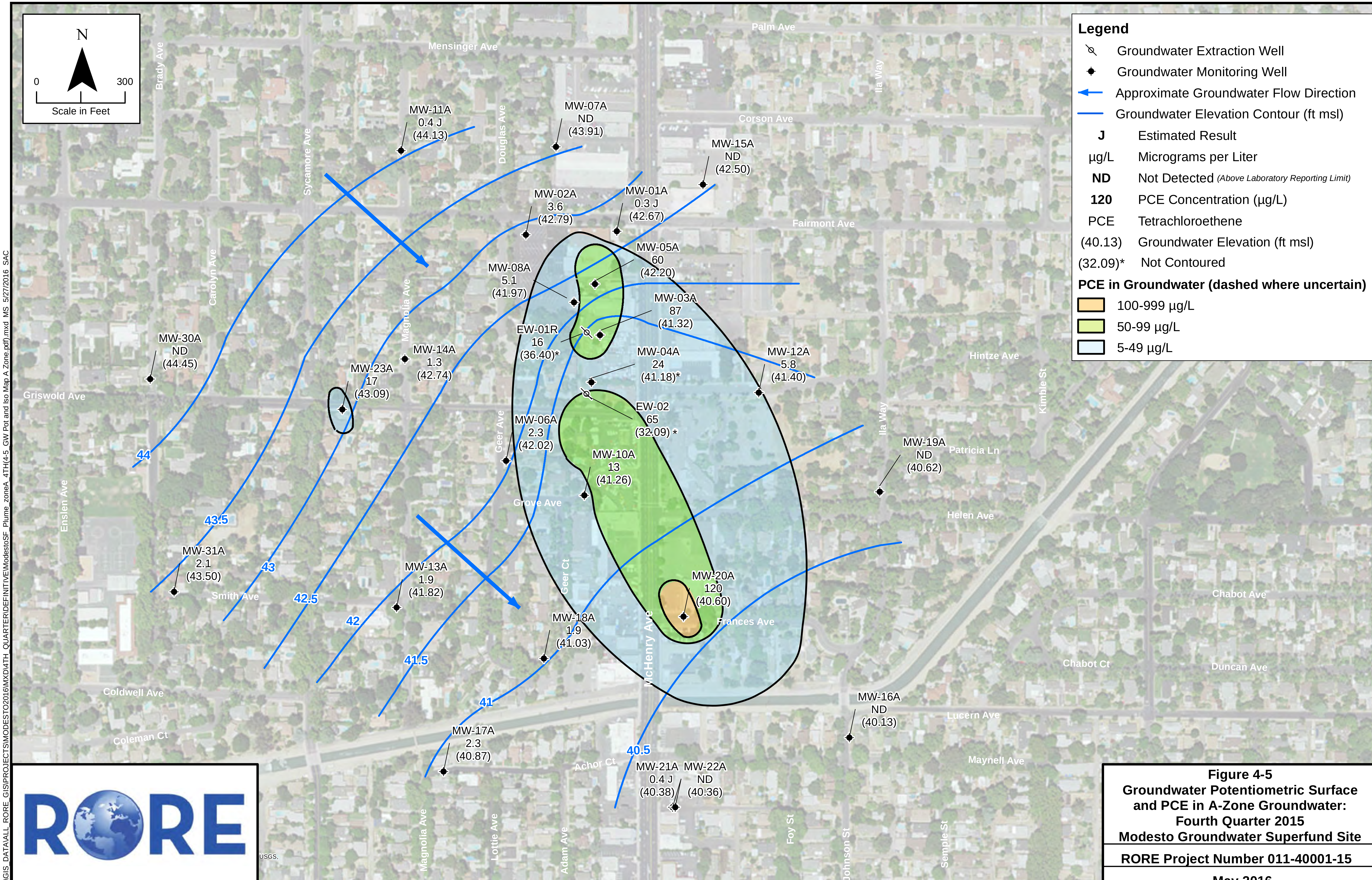

Figure 4-5
Groundwater Potentiometric Surface and PCE in A-Zone Groundwater: Fourth Quarter 2015
Modesto Groundwater Superfund Site

RORE Project Number 011-40001-15

May 2016

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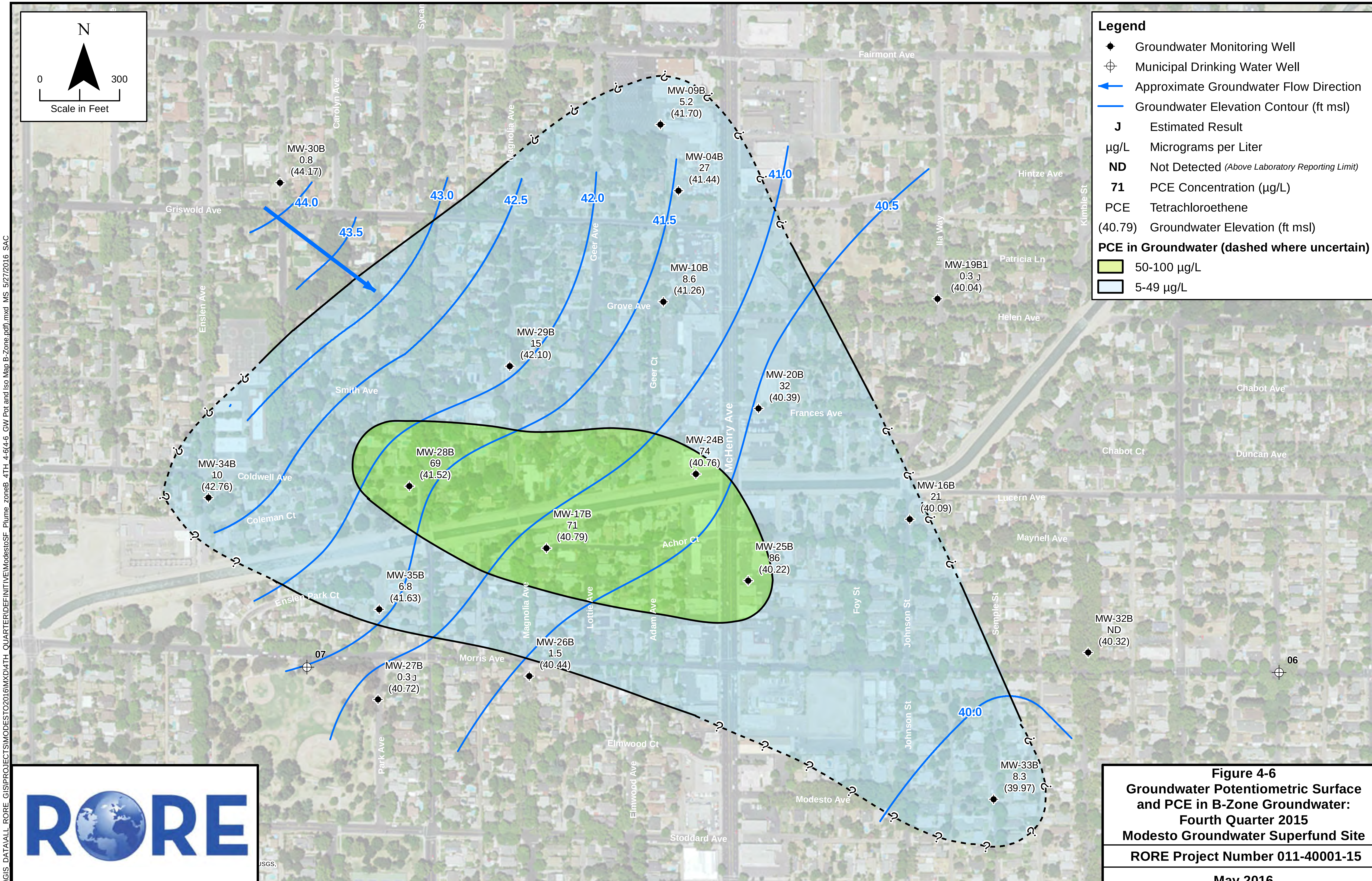

Figure 4-6
Groundwater Potentiometric Surface and PCE in B-Zone Groundwater: Fourth Quarter 2015
Modesto Groundwater Superfund Site

RORE Project Number 011-40001-15

May 2016

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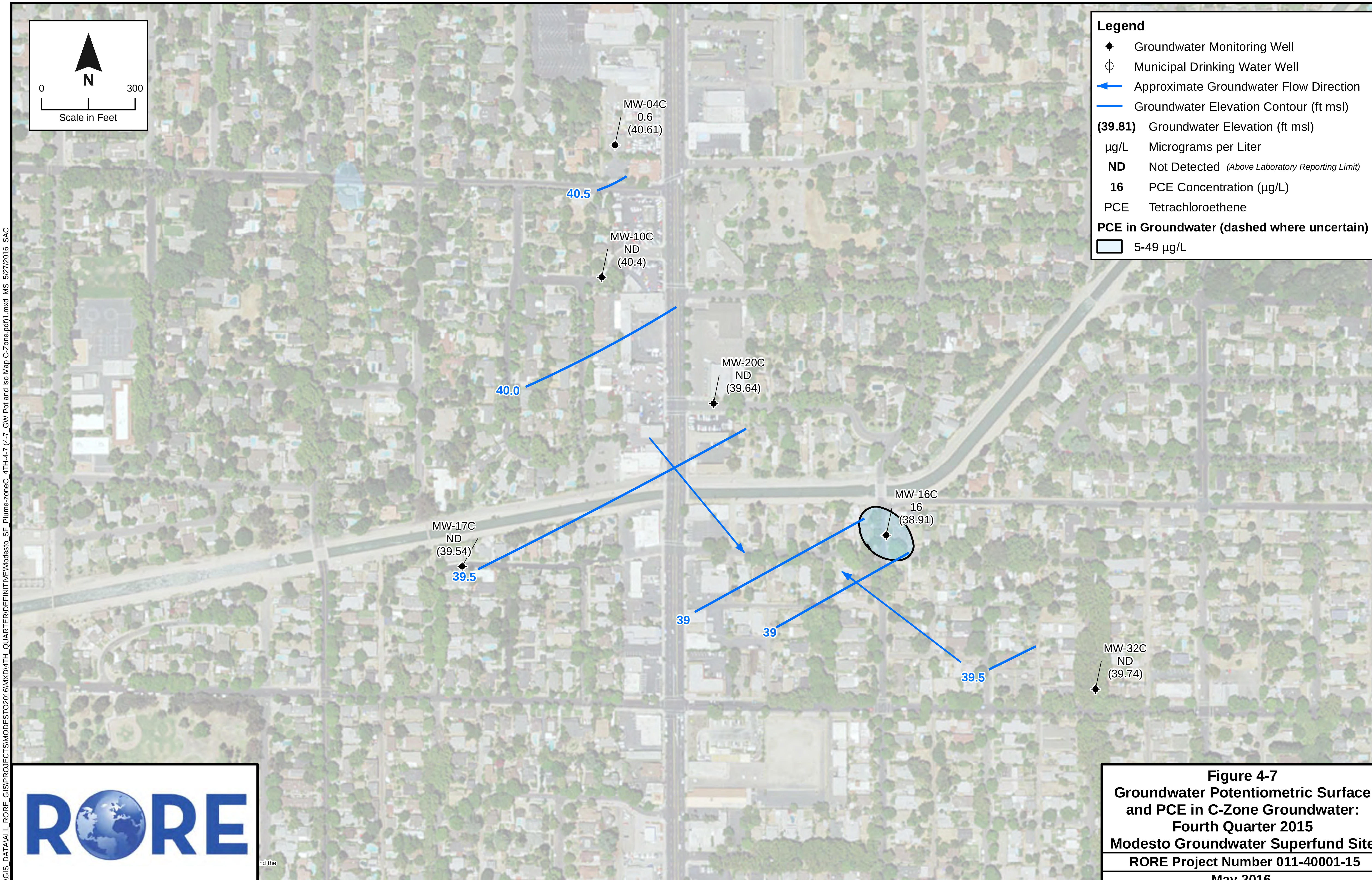

Figure 4-7
Groundwater Potentiometric Surface and PCE in C-Zone Groundwater: Fourth Quarter 2015
Modesto Groundwater Superfund Site
RORE Project Number 011-40001-15
May 2016

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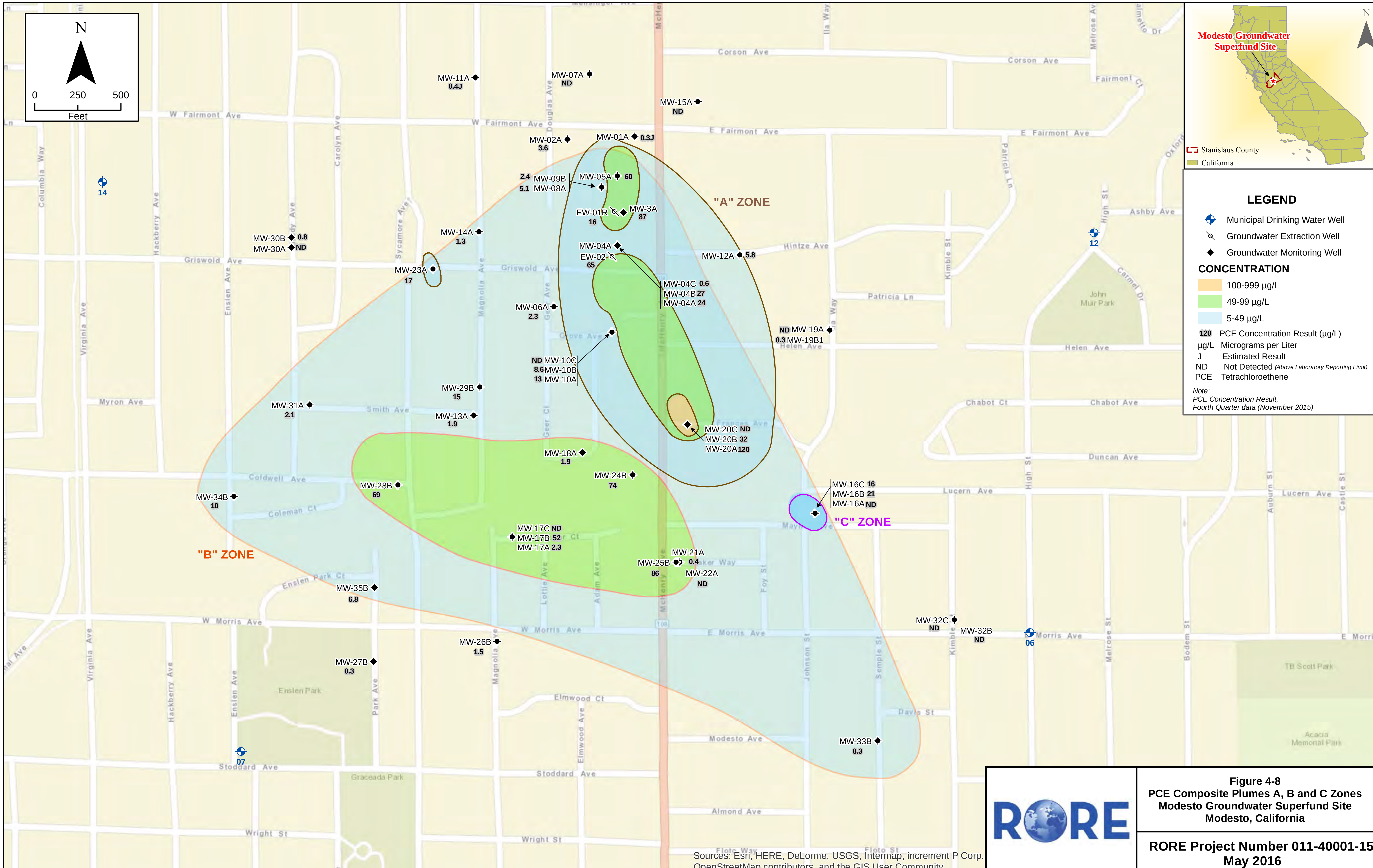

RORE

Figure 4-8
PCE Composite Plumes A, B and C Zones
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15
May 2016

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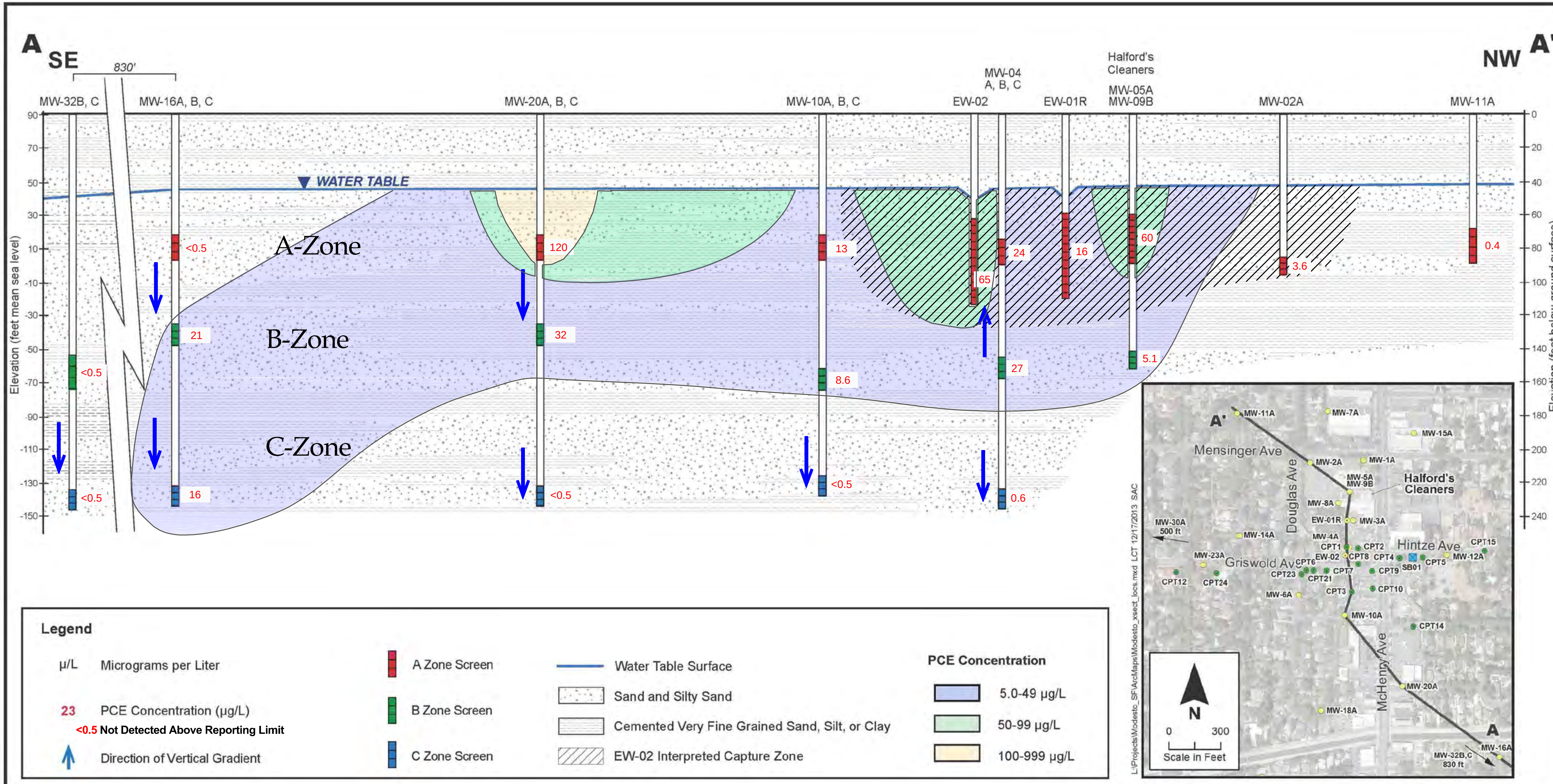

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SCALE IN FEET

Lithology source URS 2013f

CROSS SECTION A-A'

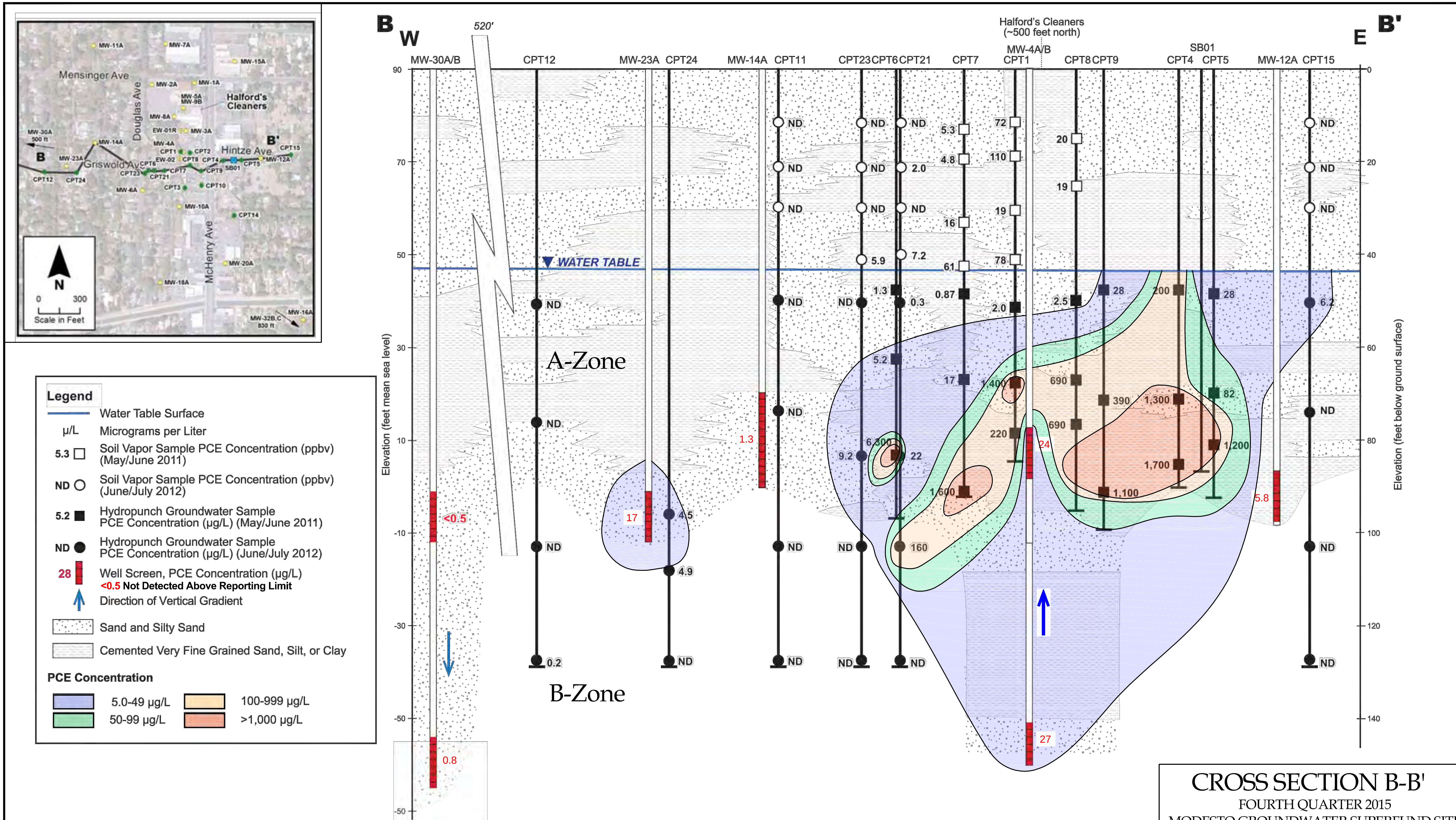
FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE
MODESTO, CALIFORNIA

RORE

FIGURE 4-9

PROJECT No.
011-40001-15

MAY 2016



Lithology source URS 2013f

CROSS SECTION B-B'

FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE
MODESTO, CALIFORNIA

RORE

FIGURE 4-10

PROJECT No. 011-40001-15

MAY 2016

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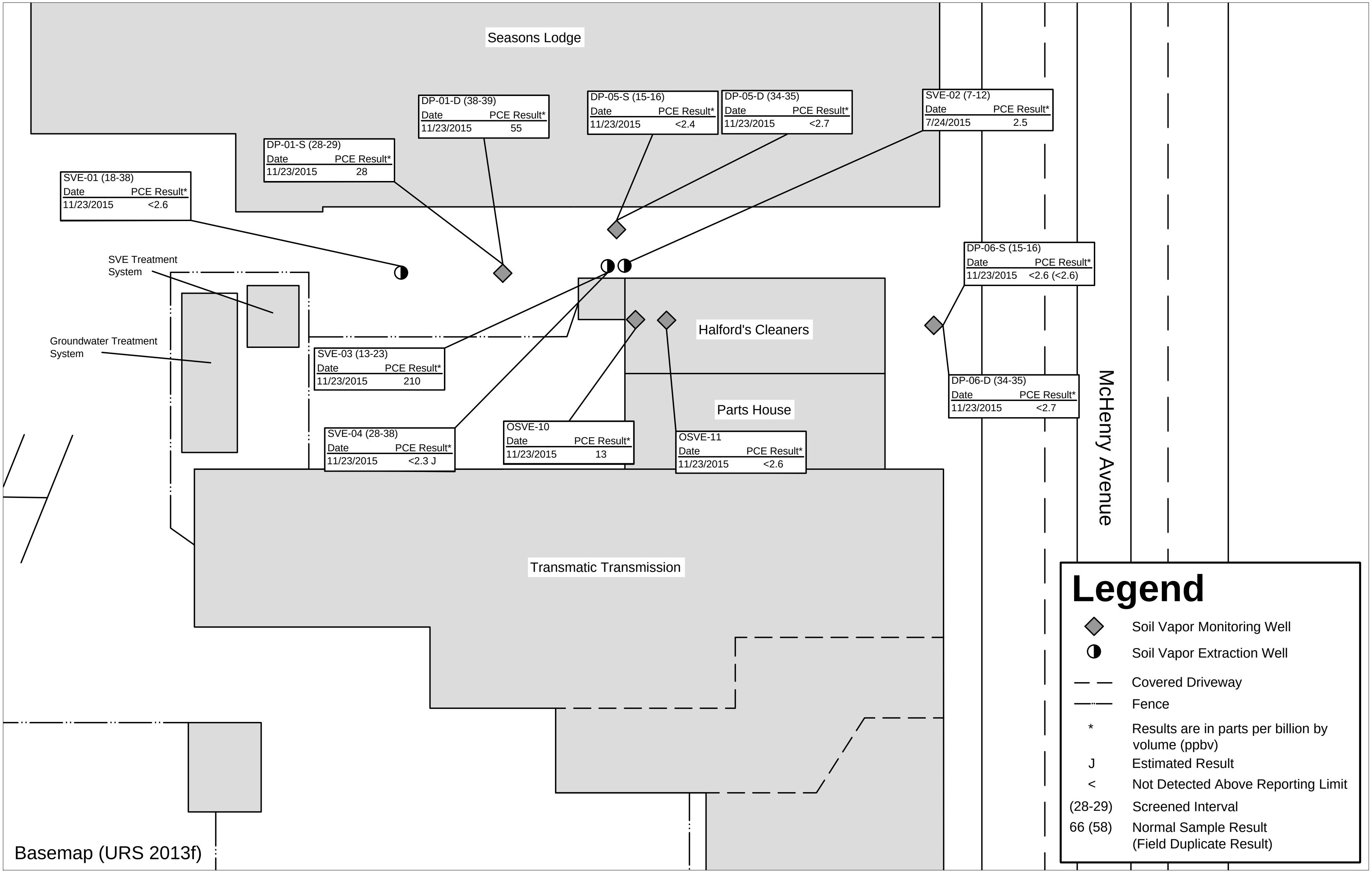

Figure 4-11 Soil Vapor Analytical Results: Fourth Quarter 2015 Modesto Groundwater Superfund Site

RORE Inc.

May 2016

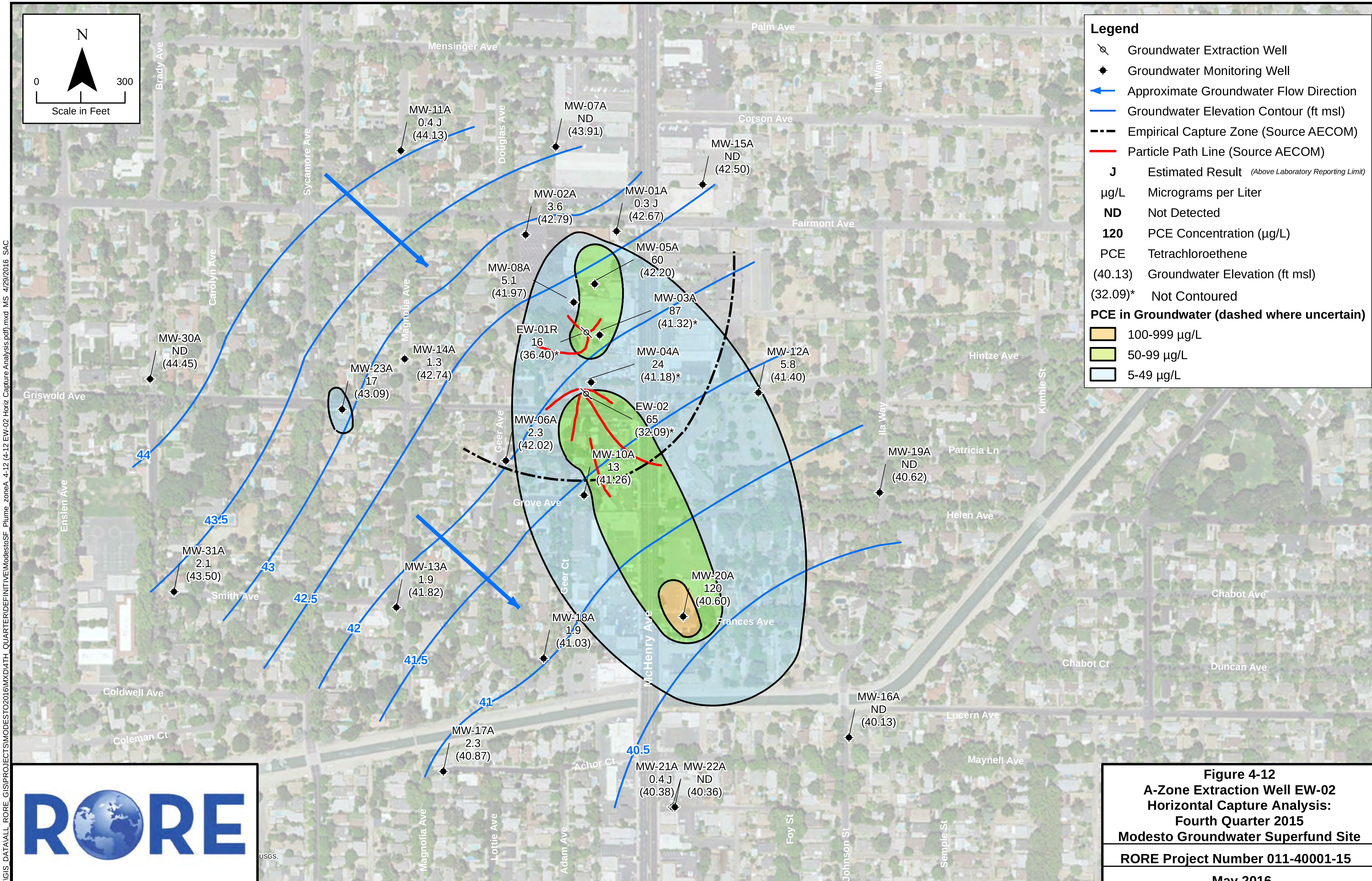

Figure 4-12
A-Zone Extraction Well EW-02
Horizontal Capture Analysis:
Fourth Quarter 2015
Modesto Groundwater Superfund Site

RORE Project Number 011-40001-15

May 2016

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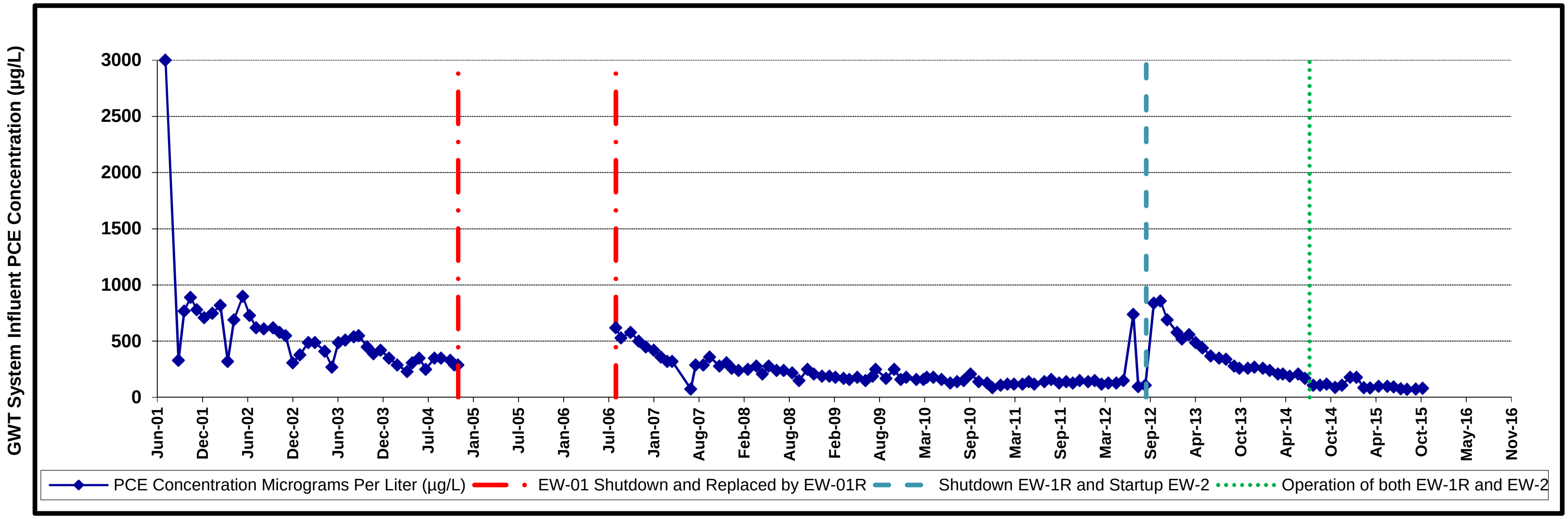
Figure 4-13
Cumulative PCE Mass Removed by the Groundwater Treatment System
Modesto Groundwater Superfund Site



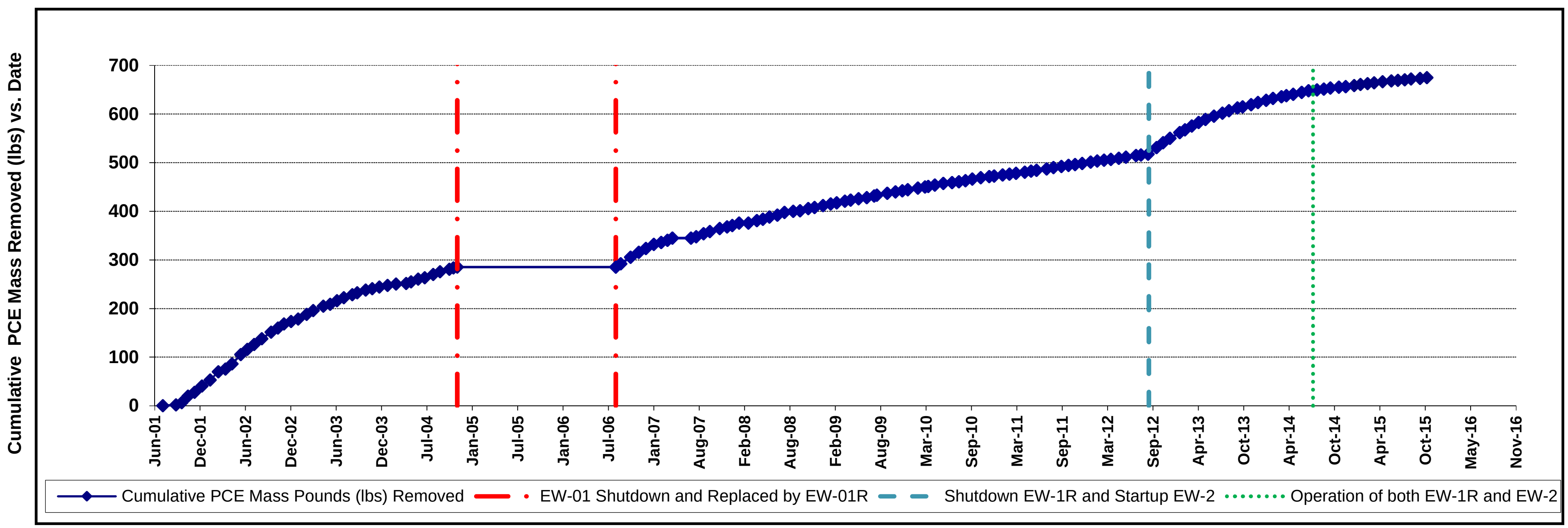


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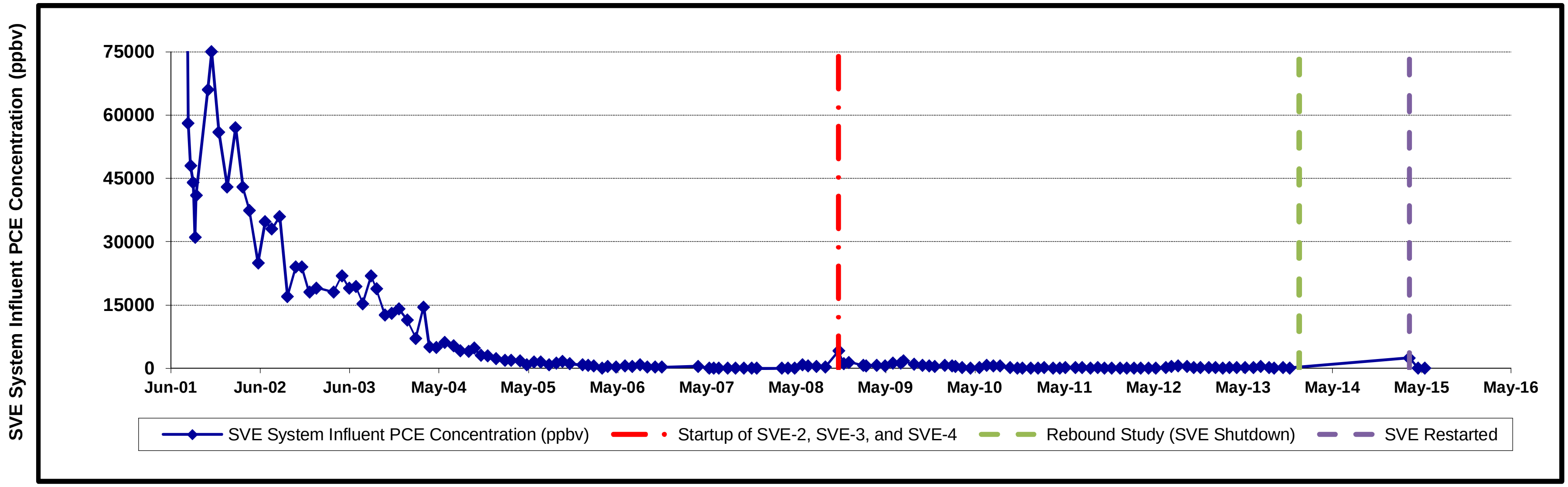
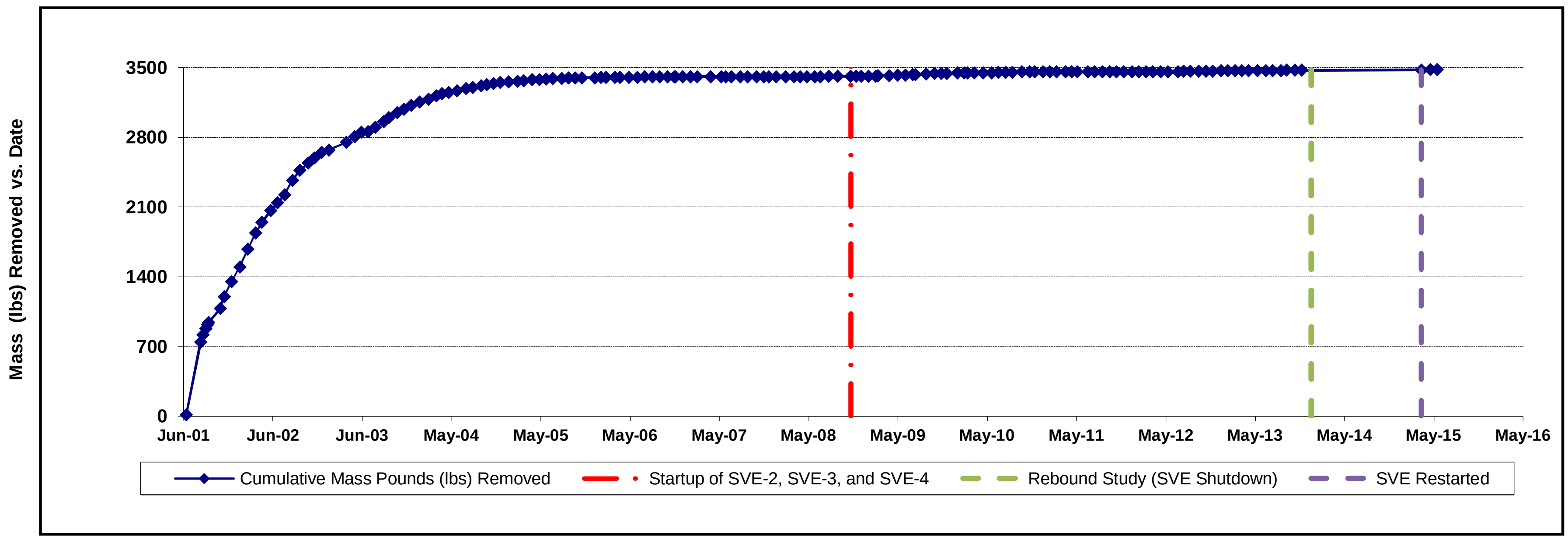
Figure 4-14
Cumulative Mass Removed by the Soil Vapor Extraction System
Modesto Groundwater Superfund Site





Appendix A

Treatment System Process and Instrumentation Diagrams

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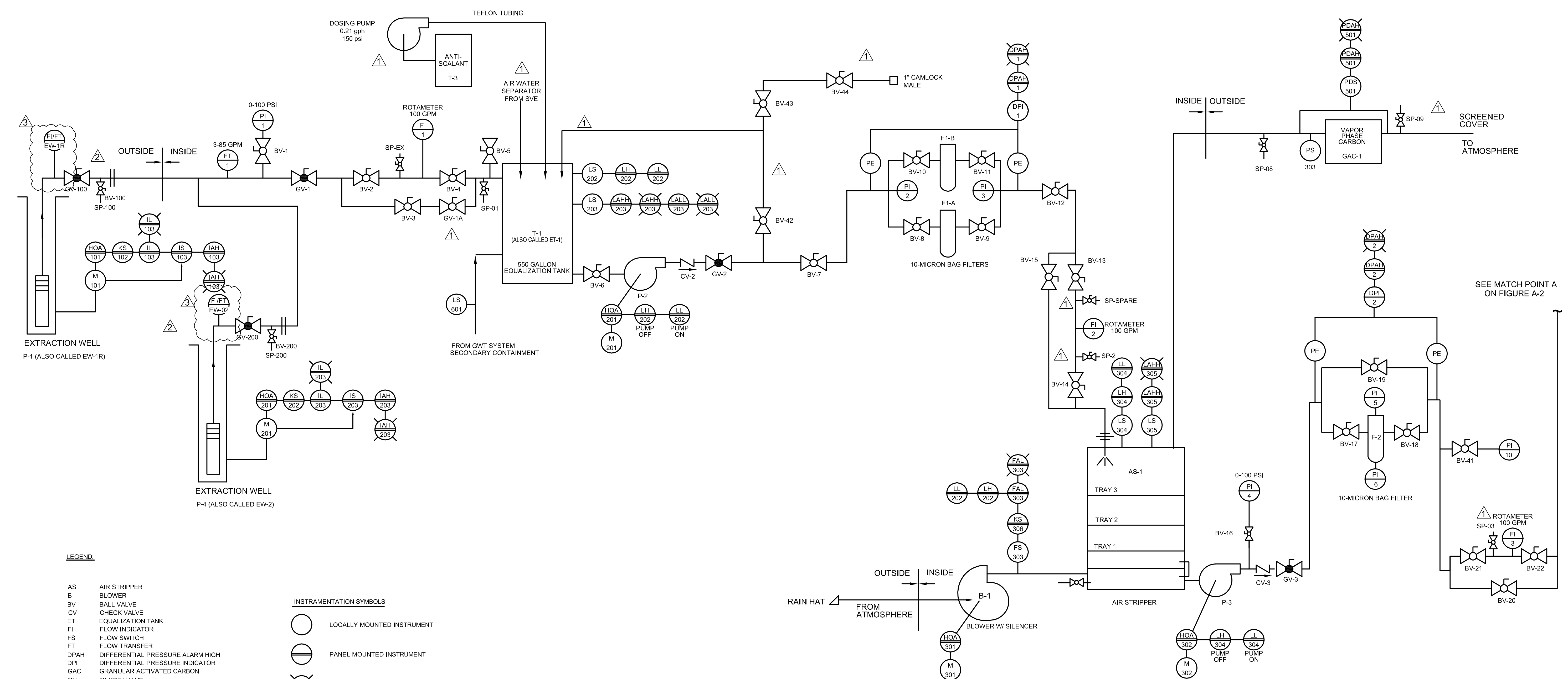

LEGEND:

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
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
UNION
BALL VALVE
FLANGE
SAMPLE PORT
CHECK VALVE

REFERENCES
TITLE

NOTE: REFERENCE
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AS-BUILTS

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3	TM	9/2012	AS-BUILTS

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MODESTO SUPERFUND SITE
EW-02 INSTALLATION
MODESTO, CALIFORNIA

GROUNDWATER TREATMENT P&ID

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CONTRACT/TASK ORDER NO. 03AA14C1
SHEET NO. 1-1

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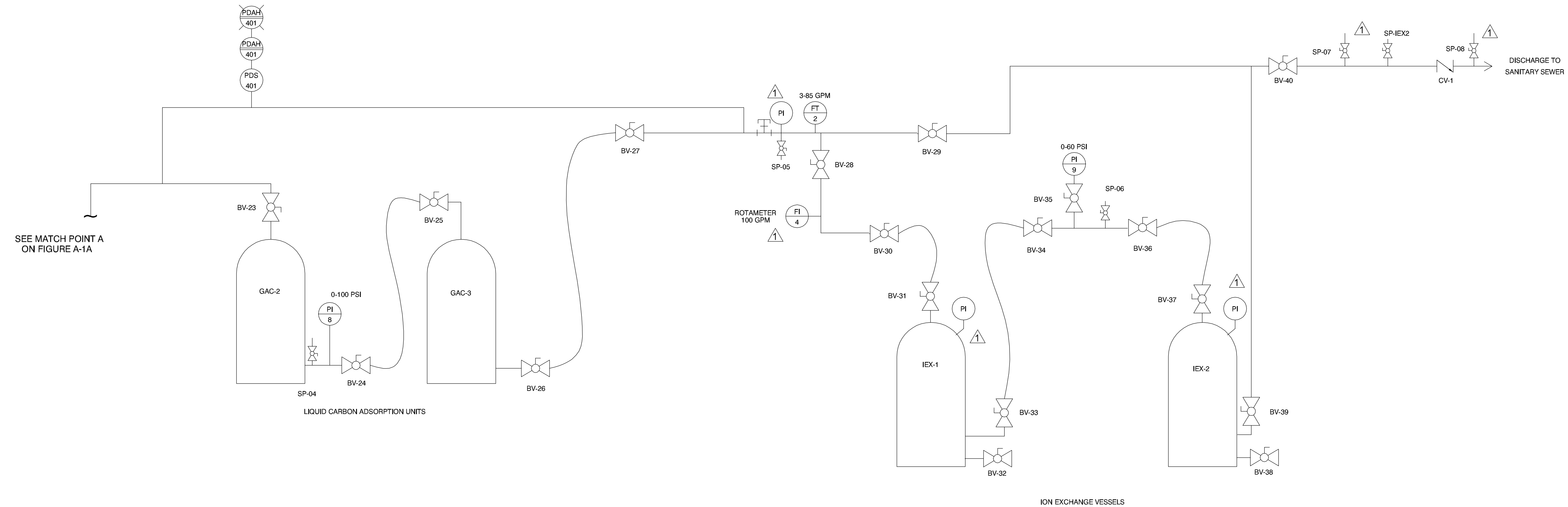

LEGEND:

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

INSTRAMENTATION SYBOLS

LOCALLY MOUNTED INSTRUMENT

PANEL MOUNTED INSTRUMENT

PANEL MOUNTED LIGHT

BALL VALVE

SAMPLE PORT

CHECK VALVE

REFERENCES
TITLE

NOTE: REFERENCE
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Sacramento, CA 95833-3200
TEL: (916) 679-2000
FAX: (916) 679-2900

MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

GROUNDWATER TREATMENT P&ID

JOB NO.

PROJECT

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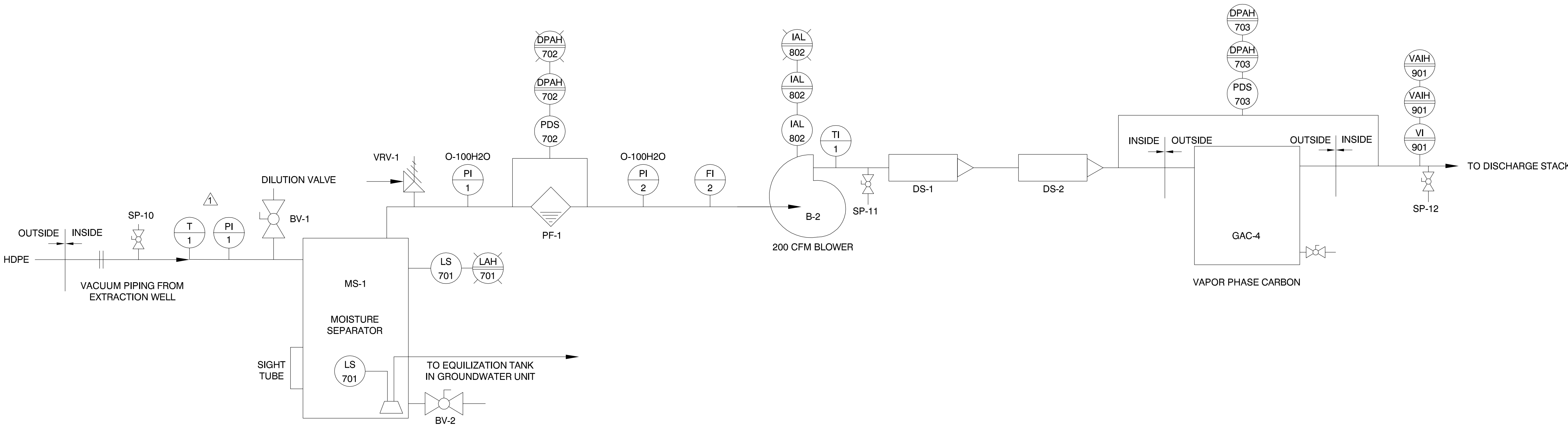

KEY

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

REFERENCES
TITLE

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

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

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APPROVED BY:		

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Sacramento, CA 95833-3200
TEL: (916) 679-2000
FAX: (916) 679-2900

MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

SOIL VAPOR EXTRACTION P&ID

JOB NO.

PROJECT

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Appendix B

Laboratory Analytical Data Tables

Table B-1	**Site Contaminants of Concern**
Table B-2	**Results Summary for Long-Term Monitoring: Fourth Quarter 2015**
Table B-3	**Results Summary for the Groundwater Treatment System: Fourth Quarter 2015**
Table B-4	**Results Summary for Vapor Samples (Indoor Air, Sub-Slab, and Soil Vapor): Fourth Quarter 2015**

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TABLE B-1

SITE CONTAMINANTS OF CONCERN
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

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

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TABLE B-2
RESULTS SUMMARY FOR LONG-TERM MONITORING: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
EW-01R	EW-01R	WG	E524.2	FN	11/23/2015	Chloroform	3.6	0.5	µg/L	
						Tetrachloroethene	16	0.5	µg/L	
EW-02	EW-02	WG	E524.2	FN	11/24/2015	Chloroform	2.4	0.5	µg/L	
						Tetrachloroethene	65	5	µg/L	RE1
MW-01A	MW-01A	WG	E524.2	FN	11/24/2015	Acetone	5.8	4	µg/L	
						Chloroform	0.4	0.5	µg/L	C1, J
						Tetrachloroethene	0.3	0.5	µg/L	C1, J
MW-02A	MW-02A	WG	E524.2	FN	11/25/2015	Acetone	3.5	4	µg/L	C1, J
						Chloroform	2	0.5	µg/L	
						Tetrachloroethene	3.6	0.5	µg/L	
MW-03A	MW-03A	WG	E524.2	FN	12/9/2015	Chloroform	0.9	0.5	µg/L	
						Tetrachloroethene	87	5	µg/L	RE1
MW-04A	MW-04A	WG	E524.2	FN	12/9/2015	Acetone	2.4	4	µg/L	C1, J
						Chloroform	5.2	0.5	µg/L	
						Tetrachloroethene	24	0.5	µg/L	
MW-04B	MW-04B	WG	E524.2	FN	11/23/2015	Acetone	3.9	4	µg/L	C1, J
						Tetrachloroethene	27	1	µg/L	RE1
MW-04C	MW-04C	WG	E524.2	FN	11/23/2015	Acetone	4.7	4	µg/L	
						Tetrachloroethene	0.6	0.5	µg/L	
MW-05A	MW-05A	WG	E524.2	FN	11/25/2015	Acetone	5.3	4	µg/L	
						Chloroform	0.4	0.5	µg/L	C1, J
						Tetrachloroethene	60	5	µg/L	RE1
MW-06A	MW-06A	WG	E524.2	FN	11/24/2015	Acetone	3.7	4	µg/L	C1, J
						Chloroform	7.8	0.5	µg/L	
						Bromodichloromethane	0.3	0.5	µg/L	C1, J
						Tetrachloroethene	2.3	0.5	µg/L	
MW-07A	MW-07A	WG	E524.2	FN	11/24/2015	Acetone	3.2	4	µg/L	C1, J
						Chloroform	2.9	0.5	µg/L	
MW-08A	MW-08A	WG	E524.2	FN	11/25/2015	Acetone	3.5	4	µg/L	C1, J
						Chloroform	4.4	0.5	µg/L	

TABLE B-2
RESULTS SUMMARY FOR LONG-TERM MONITORING: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
						Bromodichloromethane	0.3	0.5	µg/L	C1, J
						Tetrachloroethene	5.1	0.5	µg/L	
MW-09B	MW-09B	WG	E524.2	FN	11/25/2015	Acetone	6.1	4	µg/L	
						Chloroform	0.2	0.5	µg/L	C1, J
						Tetrachloroethene	5.2	0.5	µg/L	
MW-10A	MW-10A	WG	E524.2	FN	11/24/2015	Acetone	2.6	4	µg/L	C1, J
						Chloroform	7.2	0.5	µg/L	
						Bromodichloromethane	0.3	0.5	µg/L	C1, J
						Tetrachloroethene	13	0.5	µg/L	
MW-10B	MW-10B	WG	E524.2	FN	11/24/2015	Acetone	3	4	µg/L	C1, J
						Chloroform	0.5	0.5	µg/L	
						Tetrachloroethene	8.6	0.5	µg/L	
MW-10C	MW-10C	WG	E524.2	FN	11/24/2015	Acetone	3.9	4	µg/L	C1, J
MW-11A	MW-11A	WG	E524.2	FN	11/24/2015	Acetone	4	4	µg/L	
						Chloroform	3.3	0.5	µg/L	
						Tetrachloroethene	0.4	0.5	µg/L	C1, J
MW-12A	MW-12A	WG	E524.2	FN	11/24/2015	Trichlorofluoromethane	0.4	0.5	µg/L	C1, J
						Acetone	4.8	4	µg/L	
						Chloroform	21	0.5	µg/L	
						Bromodichloromethane	0.9	0.5	µg/L	
						Tetrachloroethene	5.8	0.5	µg/L	
MW-13A	MW-13A	WG	E524.2	FN	11/24/2015	Acetone	5.3	4	µg/L	
						Chloroform	6.7	0.5	µg/L	
						Bromodichloromethane	0.3	0.5	µg/L	C1, J
						Tetrachloroethene	1.9	0.5	µg/L	
MW-14A	MW-14A	WG	E524.2	FN	11/24/2015	Acetone	5.5	4	µg/L	
						Chloroform	2	0.5	µg/L	
						Tetrachloroethene	1.3	0.5	µg/L	
MW-15A	MW-15A	WG	E524.2	FN	11/25/2015	Acetone	5.3	4	µg/L	
						Dichloromethane	0.2	0.5	µg/L	C1, C3, J
						Chloroform	0.6	0.5	µg/L	

TABLE B-2
RESULTS SUMMARY FOR LONG-TERM MONITORING: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
						1,2-Dichloroethane	0.3	0.5	µg/L	C1, J
MW-16A	MW-16A	WG	E524.2	FN	11/24/2015	Acetone	6.2	4	µg/L	
						Chloroform	2.6	0.5	µg/L	
MW-16B	MW-16B	WG	E524.2	FN	11/24/2015	Acetone	9.1	4	µg/L	
						Chloroform	1	0.5	µg/L	
						Tetrachloroethene	21	0.5	µg/L	
MW-16C	MW-16C	WG	E524.2	FN	12/9/2015	Acetone	2.9	4	µg/L	C1, J
						Chloroform	3	0.5	µg/L	
						Tetrachloroethene	16	0.5	µg/L	
MW-17A	MW-17A	WG	E524.2	FN	11/23/2015	Acetone	4.6	4	µg/L	
						Chloroform	8.3	0.5	µg/L	
						Bromodichloromethane	0.4	0.5	µg/L	C1, J
						Tetrachloroethene	2.3	0.5	µg/L	
MW-17B	MW-17B	WG	E524.2	FN	12/9/2015	Chloroform	0.5	0.5	µg/L	
						Tetrachloroethene	71	5	µg/L	RE1
MW-17C	MW-17C	WG	E524.2	FN	11/23/2015	Acetone	3.6	4	µg/L	C1, J
MW-18A	MW-18A	WG	E524.2	FN	11/24/2015	Acetone	3	4	µg/L	C1, J
						Chloroform	6.1	0.5	µg/L	
						Tetrachloroethene	1.9	0.5	µg/L	
MW-19A	MW-19A	WG	E524.2	FN	11/24/2015	Acetone	4.8	4	µg/L	
						Chloroform	5.4	0.5	µg/L	
						Bromodichloromethane	0.3	0.5	µg/L	C1, J
MW-19B1	MW-19B1	WG	E524.2	FN	11/24/2015	Acetone	4.6	4	µg/L	
						Tetrachloroethene	0.3	0.5	µg/L	C1, J
MW-20A	MW-20A	WG	E524.2	FN	12/9/2015	Dichlorodifluoromethane	2.8	0.5	µg/L	C4, J
						Acetone	3.1	4	µg/L	C1, J
						Chloroform	9.4	0.5	µg/L	
						Bromodichloromethane	0.4	0.5	µg/L	C1, J
						Tetrachloroethene	120	5	µg/L	RE1
MW-20B	MW-20B	WG	E524.2	FN	11/23/2015	Acetone	11	4	µg/L	
						Tetrachloroethene	32	5	µg/L	RE1

TABLE B-2
RESULTS SUMMARY FOR LONG-TERM MONITORING: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
MW-20C	MW-20C	WG	E524.2	FN	11/23/2015	Acetone	4.4	4	µg/L	
MW-21A	MW-21A	WG	E524.2	FN	11/23/2015	Acetone	2.4	4	µg/L	C1, J
						Chloroform	5.1	0.5	µg/L	
						Tetrachloroethene	0.4	0.5	µg/L	C1, J
MW-22A	MW-22A	WG	E524.2	FN	11/23/2015	Acetone	19	4	µg/L	
						Chloroform	7.4	0.5	µg/L	
MW-23A	MW-23A	WG	E524.2	FN	11/24/2015	Acetone	5.7	4	µg/L	
						Chloroform	1.7	0.5	µg/L	
						Tetrachloroethene	17	0.5	µg/L	
MW-24B	MW-24B	WG	E524.2	FN	11/23/2015	Acetone	10	4	µg/L	
						Tetrachloroethene	74	5	µg/L	RE1
MW-25B	MW-25B	WG	E524.2	FN	12/9/2015	Acetone	2.9	4	µg/L	C1, J
						Tetrachloroethene	86	5	µg/L	RE1
MW-26B	MW-26B	WG	E524.2	FN	11/25/2015	Acetone	7.3	4	µg/L	
						Dichloromethane	0.2	0.5	µg/L	C3, C1, J
						Tetrachloroethene	1.5	0.5	µg/L	
MW-27B	MW-27B	WG	E524.2	FN	11/23/2015	Acetone	7.7	4	µg/L	
						Tetrachloroethene	0.3	0.5	µg/L	C1, J
MW-28B	MW-28B	WG	E524.2	FN	11/24/2015	Acetone	5.3	4	µg/L	
						Tetrachloroethene	69	5	µg/L	RE1
MW-29B	MW-29B	WG	E524.2	FN	11/24/2015	Acetone	5.7	4	µg/L	
						Chloroform	0.3	0.5	µg/L	C1, J
						Tetrachloroethene	15	0.5	µg/L	
MW-30A	MW-30A	WG	E524.2	FN	11/24/2015	Acetone	3.5	4	µg/L	C1, J
MW-30B	MW-30B	WG	E524.2	FN	11/24/2015	Chloroform	0.3	0.5	µg/L	C1, J
						Tetrachloroethene	0.8	0.5	µg/L	
MW-31A	MW-31A	WG	E524.2	FN	11/24/2015	Acetone	7.1	4	µg/L	
						Tetrachloroethene	2.1	0.5	µg/L	
MW-32B	MW-32B	WG	E524.2	FN	12/9/2015	Acetone	5.4	4	µg/L	
						Chloroform	0.5	0.5	µg/L	J, Q4
MW-32C	MW-32C	WG	E524.2	FN	11/23/2015	Acetone	7.1	4	µg/L	

TABLE B-2
RESULTS SUMMARY FOR LONG-TERM MONITORING: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
MW-33B	MW-33B	WG	E524.2	FN	11/23/2015	Acetone	3.1	4	µg/L	C1, J
						Chloroform	2.1	0.5	µg/L	
						Tetrachloroethene	8.3	0.5	µg/L	
MW-34B	MW-34B	WG	E524.2	FN	11/25/2015	Acetone	5.8	4	µg/L	
						Chloroform	0.2	0.5	µg/L	C1, J
						Tetrachloroethene	10	0.5	µg/L	
MW-35B	MW-35B	WG	E524.2	FN	12/9/2015	Acetone	4.2	4	µg/L	
						Chloroform	0.3	0.5	µg/L	C1, J
						Tetrachloroethene	6.8	0.5	µg/L	

Matrix
WG = groundwater

Sample Type
FN = Field Normal Sample

Units
ug/L = micrograms per liter

Qualified Result
J = Analyte concentration considered an estimated value because one or more quality control specifications were not met.
C1 = The reported concentration for this analyte is below the quantitation limit.
Q3 = The quantitation limit standard did not meet recovery criteria for this analyte.
Q4 = The matrix spike and/or matrix spike duplicate associated with this sample did not meet recovery criteria for this analyte.
RE1 = Result is from a sample re-analysis.

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TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
0000BLANK	MW-301-4Q15	WQ	E524.2	TB	10/8/2015	Methylene Chloride	0.23	0.5	µ g/L	J-
						Toluene	0.84	0.5	µ g/L	J-
	MW-302-4Q15				11/5/2015	Chloroform	0.07	0.5	µ g/L	J
						Toluene	0.18	0.5	µ g/L	J
	MW-303-4Q15				12/8/2015	Toluene	0.27	0.5	µ g/L	J
	MW-401-4Q15	WQ	E524.2	FB	12/8/2015	Chloroform	0.39	0.5	µ g/L	J
						Methylene Chloride	16	0.5	µ g/L	
						Toluene	0.05	0.5	µ g/L	J
SP-01	GWTS-INF-1002	WG	D5174	FN	10/8/2015	Uranium	54.6	1	pCi/L	
	GWTS-INF-1002	WG	E524.2	FN	10/8/2015	Bromodichloromethane	0.17	0.5	µ g/L	J
						Chloroform	4.7	0.5	µ g/L	
						Tetrachloroethene	76	5	µ g/L	
						Toluene	0.18	0.5	µ g/L	U
						Trichloroethylene	0.08	0.5	µ g/L	J
	MW-101-NS	WG	D5174	FD	10/8/2015	Uranium	62.9	1	pCi/L	
	GWTS-INF-1101	WG	E524.2	FN	11/5/2015	Bromodichloromethane	0.14	0.5	µ g/L	J
						Chloroform	3.4	0.5	µ g/L	
						Tetrachloroethene	82	5	µ g/L	
						Toluene	0.12	0.5	µ g/L	U
						Trichloroethylene	0.07	0.5	µ g/L	J
	GWTS-INF-1202				12/8/2015	Bromodichloromethane	0.15	0.5	µ g/L	J
						Chloroform	3.5	0.5	µ g/L	
						Tetrachloroethene	89	2.5	µ g/L	
						Toluene	0.06	0.5	µ g/L	U
						Trichloroethylene	0.06	0.5	µ g/L	J
SP-03	CRB INF-1002	WG	E524.2	FN	10/8/2015	Chloroform	0.24	0.5	µ g/L	U
						Tetrachloroethene	0.96	0.5	µ g/L	
						Toluene	0.11	0.5	µ g/L	U
	CRB INF-1101				11/5/2015	Chloroform	0.19	0.5	µ g/L	U
						Tetrachloroethene	0.74	0.5	µ g/L	

TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
						Toluene	0.18	0.5	µ g/L	U
	CRB INF-1202				12/8/2015	Chloroform	0.28	0.5	µ g/L	U
						Tetrachloroethene	2.4	0.5	µ g/L	
						Toluene	0.08	0.5	µ g/L	U
	MW-103-1202	WG	E524.2	FD	12/8/2015	Chloroform	0.28	0.5	µ g/L	U
						Tetrachloroethene	2.4	0.5	µ g/L	
						Toluene	0.06	0.5	µ g/L	U
SP-04	CRB Mid-1002	WG	E524.2	FN	10/8/2015	Chloroform	0.35	0.5	µ g/L	U
						Chloromethane	0.09	0.5	µ g/L	J
						Tetrachloroethene	1	0.5	µ g/L	
						Toluene	0.15	0.5	µ g/L	U
	MW-104-NS	WG	E524.2	FD	10/8/2015	Chloroform	0.29	0.5	µ g/L	U
						Tetrachloroethene	1	0.5	µ g/L	
						Toluene	0.1	0.5	µ g/L	U
	CRB Mid-1101	WG	E524.2	FN	11/5/2015	Chloroform	0.26	0.5	µ g/L	U
						Tetrachloroethene	1	0.5	µ g/L	
						Toluene	0.24	0.5	µ g/L	U
	CRB Mid-1202				12/8/2015	Chloroform	0.35	0.5	µ g/L	U
						Tetrachloroethene	0.09	0.5	µ g/L	J
						Toluene	0.05	0.5	µ g/L	U
SP-05	CRB EFF-1002	WG	E524.2	FN	10/8/2015	1,4-Dichlorobenzene	0.05	0.5	µ g/L	J
						Chloroform	0.34	0.5	µ g/L	U
						Chloromethane	0.13	0.5	µ g/L	J
						Toluene	0.21	0.5	µ g/L	U
	Pre IEX-1101	WG	D5174	FN	11/5/2015	Uranium	52.6	1	pCi/L	
	MW-105-1202	WG	D5174	FD	12/8/2015	Uranium	53.2	1	pCi/L	
	Pre IEX-1202	WG	D5174	FN	12/8/2015	Uranium	54.7	1	pCi/L	
SP-06	IEX Mid-1002	WG	D5174	FN	10/8/2015	No Analytes Detected				
	IEX Mid-1101				11/5/2015	No Analytes Detected				
	IEX Mid-1202				12/8/2015	No Analytes Detected				

TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
SP-07	EFF-1002	WG	D5174	FN	10/8/2015	Uranium	12.8	1	pCi/L	
	EFF-1002	WG	E524.2	FN	10/8/2015	Chloroform	0.33	0.5	µ g/L	U
						Chloromethane	0.08	0.5	µ g/L	J
						Toluene	0.55	0.5	µ g/L	U
	EFF-1002	WG	SM2540C	FN	10/8/2015	Total Dissolved Solids	635	13	mg/L	
	EFF-1002	WG	SM2540D	FN	10/8/2015	No Analytes Detected				
	EFF-1002	WG	SM5210B	FN	10/8/2015	No Analytes Detected				
	EFF-1101	WG	E524.2	FN	11/5/2015	Chloroform	0.27	0.5	µ g/L	U
						Toluene	0.19	0.5	µ g/L	U
	EFF-1101	WG	SM2540C	FN	11/5/2015	Total Dissolved Solids	660	13	mg/L	
	EFF-1101	WG	SM2540D	FN	11/5/2015	No Analytes Detected				
	EFF-1101	WG	SM5210B	FN	11/5/2015	No Analytes Detected				
EFF-1101 WG TITLE22 NS1 11/5/2015 96 Hour Fish Survival >750 0 mg/L										
	EFF-1202	WG	E524.2	FN	12/8/2015	Toluene	0.05	0.5	µ g/L	U
	EFF-1202	WG	SM2540C	FN	12/8/2015	Total Dissolved Solids	607	13	mg/L	
	EFF-1202	WG	SM2540D	FN	12/8/2015	No Analytes Detected				
	EFF-1202	WG	SM5210B	FN	12/8/2015	No Analytes Detected				
SP-08	GWTS Pr GAC-1002	GS	TO15	FN	10/8/2015	Benzene	0.7	1.2	PPBV	J
						Chloroethane	5.5	4.8	PPBV	
						Chloroform	11	1.2	PPBV	
						Chloromethane	11	12	PPBV	J
						Dichlorodifluoromethane	0.53	1.2	PPBV	J
						Tetrachloroethene	150	1.2	PPBV	
						Toluene	0.31	1.2	PPBV	J
	GWTS Pr GAC-1101				11/5/2015	Benzene	0.45	1.1	PPBV	J
						Chloroform	11	1.1	PPBV	
						Dichlorodifluoromethane	0.52	1.1	PPBV	J
						Tetrachloroethene	160	1.1	PPBV	
						Toluene	0.44	1.1	PPBV	J
						Trichloroethylene	0.33	1.1	PPBV	J

TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
						Trichlorofluoromethane	0.3	1.1	PPBV	J
	GWTS Pr GAC-1202				12/8/2015	Benzene	0.54	1.1	PPBV	U
						Chloroform	11	1.1	PPBV	
						Cis-1,2-Dichloroethene	0.36	1.1	PPBV	J
						Dichlorodifluoromethane	0.6	1.1	PPBV	J
						M,P-Xylenes	0.62	1.1	PPBV	J
						O-Xylene	0.24	1.1	PPBV	J
						Tetrachloroethene	160	1.1	PPBV	
						Toluene	0.9	1.1	PPBV	U
						Trichloroethylene	0.85	1.1	PPBV	J
						Trichlorofluoromethane	0.25	1.1	PPBV	J
SP-09	GWTS Stack-1002	GS	TO15	FN	10/8/2015	Benzene	3.6	1.2	PPBV	J
						Chloroform	13	1.2	PPBV	
						Dichlorodifluoromethane	0.52	1.2	PPBV	J
						Ethylbenzene	0.24	1.2	PPBV	J
						M,P-Xylenes	0.32	1.2	PPBV	U
						O-Xylene	0.22	1.2	PPBV	J
						Tetrachloroethene	5.5	1.2	PPBV	J
						Trichlorofluoromethane	0.27	1.2	PPBV	J
	MW-109-NS	GS	TO15	FD	10/8/2015	Benzene	0.68	1.2	PPBV	J
						Chloroethane	2.8	4.6	PPBV	J
						Chloroform	12	1.2	PPBV	
						Chloromethane	8.6	12	PPBV	J
						Dichlorodifluoromethane	0.48	1.2	PPBV	J
						Tetrachloroethene	3.8	1.2	PPBV	J
						Trichlorofluoromethane	0.32	1.2	PPBV	J
	GWTS Stack-1101	GS	TO15	FN	11/5/2015	Benzene	1.1	1.1	PPBV	
						Chloroform	12	1.1	PPBV	
						Dichlorodifluoromethane	0.65	1.1	PPBV	J
						Tetrachloroethene	3	1.1	PPBV	

TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
						Trichlorofluoromethane	0.3	1.1	PPBV	J
	GWTS Stack-1202				12/8/2015	Benzene	0.9	1.1	PPBV	U
						Chloroform	11	1.1	PPBV	
						Dichlorodifluoromethane	0.54	1.1	PPBV	J
						Tetrachloroethene	6.9	1.1	PPBV	
						Trichloroethylene	0.4	1.1	PPBV	J
SP-10	IEXEFF-1002	WG	D5174	FN	10/8/2015	No Analytes Detected				
	IEXEFF-1101				11/5/2015	No Analytes Detected				
	IEXEFF-1202				12/8/2015	No Analytes Detected				

Matrix			Sample Type		
GS	=	soil gas	FD	=	Field Duplicate Sample
WG	=	groundwater	FN	=	Field Normal Sample
WQ	=	water quality	TB	=	Trip Blank

Units		
mg/L	=	milligrams per Liter
ppbv	=	parts per billion by volume
pci/L	=	picoCuries per Liter
µ g/L	=	micrograms per Liter

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

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TABLE B-4

RESULTS SUMMARY FOR VAPOR SAMPLES (INDOOR AIR, SUB-SLAB, AND SOIL VAPOR): FOURTH QUARTER 2015

MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Quantitation Limit	Units	Qualified Result
931-IA-01	931-IA-01-A	GS	TO-15 SIM	FN	11/23/2015	1,3-Butadiene	0.39	0.44	µg/m3	C1, J
						Dichloromethane	0.46	0.68	$\mu g/m^3$	C1, J
						Hexane	3.2	0.69	$\mu g/m^3$	--
						Benzene	3.2	0.63	$\mu g/m^3$	--
						Toluene	78	2.2	$\mu g/m^3$	C2, J, RE1
						Ethylbenzene	4.2	0.86	$\mu g/m^3$	--
						m&p-Xylene	16	1.7	$\mu g/m^3$	--
						o-Xylene	6.3	0.86	$\mu g/m^3$	C1, J
						Styrene	0.54	0.84	$\mu g/m^3$	C1, J
	931-IA-01-B (dup)	GS	TO-15 SIM	FD	11/23/2015	1,3-Butadiene	0.46	0.44	$\mu g/m^3$	--
						Dichloromethane	0.44	0.68	$\mu g/m^3$	C1, J
						Hexane	3.8	0.69	$\mu g/m^3$	--
						Benzene	3.1	0.63	$\mu g/m^3$	--
						Toluene	78	2.2	$\mu g/m^3$	RE1
						Ethylbenzene	4.1	0.86	$\mu g/m^3$	--
						m&p-Xylene	16	1.7	$\mu g/m^3$	--
						o-Xylene	6.1	0.86	$\mu g/m^3$	--
						Styrene	0.53	0.84	$\mu g/m^3$	C1, J
931-SS-01	931-SS-01-A	GS	TO-15	FN	11/24/2015	Dichloromethane	6	9	$\mu g/m^3$	B1, C1, J, Q3
						Benzene	7	8	$\mu g/m^3$	C1, J
						Toluene	20	10	$\mu g/m^3$	--
	931-SS-01-B	GS	TO-15	FN	11/24/2015	Dichloromethane	6	9	$\mu g/m^3$	B1, C1, J, Q3
						Toluene	10	10	$\mu g/m^3$	--
						Tetrachloroethene	10	20	$\mu g/m^3$	C1, J
939-IA-01	939-IA-01	GS	TO-15 SIM	FN	11/23/2015	Dichloromethane	16	2.1	$\mu g/m^3$	RE1
						Hexane	1.6	0.69	$\mu g/m^3$	--
						Carbon Tetrachloride	0.79	1.20	µg/m3	C1, Q2, J

TABLE B-4
RESULTS SUMMARY FOR VAPOR SAMPLES (INDOOR AIR, SUB-SLAB, AND SOIL VAPOR): FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Quantitation Limit	Units	Qualified Result
						Benzene	0.94	0.63	µg/m^3	--
						Trichloroethene	0.68	1.1	µg/m^3	C1, J
						Toluene	5.8	0.74	µg/m^3	--
						Tetrachloroethene	0.92	1.3	µg/m^3	C1, J
						Ethylbenzene	1.3	0.86	µg/m^3	
						m&p-Xylene	5.4	1.7	µg/m^3	
						o-Xylene	1.9	0.86	µg/m^3	
939-IA-03	939-IA-03-A	GS	TO-15 SIM	FN	11/23/2015	Dichloromethane	8.7	0.68	µg/m^3	C2, J
						Hexane	1.4	0.69	µg/m^3	--
						Benzene	0.91	0.63	µg/m^3	--
						Trichloroethene	0.53	1.1	µg/m^4	C1, J
						Toluene	5.5	0.74	µg/m^3	--
						Tetrachloroethene	0.89	1.3	µg/m3	C1, J
						Ethylbenzene	1.2	0.86	µg/m^3	--
						m&p-Xylene	5.1	1.7	µg/m^3	--
						o-Xylene	1.8	0.86	µg/m^3	--
939-SS-01	939-SS-01	GS	TO-15	FN	11/24/2015	Dichloromethane	7	9	µg/m^3	B1, C1, J, Q3
						Tetrachloroethene	20	20	µg/m^3	--
939-SS-02	939-SS-02	GS	TO-15	FN	11/24/2015	Dichloromethane	9.00	9	µg/m^3	B1, J, Q3

TABLE B-4
RESULTS SUMMARY FOR VAPOR SAMPLES (INDOOR AIR, SUB-SLAB, AND SOIL VAPOR): FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Quantitation Limit	Units	Qualified Result
941-IA-01	941-IA-01	GS	TO-15 SIM	FN	11/23/2015	Dichloromethane	1.30	0.68	µg/m^3	--
						Hexane	0.36	0.69	µg/m^3	C1, J
						Benzene	0.58	0.63	µg/m^3	C1, J
						Trichloroethene	4.3	1.1	µg/m^3	--
						Toluene	4.2	0.74	µg/m^3	--
						Tetrachloroethene	2.9	1.3	µg/m^3	C1
						Ethylbenzene	1.1	0.86	µg/m^3	--
						m&p-Xylene	4.7	1.7	µg/m^3	--
						o-Xylene	1.6	0.86	µg/m^3	--
941-IA-02	941-IA-02	GS	TO-15 SIM	FN	11/23/2015	Dichloromethane	0.91	0.69	µg/m^3	--
						Hexane	0.36	0.7	µg/m^3	C1, J
						Benzene	0.67	0.63	µg/m^3	--
						Trichloroethene	8.1	1.1	µg/m^3	--
						Toluene	1.8	0.75	µg/m^3	--
						Tetrachloroethene	3.2	1.3	µg/m^3	--
						Ethylbenzene	2.3	0.86	µg/m^3	--
						m&p-Xylene	12	1.7	µg/m^3	--
						o-Xylene	3.4	0.86	µg/m^3	--
OSC-3	OSC-3	GS	TO-15	FN	11/23/2015	Dichloromethane	4	5	µg/m^3	B1, C1, J, Q3
						Tetrachloroethene	2.5	2.5	µg/m^3	--
941-SS-01	941-SS-01	GS	TO-15	FN	11/23/2015	Dichloromethane	4	5	µg/m^3	B1, C1, J, Q3
SVE-01	SVE-01	GS	TO-15	FN	11/23/2015	Dichloromethane	1.7	2.6	ppbv	B1, C1, J, Q3
SVE-02	SVE-02	GS	TO-15	FN	11/23/2015	Dichloromethane	1.5	2.5	ppbv	B1, C1, J, Q3
						Tetrachloroethene	2.5	2.5	ppbv	--
SVE-03	SVE-03	GS	TO-15	FN	11/23/2015	Dichloromethane	1.5	2.5	ppbv	B1, C1, J, Q3
						Tetrachloroethene	210	28	ppbv	J, Q5, RE1
SVE-04	SVE-04	GS	TO-15	FN	11/23/2015	Dichloromethane	1.6	2.5	ppbv	B1, C1, J, Q3
						Chloroform	1.6	2.5	ppbv	C1, J

TABLE B-4
RESULTS SUMMARY FOR VAPOR SAMPLES (INDOOR AIR, SUB-SLAB, AND SOIL VAPOR): FOURTH QUARTER 2015
MODESTO GROUNDWATER SUPERFUND SITE

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Quantitation Limit	Units	Qualified Result
						Tetrachloroethene	2.3	2.5	ppbv	C1, J
DP-01-S	DP-01-S	GS	TO-15	FN	11/23/2015	Dichloromethane	1.7	2.6	ppbv	B1, C1, J, Q3
						Tetrachloroethene	28	2.6	ppbv	--
DP-01-D	DP-01-D	GS	TO-15	FN	11/23/2015	Dichloromethane	1.7	2.7	ppbv	B1, C1, J, Q3
						Tetrachloroethene	55	11	ppbv	RE1
DP-05-S	DP-05-S	GS	TO-15	FN	11/23/2015	Dichloromethane	1.5	2.4	ppbv	B1, C1, J, Q3
DP-05-D	DP-05-D	GS	TO-15	FN	11/23/2015	Dichloromethane	1.7	2.7	ppbv	B1, C1, J, Q3
DP-06-S	DP-06-S-A	GS	TO-15	FN	11/23/2015	Dichloromethane	1.6	2.6	ppbv	B1, C1, J, Q3
						Toluene	2.1	2.6	ppbv	C1, J
	DP-06-S-B (dup)	GS	TO-15	FD	11/23/2015	Dichloromethane	1.6	2.6	ppbv	B1, C1, J, Q3
DP-06-D	DP-06-D	GS	TO-15	FN	11/23/2015	Dichloromethane	1.6	2.7	ppbv	B1, C1, J, Q3
OSVE-10	OSVE-10	GS	TO-15	FN	11/23/2015	Dichloromethane	1.6	2.6	ppbv	B1, C1, J, Q3
						Tetrachloroethene	13	2.6	ppbv	--
OSVE-11	OSVE-11	GS	TO-15	FN	11/23/2015	Dichloromethane	1.5	2.6	ppbv	B1, C1, J, Q3

Matrix
GS = soil gas

Sample Type
FD = Field Duplicate Sample
FN = Field Normal Sample

Units
ppbv = parts per billion volume
μg/m^3 = micrograms per cubic meter

Qualified Results

RE1	Result is from a sample re-analysis.
Q3	The quantitation limit standard did not meet recovery criteria for this analyte.
Q2	The laboratory control standard associated with this sample did not meet recovery criteria for this analyte
C1	The reported concentration for this analyte is below the quantitation limit.
C2	The reported concentration for this analyte is above the calibration range of the instrument
J	The reported result for this analyte should be considered an estimated value.
B1	The concentration of this analyte found in this sample was less than five times the concentration found in the associated method blank
--	No flag.

Appendix C

Laboratory Data Validation Reports

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Laboratory Data Consultants, Inc.

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LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

RORE, Inc.
5151 Shoreham Place, Suite 260
San Diego, CA 92122
ATTN: Mr. John McGuire

January 13, 2016

SUBJECT: Modesto November 2015 GW Monitoring, Data Validation

Dear Mr. McGuire,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on December 28, 2015. Attachment 1 is a summary of the sample that was reviewed for each analysis.

LDC Project #35641:

SDG #	**Fraction**
15335C, 15335D, 15335E, 15344B	Volatiles

The data validation was performed under EPA Level III & IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008

Please feel free to contact us if you have any questions.

Sincerely,

Andrea Leasure
Project Manager/Chemist

Attachment 1

ADR/IV 90/10	LDC #35641 (Rore Inc.-San Diego, CA / Modesto November 2015 GW Monitoring)																																
LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)																													
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	15335C	12/28/15	01/19/16	15	0																												
A	15335C	12/28/15	01/19/16	5	0																												
B	15335D	12/28/15	01/19/16	18	0																												
C	15335E	12/28/15	01/19/16	4	0																												
D	15344B	12/28/15	01/19/16	8	0																												
Total	A/AL			50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50

Shaded cells indicate Level IV validation (all other cells are ADR validation). These sample counts do not include MS/MSD, and DUPs

Data Validation Report
Modesto November 2015 GW Monitoring

SDGs: 15335C, 15335D, 15335E, 15344B

Prepared for

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January 13, 2016

INTRODUCTION

This Data Validation Report (DVR) presents EPA Level III and EPA Level IV data validation results for samples collected during the November through December 2015 sampling period. Data validation was performed in accordance with the US EPA *Contract Laboratory Program National Functional Guidelines* (CLPNFGs) *for Superfund Organic Methods Data Review* (June 2008). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. EPA Level III Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which EPA Level IV validation was performed are presented in Enclosure II.

All sample results were subjected to EPA Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, laboratory blanks, surrogates, matrix spike/matrix spike duplicates (MS/MSD), laboratory control sample (LCS), and internal standards. Approximately 10 percent of samples were subjected to EPA Level IV evaluation as indicated in Attachment 1, which comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with exception of the calibrations and internal standards, which were validated manually. Quality assurance (QA)/QC criteria specified in the CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not applicable): Data did not warrant qualification since detected results only are affected and the compound was not detected in the associated samples.

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.

I. Sample Receipt & Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Instrument Performance Check

Instrument performance was checked at the frequency required by the method.

All criteria for the instrument performance check were met.

III. Initial Calibration and Initial Calibration Verification

All criteria for the initial calibration and initial calibration verifications of each method were met with the following exceptions:

SDG/ Method	Date	Compound	%RSD (Limits)	Associated Samples	Flag	A or P
15335C/ 524.2	12/03/15	tert-butylbenzene	23.50 (≤20.0)	MW-20B MW-24B MW-12A MW-19A MW-19B1 MW-16A MW-16B MW-28B MW-31A	UJ (all non-detects)	P
15335D/ 524.2	12/03/15	Chloroethane Methylene chloride 2,2-Dichloropropane 2-Butanone	22.65 (≤20.0) 32.82 (≤20.0) 26.08 (≤20.0) 21.15 (≤20.0)	MW-01A MW-10B MW-10C MW-10A EW-02 MW-15A MW-26B MW-34B	J (all detects) UJ (all non-detects)	P
15335E/ 524.2	12/03/15	Chloroethane Methylene chloride 2,2-Dichloropropane 2-Butanone	22.65 (≤20.0) 32.82 (≤20.0) 26.08 (≤20.0) 21.15 (≤20.0)	All samples in SDG 15335E	UJ (all non-detects)	P

SDG/ Method	Date	Compound	%R (Limits)	Associated Samples	Flag	A or P
15335D/ 524.2	12/03/15 (ICV)	2,2-Dichloropropane Bromochloromethane	68 (70-130) 66 (70-130)	MW-01A MW-10B MW-10C MW-10A EW-02 MW-15A MW-26B MW-34B	UJ (all non-detects)	P

SDG/ Method	Date	Compound	%R (Limits)	Associated Samples	Flag	A or P
15335E/ 524.2	12/03/15 (ICV)	2,2-Dichloropropane Bromochloromethane	68 (70-130) 66 (70-130)	All samples in SDG 15335E	UJ (all non-detects)	P

IV. Continuing Calibration

All criteria for the continuing calibration verifications of each method were met with the following exceptions:

SDG/ Method	Date	Compound	%D (Limits)	Associated Samples	Flag	A or P
15335C/ 524.2	12/02/15	2,2-Dichloropropane	37.9 (≤30)	MW-32C MW-17A MW-27B MW-33B	NA	-
15344B/ 524.2	12/10/15	Dichlorodifluoromethane Trichlorofluoromethane 1,1,2-Trichloro-1,2,2-trifluoroethane	37.5 (≤30) 30.8 (≤30) 38.3 (≤30)	All samples in SDG 15344B	J+ (all detects)	P

V. Laboratory Blanks

Laboratory blanks were performed as required by the method. No contaminant concentrations were detected in the laboratory blanks with the exception of one blank for methylene chloride. The associated sample results were qualified as non-detected (U) due to laboratory blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

VI. Field Blank

No field blanks were identified in these SDGs.

VII. Surrogate

All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on associated project samples. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of several MS/MSD pairs for several VOCs. In instances of high %R where the results were non-detected, no data were qualified. The remainder of the data were qualified as detected estimated (J/J+/J-) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the exception of several LCS for VOCs. In instances of high %R where the results were non-detected, no data were qualified. The remainder of the associated sample results were qualified as detected estimated (J+/J-) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

X. Field Duplicate

No field duplicate samples were identified in these SDGs.

XI. Internal Standards

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

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected by the laboratory were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosures I and II.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in these SDGs.

Due to initial calibration %RSD, data were qualified as estimated in twenty-one samples.

Due to initial calibration verification %R, data were qualified as estimated in twelve samples.

Due to continuing calibration %D, data were qualified as estimated in one sample.

Due to MS/MSD %R, data were qualified as estimated in two samples.

Due to LCS %R, data were qualified as estimated in eight samples.

Due to results below the RL, data were qualified as estimated in thirty-two samples.

Due to laboratory blank contamination, data were qualified as not detected in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Data flags are summarized and are presented as Attachment 2

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
23-Nov-2015	EW-01R	1512003-01	N	5030B	524.2	III
23-Nov-2015	MW-04B	1512003-02	N	5030B	524.2	IV
23-Nov-2015	MW-04C	1512003-03	N	5030B	524.2	IV
23-Nov-2015	MW-20B	1512003-04	N	5030B	524.2	III
23-Nov-2015	MW-20C	1512003-05	N	5030B	524.2	III
23-Nov-2015	MW-21A	1512003-06	N	5030B	524.2	III
23-Nov-2015	MW-22A	1512003-07	N	5030B	524.2	III
23-Nov-2015	MW-32C	1512003-08	N	5030B	524.2	III
23-Nov-2015	MW-17C	1512003-09	N	5030B	524.2	III
23-Nov-2015	MW-17CMS	B15L005-MS1	MS	5030B	524.2	III
23-Nov-2015	MW-17CMSD	B15L005-MSD1	MSD	5030B	524.2	III
23-Nov-2015	MW-17A	1512003-10	N	5030B	524.2	IV
23-Nov-2015	MW-27B	1512003-11	N	5030B	524.2	III
23-Nov-2015	MW-33B	1512003-12	N	5030B	524.2	III
24-Nov-2015	MW-24B	1512003-13	N	5030B	524.2	III
24-Nov-2015	MW-12A	1512003-14	N	5030B	524.2	III
24-Nov-2015	MW-19A	1512003-15	N	5030B	524.2	III
24-Nov-2015	MW-19B1	1512003-16	N	5030B	524.2	III
24-Nov-2015	MW-16A	1512003-17	N	5030B	524.2	III
24-Nov-2015	MW-16B	1512003-18	N	5030B	524.2	IV
24-Nov-2015	MW-28B	1512003-19	N	5030B	524.2	IV
24-Nov-2015	MW-31A	1512003-20	N	5030B	524.2	III
24-Nov-2015	MW-30A	1512004-01	N	5030B	524.2	III
24-Nov-2015	MW-30B	1512004-02	N	5030B	524.2	III
24-Nov-2015	MW-23A	1512004-03	N	5030B	524.2	III
24-Nov-2015	MW-29B	1512004-04	N	5030B	524.2	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
24-Nov-2015	MW-13A	1512004-05	N	5030B	524.2	III
24-Nov-2015	MW-11A	1512004-06	N	5030B	524.2	III
24-Nov-2015	MW-14A	1512004-07	N	5030B	524.2	III
24-Nov-2015	MW-18A	1512004-08	N	5030B	524.2	III
24-Nov-2015	MW-06A	1512004-09	N	5030B	524.2	III
24-Nov-2015	MW-07A	1512004-10	N	5030B	524.2	III
24-Nov-2015	MW-07AMS	B15L021-MS1	MS	5030B	524.2	III
24-Nov-2015	MW-07AMSD	B15L021-MSD1	MSD	5030B	524.2	III
24-Nov-2015	MW-01A	1512004-11	N	5030B	524.2	III
24-Nov-2015	MW-10B	1512004-12	N	5030B	524.2	III
24-Nov-2015	MW-10C	1512004-13	N	5030B	524.2	III
24-Nov-2015	MW-10A	1512004-14	N	5030B	524.2	III
24-Nov-2015	EW-02	1512004-15	N	5030B	524.2	III
25-Nov-2015	MW-15A	1512004-16	N	5030B	524.2	III
25-Nov-2015	MW-26B	1512004-17	N	5030B	524.2	III
25-Nov-2015	MW-34B	1512004-18	N	5030B	524.2	III
25-Nov-2015	MW-05A	1512005-01	N	5030B	524.2	III
25-Nov-2015	MW-05AMS	B15L023-MS1	MS	5030B	524.2	III
25-Nov-2015	MW-05AMSD	B15L023-MSD1	MSD	5030B	524.2	III
25-Nov-2015	MW-02A	1512005-02	N	5030B	524.2	III
25-Nov-2015	MW-08A	1512005-03	N	5030B	524.2	III
25-Nov-2015	MW-09B	1512005-04	N	5030B	524.2	III
09-Dec-2015	MW-04A	1512031-01	N	5030B	524.2	III
09-Dec-2015	MW-17B	1512031-02	N	5030B	524.2	III
09-Dec-2015	MW-35B	1512031-03	N	5030B	524.2	III
09-Dec-2015	MW-03A	1512031-04	N	5030B	524.2	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
09-Dec-2015	MW-25B	1512031-05	N	5030B	524.2	III
09-Dec-2015	MW-32B	1512031-06	N	5030B	524.2	III
09-Dec-2015	MW-32BMS	B15L057-MS1	MS	5030B	524.2	III
09-Dec-2015	MW-32BMSD	B15L057-MSD1	MSD	5030B	524.2	III
09-Dec-2015	MW-16C	1512031-07	N	5030B	524.2	III
09-Dec-2015	MW-20A	1512031-08	N	5030B	524.2	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2

Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B | **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL

eQAPP Name: Rore_Modesto_GW_100115

SDG: 15335C

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

Sample ID: **MW-04B** *Collected:* **11/23/2015 11:50:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	3.9	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI

Sample ID: **MW-12A** *Collected:* **11/24/2015 7:10:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
TERT-BUTYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

Sample ID: **MW-16A** *Collected:* **11/24/2015 8:15:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
TERT-BUTYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-16B** *Collected:* **11/24/2015 8:35:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
TERT-BUTYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-17A** *Collected:* **11/23/2015 3:40:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
BROMODICHLOROMETHANE	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

Sample ID: **MW-17C** *Collected:* **11/23/2015 3:00:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	3.6	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI

Sample ID: **MW-19A** *Collected:* **11/24/2015 7:30:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
BROMODICHLOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

SDG: 15335C

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

Sample ID: **MW-19A** *Collected:* **11/24/2015 7:30:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TERT-BUTYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-19B1** *Collected:* **11/24/2015 7:35:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TERT-BUTYLBENZENE	0.5	U	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

Sample ID: **MW-20B** *Collected:* **11/23/2015 12:30:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TERT-BUTYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-21A** *Collected:* **11/23/2015 1:25:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	2.4	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
TETRACHLOROETHENE	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

Sample ID: **MW-24B** *Collected:* **11/24/2015 6:50:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TERT-BUTYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-27B** *Collected:* **11/23/2015 4:40:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

SDG: 15335C

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

*Sample ID:*MW-28B *Collected:* 11/24/2015 9:55:00 AM *Analysis Type:* Initial/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TERT-BUTYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

*Sample ID:*MW-31A *Collected:* 11/24/2015 10:15:00 AM *Analysis Type:* Initial/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TERT-BUTYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

*Sample ID:*MW-33B *Collected:* 11/23/2015 4:55:00 PM *Analysis Type:* Initial/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	3.1	J,C1	2.0	MDL	4.0	MRL	ug/L	J	Rl

SDG: 15335D

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

*Sample ID:*EW-02 *Collected:* 11/24/2015 4:50:00 PM *Analysis Type:* Initial/TOT *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, Icv
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd

*Sample ID:*MW-01A *Collected:* 11/24/2015 3:00:00 PM *Analysis Type:* Initial/TOT *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, Icv
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

SDG: 15335D

Method Category: **VOA**

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

Sample ID: **MW-01A** *Collected:* **11/24/2015 3:00:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
CHLOROFORM	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
METHYLENE CHLORIDE	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

Sample ID: **MW-06A** *Collected:* **11/24/2015 2:10:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	3.7	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
BROMODICHLOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

Sample ID: **MW-07A** *Collected:* **11/24/2015 2:35:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	3.2	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI

Sample ID: **MW-10A** *Collected:* **11/24/2015 4:05:00 PM** *Analysis Type:* **Initial/TOT** *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, Icv
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
ACETONE	2.6	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
BROMODICHLOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-10B** *Collected:* **11/24/2015 3:35:00 PM** *Analysis Type:* **Initial/TOT** *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, Icv
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

SDG: 15335D

Method Category: **VOA**

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

Sample ID: **MW-10B** *Collected:* **11/24/2015 3:35:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	3.0	J,C1	2.0	MDL	4.0	MRL	ug/L	J	Rl
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-10C** *Collected:* **11/24/2015 3:50:00 PM** *Analysis Type:* **Initial/TOT** *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, Icv
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
ACETONE	3.9	J,C1	2.0	MDL	4.0	MRL	ug/L	J	Rl
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-11A** *Collected:* **11/24/2015 1:00:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	Rl

Sample ID: **MW-13A** *Collected:* **11/24/2015 12:40:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BROMODICHLOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	Rl

Sample ID: **MW-15A** *Collected:* **11/25/2015 7:00:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2-DICHLOROETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	Rl
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd, Icv
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

SDG: 15335D

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

Sample ID: **MW-15A** *Collected:* **11/25/2015 7:00:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
METHYLENE CHLORIDE	0.2	J,C1,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Mb, IcRsd

Sample ID: **MW-18A** *Collected:* **11/24/2015 1:45:00 PM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	3.0	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI

Sample ID: **MW-26B** *Collected:* **11/25/2015 7:20:00 AM** *Analysis Type:* **Initial/TOT** *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, Icv
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
METHYLENE CHLORIDE	0.2	J,C1,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Mb, IcRsd

Sample ID: **MW-29B** *Collected:* **11/24/2015 11:55:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **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

Sample ID: **MW-30A** *Collected:* **11/24/2015 10:45:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	3.5	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI

Sample ID: **MW-30B** *Collected:* **11/24/2015 11:00:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **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

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

SDG: 15335D

Method Category: **VOA**

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

Sample ID: **MW-34B** *Collected:* **11/25/2015 7:45:00 AM** *Analysis Type:* **Initial/TOT** *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, Icv
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
CHLOROFORM	0.2	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

SDG: 15335E

Method Category: **VOA**

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

Sample ID: **MW-02A** *Collected:* **11/25/2015 8:25:00 AM** *Analysis Type:* **Initial/TOT** *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	Icv, IcRsd
ACETONE	3.5	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-05A** *Collected:* **11/25/2015 8:05:00 AM** *Analysis Type:* **Initial/TOT** *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	Icv, IcRsd
2-BUTANONE	4.0	J,U,C3,Q4	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
CHLOROFORM	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
STYRENE	0.5	J,U,Q4	0.2	MDL	0.5	MRL	ug/L	UJ	Ms

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

SDG: 15335E

Method Category: VOA

Method: 524.2 **Matrix: Water**

Sample ID: **MW-08A** *Collected:* **11/25/2015 8:40:00 AM** *Analysis Type:* **Initial/TOT** *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	Icv, IcRsd
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
ACETONE	3.5	J,C1	2.0	MDL	4.0	MRL	ug/L	J	Rl
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
BROMODICHLOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	Rl
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-09B** *Collected:* **11/25/2015 8:55:00 AM** *Analysis Type:* **Initial/TOT** *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	Icv, IcRsd
2-BUTANONE	4.0	J,U,C3	2.0	MDL	4.0	MRL	ug/L	UJ	IcRsd
BROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
CHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
CHLOROFORM	0.2	J,C1	0.2	MDL	0.5	MRL	ug/L	J	Rl
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

SDG: 15344B

Method Category: VOA

Method: 524.2 **Matrix: Water**

Sample ID: **MW-03A** *Collected:* **12/9/2015 9:10:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BROMOBENZENE	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL

eQAPP Name: Rore_Modesto_GW_100115

SDG: 15344B

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

Sample ID: **MW-04A** *Collected:* **12/9/2015 8:10:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	2.4	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
BROMOBENZENE	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

Sample ID: **MW-16C** *Collected:* **12/9/2015 10:05:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	2.9	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
BROMOBENZENE	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

Sample ID: **MW-17B** *Collected:* **12/9/2015 8:35:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
BROMOBENZENE	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

Sample ID: **MW-20A** *Collected:* **12/9/2015 10:30:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	3.1	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
BROMOBENZENE	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
BROMODICHLOROMETHANE	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
DICHLORODIFLUOROMETHANE	2.8	J,C4	0.2	MDL	0.5	MRL	ug/L	J+	Ccv
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

Sample ID: **MW-25B** *Collected:* **12/9/2015 9:30:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	2.9	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
BROMOBENZENE	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 15335C, 15335D, 15335E, 15344B **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL, 15335D_VOCs_1512004 FINAL, 15335E_VOCs_1512005 FINAL, 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

SDG: 15344B

Method Category: VOA

Method: 524.2 **Matrix: Water**

Sample ID: **MW-25B** *Collected:* **12/9/2015 9:30:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code

Sample ID: **MW-32B** *Collected:* **12/9/2015 9:50:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3-DICHLOROBENZENE	0.5	J,U,Q4	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,4-DICHLOROBENZENE	0.5	J,U,Q4	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BROMOBENZENE	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
CHLOROFORM	0.5	J,Q4	0.2	MDL	0.5	MRL	ug/L	J+	Ms
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

Sample ID: **MW-35B** *Collected:* **12/9/2015 8:55:00 AM** *Analysis Type:* **Initial/TOT** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BROMOBENZENE	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
TRICHLOROETHENE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

Reason Code Legend

Reason Code	*Description*
Ccv	Continuing Calibration Verification Percent Difference Upper Estimation
IcRsd	Initial Calibration Percent Relative Standard Deviation
Icv	Initial Calibration Verification Percent Recovery Lower Estimation
Lcs	Laboratory Control Spike Lower Estimation
Lcs	Laboratory Control Spike Upper Estimation
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
Rl	Reporting Limit Trace Value

Enclosure I

EPA Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

15335C

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 15335C | **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL | **eQAPP Name: Rore_Modesto_GW_100115**

Method: 524.2
Matrix: Water

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-17CMSD (MW-17C)	2-BUTANONE	-	129	67.00-123.00	31 (20.00)	2-BUTANONE	J (all detects)
MW-17CMS MW-17CMSD (MW-17C)	1,1,2-TRICHLORO-1,2,2-TRIFLUOI	-	141	73.00-139.00	-	1,1,2-TRICHLORO-1,2,2-TRIFLU(	J+(all detects)
	1,1-DICHLOROETHENE	131	132	80.00-126.00	-	1,1-DICHLOROETHENE	
	1,1-DICHLOROPROPENE	127	129	88.00-120.00	-	1,1-DICHLOROPROPENE	
	1,2,4-TRIMETHYLBENZENE	117	-	90.00-112.00	-	1,2,4-TRIMETHYLBENZENE	
	1,3,5-TRIMETHYLBENZENE	121	-	90.00-115.00	-	1,3,5-TRIMETHYLBENZENE	
	2-CHLOROTOLUENE	115	-	88.00-114.00	-	2-CHLOROTOLUENE	
	4-CHLOROTOLUENE	114	-	90.00-112.00	-	4-CHLOROTOLUENE	
	BENZENE	-	113	86.00-112.00	-	BENZENE	
	BROMOCHLOROMETHANE	-	127	84.00-114.00	-	BROMOCHLOROMETHANE	
	CHLOROFORM	-	130	85.00-117.00	-	CHLOROFORM	
	CIS-1,2-DICHLOROETHENE	-	130	87.00-113.00	-	CIS-1,2-DICHLOROETHENE	
	ISOPROPYLBENZENE	124	-	90.00-118.00	-	ISOPROPYLBENZENE	
	M&P-XYLENE	116	114	90.00-113.00	-	M&P-XYLENE	
	N-BUTYLBENZENE	126	-	86.00-123.00	-	N-BUTYLBENZENE	
	N-PROPYLBENZENE	124	-	89.00-120.00	-	N-PROPYLBENZENE	
	P-ISOPROPYLTOLUENE	126	-	89.00-119.00	-	P-ISOPROPYLTOLUENE	
	SEC-BUTYLBENZENE	130	123	87.00-122.00	-	SEC-BUTYLBENZENE	
	TERT-BUTYLBENZENE	130	121	89.00-118.00	-	TERT-BUTYLBENZENE	
	TETRACHLOROETHENE	-	120	87.00-118.00	-	TETRACHLOROETHENE	
	TRICHLOROETHENE	-	113	90.00-112.00	-	TRICHLOROETHENE	
	TRICHLOROFLUOROMETHANE	145	148	74.00-141.00	-	TRICHLOROFLUOROMETHANE	
	VINYL CHLORIDE	-	128	77.00-127.00	-	VINYL CHLORIDE	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 15335C — **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL — **eQAPP Name: Rore_Modesto_GW_100115**

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

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
B15L005-BS1 (EW-01R MW-04B MW-04C MW-17C MW-20C MW-21A MW-22A)	1,2,4-TRIMETHYLBENZENE	114	-	90.00-112.00	-	1,2,4-TRIMETHYLBENZENE	J+ (all detects)
B15L006-BS1 (MW-04B MW-17A MW-27B MW-32C MW-33B)	2-BUTANONE BROMOCHLOROMETHANE TERT-BUTYLBENZENE	128 123 123	- - -	67.00-123.00 84.00-114.00 89.00-118.00	- - -	2-BUTANONE BROMOCHLOROMETHANE TERT-BUTYLBENZENE	J+(all detects)
B15L015-BS1 (MW-12A MW-16A MW-16B MW-19A MW-19B1 MW-20B MW-24B MW-28B MW-31A)	BROMOCHLOROMETHANE	120	-	84.00-114.00	-	BROMOCHLOROMETHANE	J+(all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 15335C **Laboratory: FALSE**

EDD Filename: 15335C_VOCs_1512003 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

Method: **524.2**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
MW-04B	ACETONE	J,C1	3.9	4.0	MRL	ug/L	J (all detects)
MW-12A	TRICHLOROFLUOROMETHANE	J,C1	0.4	0.5	MRL	ug/L	J (all detects)
MW-17A	BROMODICHLOROMETHANE	J,C1	0.4	0.5	MRL	ug/L	J (all detects)
MW-17C	ACETONE	J,C1	3.6	4.0	MRL	ug/L	J (all detects)
MW-19A	BROMODICHLOROMETHANE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-19B1	TETRACHLOROETHENE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-21A	ACETONE TETRACHLOROETHENE	J,C1 J,C1	2.4 0.4	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-27B	TETRACHLOROETHENE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-33B	ACETONE	J,C1	3.1	4.0	MRL	ug/L	J (all detects)

LDC #: 35641A1

VALIDATION COMPLETENESS WORKSHEET

ADR/IV

Date: 1-7-16

Page: 1 of 2

SDG #: 15335C

Reviewer: Th

Laboratory: USEPA Region 9 Laboratory

2nd Reviewer: AK

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.	Sample receipt/Technical holding times	N / N	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW / A	≤20 ICV≤30
IV.	Continuing calibration	SW	≤30
V.	Laboratory Blanks	N	Not reviewed for ADR validation.
VI.	Field blanks	N	
VII.	Surrogate spikes	N	Not reviewed for ADR validation.
VIII.	Matrix spike/Matrix spike duplicates	N	Not reviewed for ADR validation.
IX.	Laboratory control samples	N	Not reviewed for ADR validation.
X.	Field duplicates	N	
XI.	Internal standards	N	Not reviewed for ADR validation.
XII.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation.
XIII.	Target compound identification	N	Not reviewed for ADR validation.
XIV.	System performance	N	Not reviewed for ADR validation.
XV.	Overall assessment of data	N	Not reviewed for ADR validation.

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
SB=Source blank
OTHER:

** Indicates sample underwent Level IV validation

	Client ID	Lab ID	Matrix	Date
1	EW-01R	1512003-01	Water	11/23/15
2	MW-04B**	1512003-02**	Water	11/23/15
3	MW-04C**	1512003-03**	Water	11/23/15
4	MW-20B	1512003-04	Water	11/23/15
5	MW-20C	1512003-05	Water	11/23/15
6	MW-21A	1512003-06	Water	11/23/15
7	MW-22A	1512003-07	Water	11/23/15
8	MW-32C	1512003-08	Water	11/23/15
9	MW-17C	1512003-09	Water	11/23/15
10	MW-17A**	1512003-10**	Water	11/23/15
11	MW-27B	1512003-11	Water	11/23/15
12	MW-33B	1512003-12	Water	11/23/15
13	MW-24B	1512003-13	Water	11/24/15

LDC #: 35641A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 1-7-16
SDG #: 15335C ADR/~~IV~~ Page: 2 of 2
Laboratory: USEPA Region 9 Laboratory Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	MW-12A	1512003-14	Water	11/24/15
15	MW-19A	1512003-15	Water	11/24/15
16	MW-19B1	1512003-16	Water	11/24/15
17	MW-16A	1512003-17	Water	11/24/15
18	MW-16B**	1512003-18**	Water	11/24/15
19	MW-28B**	1512003-19**	Water	11/24/15
20	MW-31A	1512003-20	Water	11/24/15
21	MW-17CMS	1512003-09MS	Water	11/23/15
22	MW-17CMSD	1512003-09MSD	Water	11/23/15
23				
24				
25				
26				

Notes:

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: AVL

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 Did the laboratory perform a 5 point calibration prior to sample analysis?

Y N N/A Were all percent relative standard deviations (%RSD) ≤ 20% ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤20.0%)	Associated Samples	Qualifications
	12/03/15	120315W.M	CCC	23.50	4,13-20, B15L015-BLK1	J/UJ/P(ND)
					B15L021-BLK1	

INICAL.1S5

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: ANL

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)

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

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Associated Samples	Qualifications
	12/02/15	120215D02.D	OO	37.9	8, 10-12, B15L006-BLK1	J^+dets/P (ND)

CONCAL.1S5

Quality Control Outlier Reports

15335D

Method Blank Outlier Report

Lab Reporting Batch ID: 15335D **Laboratory: FALSE**

EDD Filename: 15335D_VOCs_1512004 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
B15L023-BLK1	12/4/2015 11:57:00 AM	METHYLENE CHLORIDE	0.2 ug/L	EW-02 MW-01A MW-10A MW-10B MW-10C MW-15A MW-26B MW-34B

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
MW-15A(Initial/TOT)	METHYLENE CHLORIDE	0.2 ug/L	0.5U ug/L
MW-26B(Initial/TOT)	METHYLENE CHLORIDE	0.2 ug/L	0.5U ug/L

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 15335D **Laboratory: FALSE**

EDD Filename: 15335D_VOCs_1512004 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

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

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-07AMSD (MW-07A)	BROMODICHLOROMETHANE CIS-1,3-DICHLOROPROPENE DIBROMOMETHANE	- - -	- - -	82.00-120.00 79.00-127.00 79.00-118.00	21 (20.00) 22 (20.00) 25 (20.00)	BROMODICHLOROMETHANE CIS-1,3-DICHLOROPROPENE DIBROMOMETHANE	J (all detects)
MW-07AMS (MW-07A)	1,1,2-TRICHLORO-1,2,2-TRIFLUOF TETRACHLOROETHENE TRICHLOROETHENE	143 120 128	- - -	73.00-139.00 87.00-118.00 90.00-112.00	- - -	1,1,2-TRICHLORO-1,2,2-TRIFLU(TETRACHLOROETHENE TRICHLOROETHENE	J+(all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 15335D **Laboratory: FALSE**

EDD Filename: 15335D_VOCs_1512004 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

Method: **524.2**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
MW-01A	CHLOROFORM TETRACHLOROETHENE	J,C1 J,C1	0.4 0.3	0.5 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-06A	ACETONE BROMODICHLOROMETHANE	J,C1 J,C1	3.7 0.3	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-07A	ACETONE	J,C1	3.2	4.0	MRL	ug/L	J (all detects)
MW-10A	ACETONE BROMODICHLOROMETHANE	J,C1 J,C1	2.6 0.3	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-10B	ACETONE	J,C1	3.0	4.0	MRL	ug/L	J (all detects)
MW-10C	ACETONE	J,C1	3.9	4.0	MRL	ug/L	J (all detects)
MW-11A	TETRACHLOROETHENE	J,C1	0.4	0.5	MRL	ug/L	J (all detects)
MW-13A	BROMODICHLOROMETHANE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-15A	1,2-DICHLOROETHANE METHYLENE CHLORIDE	J,C1 J,C1,C3	0.3 0.2	0.5 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-18A	ACETONE	J,C1	3.0	4.0	MRL	ug/L	J (all detects)
MW-26B	METHYLENE CHLORIDE	J,C1,C3	0.2	0.5	MRL	ug/L	J (all detects)
MW-29B	CHLOROFORM	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-30A	ACETONE	J,C1	3.5	4.0	MRL	ug/L	J (all detects)
MW-30B	CHLOROFORM	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-34B	CHLOROFORM	J,C1	0.2	0.5	MRL	ug/L	J (all detects)

LDC #: 35641B1 **VALIDATION COMPLETENESS WORKSHEET** Date: 1-8-16
SDG #: 15335D ADR Page: 1 of 2
Laboratory: USEPA Region 9 Laboratory Reviewer: APL
2nd Reviewer: SM

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.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW / SW	%RSD ≤ 20 ICV ≤ 30%
IV.	Continuing calibration	A	CCV ≤ 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	LCS
X.	Field duplicates	N	
XI.	Internal standards	A ~~N~~	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A ~~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
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1 +	MW-30A	1512004-01	Water	11/24/15
2 +	MW-30B	1512004-02	Water	11/24/15
3 +	MW-23A	1512004-03	Water	11/24/15
4 +	MW-29B	1512004-04	Water	11/24/15
5 +	MW-13A	1512004-05	Water	11/24/15
6 +	MW-11A	1512004-06	Water	11/24/15
7 +	MW-14A	1512004-07	Water	11/24/15
8 +	MW-18A	1512004-08	Water	11/24/15
9 +	MW-06A	1512004-09	Water	11/24/15
10 +	MW-07A	1512004-10	Water	11/24/15
11 +	MW-01A	1512004-11	Water	11/24/15
12 +	MW-10B	1512004-12	Water	11/24/15
13 +	MW-10C	1512004-13	Water	11/24/15

LDC #: 35641B1
SDG #: 15335D
Laboratory: USEPA Region 9 Laboratory

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 1-8-16

Reviewer: APL
2nd Reviewer: SM

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
† 14	MW-10A	1512004-14	Water	11/24/15
† 15	REI = PCE EW-02	1512004-15	Water	11/24/15
† 16	MW-15A	1512004-16	Water	11/25/15
† 17	MW-26B	1512004-17	Water	11/25/15
† 18	MW-34B	1512004-18	Water	11/25/15
19	MW-07AMS	1512004-10MS	Water	11/24/15
20	MW-07AMSD	1512004-10MSD	Water	11/24/15
21				
22				
23				
24				
25				

Notes:

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 choride	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.
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 #: 35641B1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: APL
2nd Reviewer: [illegible]

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 Did the laboratory perform a 5 point calibration prior to sample analysis?

Y N N/A Were all percent relative standard deviations (%RSD) ≤ 20% ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤20.0%)	Associated Samples	Qualifications
	12/~~[illegible]~~/15 03	ICAL 120315PERKEN.M	D	22.65	11-18	J/UJ/P
			E	32.82		
			O O	26.08		
			M	21.15		

LDC #: 35641B1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: AYL
2nd Reviewer: [illegible]

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
	12/03/15	120315PE013.D	OO	68 (70-130)	11-18	J-/UJ/P
		(ICV)	PP	66 (↓)		

CONCAL.1S5

Quality Control Outlier Reports

15335E

Method Blank Outlier Report

Lab Reporting Batch ID: 15335E | **Laboratory: FALSE**

EDD Filename: 15335E_VOCs_1512005 FINAL | **eQAPP Name: Rore_Modesto_GW_100115**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
B15L023-BLK1	12/4/2015 11:57:00 AM	METHYLENE CHLORIDE	0.2 ug/L	MW-02A MW-05A MW-08A MW-09B

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 15335E | **Laboratory: FALSE**

EDD Filename: 15335E_VOCs_1512005 FINAL | **eQAPP Name: Rore_Modesto_GW_100115**

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

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-05AMSD (MW-05A)	STYRENE	-	78	86.00-113.00	-	STYRENE	J- (all detects) UJ (all non-detects)
MW-05AMS MW-05AMSD (MW-05A)	1,1,2-TRICHLOROETHANE 1,1-DICHLOROPROPENE 2-BUTANONE CIS-1,2-DICHLOROETHENE	146 123 146 148	146 121 143 142	79.00-116.00 88.00-120.00 67.00-123.00 87.00-113.00	- - - -	1,1,2-TRICHLOROETHANE 1,1-DICHLOROPROPENE 2-BUTANONE CIS-1,2-DICHLOROETHENE	J+(all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 15335E **Laboratory: FALSE**

EDD Filename: 15335E_VOCs_1512005 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

Method: **524.2**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
MW-02A	ACETONE	J,C1	3.5	4.0	MRL	ug/L	J (all detects)
MW-05A	CHLOROFORM	J,C1	0.4	0.5	MRL	ug/L	J (all detects)
MW-08A	ACETONE BROMODICHLOROMETHANE	J,C1 J,C1	3.5 0.3	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-09B	CHLOROFORM	J,C1	0.2	0.5	MRL	ug/L	J (all detects)

LDC #: 35641C1

SDG #: 15335E

Laboratory: USEPA Region 9 Laboratory

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 1-8-16
Page: 1 of 1
Reviewer: APL
2nd Reviewer: SM

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.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW / SW	% RSD ≤ 20 ICV ≤ 30 %
IV.	Continuing calibration	A	CCV ≤ 30 %
V.	Laboratory Blanks	N	
VI.	Field blanks		
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	LCS
X.	Field duplicates	N	
XI.	Internal standards	~~A~~ N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A ~~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
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1 +	PEI=PCE MW-05A	1512005-01	Water	11/25/15
2 +	MW-02A	1512005-02	Water	11/25/15
3 +	MW-08A	1512005-03	Water	11/25/15
4 +	MW-09B	1512005-04	Water	11/25/15
5	MW-05AMS	1512005-01MS	Water	11/25/15
6	MW-05AMSD	1512005-01MSD	Water	11/25/15
7				
8				
9				
10				

Notes:

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 choride	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 (Dichloromethane)	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.
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 #: 35641C1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: APR
2nd Reviewer: SL

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 — Did the laboratory perform a 5 point calibration prior to sample analysis? (Y)

Y N N/A — Were all percent relative standard deviations (%RSD) ≤ 20% ? (N)

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤20.0%)	Associated Samples	Qualifications
	12/03/15	ICAL 120315PERKEN.M	D	22.65	All	J/UJ/P
			E	32.82		
			OO	26.08		
			M	21.15		

LDC #: 35641C1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: AVL
2nd Reviewer: SR

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
	12/03/15	120315PE013.D	OO	68 (70-130)	All	J-/UJ/P
		(ICV)	PP	64 ↓		

Quality Control Outlier Reports

15344B

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 15344B **Laboratory: FALSE**

EDD Filename: 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

Method: 524.2
Matrix: Water

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-32BMSD (MW-32B)	2,2-DICHLOROPROPANE 2-BUTANONE CIS-1,2-DICHLOROETHENE	- - -	- - 120	61.00-163.00 67.00-123.00 87.00-113.00	21 (20.00) 22 (20.00) 28 (20.00)	2,2-DICHLOROPROPANE 2-BUTANONE CIS-1,2-DICHLOROETHENE	J (all detects)
MW-32BMS (MW-32B)	1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE	81 84	- -	88.00-111.00 87.00-111.00	- -	1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE	J-(all detects) UJ(all non-detects)
MW-32BMSD (MW-32B)	1,1,2-TRICHLORO-1,2,2-TRIFLUOF BROMOCHLOROMETHANE CHLOROFORM	- - -	146 121 118	73.00-139.00 84.00-114.00 85.00-117.00	- - -	1,1,2-TRICHLORO-1,2,2-TRIFLU(BROMOCHLOROMETHANE CHLOROFORM	J+(all detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 15344B **Laboratory: FALSE**

EDD Filename: 15344B_VOCs_1512031 FINAL **eQAPP Name: Rore_Modesto_GW_100115**

Method: 524.2
Matrix: Water

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
B15L057-BS1 (MW-03A MW-04A MW-16C MW-17B MW-20A MW-25B MW-32B MW-35B)	BROMOBENZENE ETHYLENE DIBROMIDE (EDB)	86 84	- -	90.00-110.00 85.00-114.00	- -	BROMOBENZENE ETHYLENE DIBROMIDE (EDB)	J- (all detects) UJ (all non-detects)
B15L061-BS2 (MW-03A)	1,2,4-TRIMETHYLBENZENE 1,3-DICHLOROBENZENE BROMOBENZENE	83 84 85	- - -	90.00-112.00 88.00-111.00 90.00-110.00	- - -	1,2,4-TRIMETHYLBENZENE 1,3-DICHLOROBENZENE BROMOBENZENE	J-(all detects) UJ(all non-detects)
B15L061-BS1 B15L061-BS2 (MW-03A)	1,1,2-TRICHLORO-1,2,2-TRIFLUOF 1,1-DICHLOROETHENE BROMOCHLOROMETHANE TRICHLOROFLUOROMETHANE	162 135 116 148	- - - -	73.00-139.00 70.00-130.00 84.00-114.00 74.00-141.00	- - - -	1,1,2-TRICHLORO-1,2,2-TRIFLU(1,1-DICHLOROETHENE BROMOCHLOROMETHANE TRICHLOROFLUOROMETHANE	J+(all detects)
B15L081-BS1 (MW-20A)	BROMOBENZENE	89	-	90.00-110.00	-	BROMOBENZENE	J-(all detects) UJ(all non-detects)
B15L081-BS1 (MW-20A)	1,1,2-TRICHLORO-1,2,2-TRIFLUOF BROMOCHLOROMETHANE	147 118	- -	73.00-139.00 84.00-114.00	- -	1,1,2-TRICHLORO-1,2,2-TRIFLU(BROMOCHLOROMETHANE	J+(all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 15344B | **Laboratory: FALSE**

EDD Filename: 15344B_VOCs_1512031 FINAL | **eQAPP Name: Rore_Modesto_GW_100115**

Method: **524.2**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
MW-04A	ACETONE	J,C1	2.4	4.0	MRL	ug/L	J (all detects)
MW-16C	ACETONE	J,C1	2.9	4.0	MRL	ug/L	J (all detects)
MW-20A	ACETONE BROMODICHLOROMETHANE	J,C1 J,C1	3.1 0.4	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-25B	ACETONE	J,C1	2.9	4.0	MRL	ug/L	J (all detects)
MW-35B	TRICHLOROETHENE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)

LDC #: 35641D1

SDG #: 15344B

Laboratory: USEPA Region 9 Laboratory

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 1-8-16

Page: 1 of 1

Reviewer: AR

2nd Reviewer: SM

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.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	%RSD ≤ 20 ICV ≤ 30%
IV.	Continuing calibration	SW	CCV ≤ 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	LCS
X.	Field duplicates	N	
XI.	Internal standards	A ~~N~~	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A ~~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; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
+ 1	MW-04A	1512031-01	Water	12/09/15
− 2	REI = PCE MW-17B	1512031-02	Water	12/09/15
+ 3	MW-35B	1512031-03	Water	12/09/15
+ 4	REI = PCE MW-03A	1512031-04	Water	12/09/15
+ 5	REI = PCE MW-25B	1512031-05	Water	12/09/15
+ 6	MW-32B	1512031-06	Water	12/09/15
+ 7	MW-16C	1512031-07	Water	12/09/15
+ 8	REI = PCE MW-20A	1512031-08	Water	12/09/15
9	MW-32BMS	1512031-06MS	Water	12/09/15
10	MW-32BMSD	1512031-06MSD	Water	12/09/15
11				
12				
13				

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 choride	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.
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 #: 35641D1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: ATL
2nd Reviewer: SL

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
	12/10/15	121015D02.D	JJ	37.5	All	J+/P
		(CCV)	KK	30.8		
			TTT	38.3		

CONCAL.1S5

Enclosure II

EPA Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Modesto November 2015 GW Monitoring

LDC Report Date: January 13, 2016

Parameters: Volatiles

Validation Level: Level IV

Laboratory: USEPA Region 9 Laboratory

Sample Delivery Group (SDG): 15335C

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-04B	1512003-02	Water	11/23/15
MW-04C	1512003-03	Water	11/23/15
MW-17A	1512003-10	Water	11/23/15
MW-16B	1512003-18	Water	11/24/15
MW-28B	1512003-19	Water	11/24/15

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The 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
12/03/15	tert-Butylbenzene	23.50	MW-16B MW-28B	UJ (all non-detects)	A

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

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
12/02/15	2,2-Dichloropropane	37.9	MW-17A	NA	-

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

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

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

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	%R (Limits)	Flag	A or P
B15L005-BS1 (MW-04B MW-04C)	1,2,4-Trimethylbenzene	114 (90-112)	NA	-
B15L006-BS1 (MW-17A)	2-Butanone Bromochloromethane tert-Butylbenzene	128 (67-123) 123 (84-114) 123 (89-118)	NA	-
B15L015-BS1 (MW-16B MW-28B)	Bromochloromethane	120 (84-114)	NA	-

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

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

XII. Compound Quantitation

All compound quantitations met validation criteria.

All compounds reported below the reporting limit (RL) were qualified as follows:

Sample	Finding	Flag	A or P
MW-04B MW-17A	All compounds reported below the RL.	J (all detects)	A

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration %RSD and results below the RL, data were qualified as estimated in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Modesto November 2015 GW Monitoring
Volatiles - Data Qualification Summary - SDG 15335C

Sample	Compound	Flag	A or P	Reason
MW-16B MW-28B	tert-Butylbenzene	UJ (all non-detects)	A	Initial calibration (%RSD)
MW-04B MW-17A	All compounds reported below the RL.	J (all detects)	A	Compound quantitation

Modesto November 2015 GW Monitoring
Volatiles - Laboratory Blank Data Qualification Summary - SDG 15335C

No Sample Data Qualified in this SDG

Modesto November 2015 GW Monitoring
Volatiles - Field Blank Data Qualification Summary - SDG 15335C

No Sample Data Qualified in this SDG

LDC #: 35641A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 1-7-16
SDG #: 15335C ~~ADR~~/IV Page: 1 of 2
Laboratory: USEPA Region 9 Laboratory Reviewer: TM
2nd Reviewer: AYL

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.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW / A	≤ 20 ICV ≤30
IV.	Continuing calibration	SW	≤30
V.	Laboratory Blanks	A	~~Not reviewed for ADR validation.~~
VI.	Field blanks	N	
VII.	Surrogate spikes	A	~~Not reviewed for ADR validation.~~
VIII.	Matrix spike/Matrix spike duplicates	N	Not reviewed for ADR validation.
IX.	Laboratory control samples	SW	~~Not reviewed for ADR validation.~~
X.	Field duplicates	N	
XI.	Internal standards	A	~~Not reviewed for ADR validation.~~
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Target compound identification	A	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.~~

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; SB=Source blank; OTHER:

** Indicates sample underwent Level IV validation

		Client ID	Lab ID	Matrix	Date
	~~1~~	~~EW-01R~~	~~1512003-01~~	~~Water~~	~~11/23/15~~
1/2	2	MW-04B**	1512003-02**	Water	11/23/15
1	3	MW-04C**	1512003-03**	Water	11/23/15
	~~4~~	~~MW-20B~~	~~1512003-04~~	~~Water~~	~~11/23/15~~
	5	MW-20C	1512003-05	Water	11/23/15
	6	MW-21A	1512003-06	Water	11/23/15
	7	MW-22A	1512003-07	Water	11/23/15
	8	MW-32C	1512003-08	Water	11/23/15
	~~9~~	~~MW-17C~~	~~1512003-09~~	~~Water~~	~~11/23/15~~
2	10	MW-17A**	1512003-10**	Water	11/23/15
	~~11~~	~~MW-27B~~	~~1512003-11~~	~~Water~~	~~11/23/15~~
	~~12~~	~~MW-33B~~	~~1512003-12~~	~~Water~~	~~11/23/15~~
	~~13~~	~~MW-24B~~	~~1512003-13~~	~~Water~~	~~11/24/15~~

LDC #: 35641A1

SDG #: 15335C

Laboratory: USEPA Region 9 Laboratory

VALIDATION COMPLETENESS WORKSHEET

~~ADR~~/IV

Date: 1-7-16

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA Method 524.2)

		Client ID	Lab ID	Matrix	Date
	~~14~~	~~MW-12A~~	~~1512003-14~~	~~Water~~	~~11/24/15~~
	15	MW-19A	1512003-15	Water	11/24/15
	16	MW-19B1	1512003-16	Water	11/24/15
	~~17~~	~~MW-16A~~	~~1512003-17~~	~~Water~~	~~11/24/15~~
3	18	MW-16B**	1512003-18**	Water	11/24/15
3/4	19	MW-28B**	1512003-19**	Water	11/24/15
	~~20~~	~~MW-31A~~	~~1512003-20~~	~~Water~~	~~11/24/15~~
	21	MW-17CMS	1512003-09MS	Water	11/23/15
	~~22~~	~~MW-17CMSD~~	~~1512003-09MSD~~	~~Water~~	~~11/23/15~~
	23				
	24				
	25				
	26				

Notes:

1	B15L005-BLK1						
2	B15L006-BLK1						
3	B15L015-BLK1						
4	B15L021-BLK1						

LDC #: 35641A1

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Volatiles (EPA Method 524.2)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
II. GC/MS Instrument performance check				
Was a tune check performed prior to establishing and/or re-establishing an initial calibration?	/			
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
III. Initial calibration				
Did the laboratory perform at least 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) ≤ 20%?		/		
IIIa. Initial Calibration Verification calibration				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) ≤ 30%?	/			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at the beginning of each analysis batch?	/			
Were all percent differences (%D) of continuing calibration ≤ 30%?		/		
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed with each analysis batch?	/			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		/		
VI. Field blanks				
Field blanks were identified in this SDG.		/		
Target compounds were detected in the field blanks.			/	
VII. Surrogate spikes				
Were all surrogate %R within the 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?			/	
VIII. Matrix spike/Matrix spike duplicates				
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?			/	
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	/			

LDC #: 35641A1

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	/			
Were the LCS percent recoveries (%R) within 70-130%?		/		
X. Field duplicates				
Field duplicate pairs were identified in this SDG.		/		
Target compounds were detected in the field duplicates.			/	
XI. Internal standards				
Were internal standard area counts within +/-30% of the area of the most recent continuing calibration standard and +/-50% of the average peak area in the initial calibration?	/			
Were retention times within +/-30 seconds of the associated calibration standard?	/			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) or regression equations 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?	/			
XIII. Target compound identification				
Were relative retention times (RRT's) within $\pm$ 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
XIV. System performance				
System performance was found to be acceptable.	/			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	/			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

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 Did the laboratory perform a 5 point calibration prior to sample analysis?

Y N N/A Were all percent relative standard deviations (%RSD) ≤ 20% ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤20.0%)	Associated Samples	Qualifications
	12/03/15	120315W.M	CCC	23.50	18-19, B15L015-BLK1	J/UJ/A (ND)

INICAL.1S5

LDC #: 3564A1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: [illegible]
2nd Reviewer: APL

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
	12/02/15	120215D02.D	OO	37.9	10, B15L006-BLK1	J⁺dets/A (ND)

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

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 required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		B15L005-BS1	DDD	114 (90-112)	( )	( )	2-3,B15L005-BLK1	J+dets/P (ND)
				( )	( )	( )		
		B15L006-BS1	M	128 (67-123)	( )	( )	10,B15L006-BLK1	J+dets/P (ND)
		↓	PP	123 (84-114)	( )	( )	↓	↓
			CCC	123 (89-118)	( )	( )		
				( )	( )	( )		
		B15L015-BS1	PP	120 (84-114)	( )	( )	18-19,B15L015-BLK1	J+dets/P (ND)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: AN

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
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (5.0 std)	Recalculated RRF (5.0 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	120115W.M	12/01/15	Acetone (1st Internal Standard)	0.200	0.200	0.207	0.207	9.23	9.13
			Benzene (2nd Internal Standard)	0.980	0.980	1.017	1.017	2.69	2.68
			Tetrachloroethene (3rd Internal Standard)	0.409	0.409	0.461	0.461	6.64	6.65
2	120315D05D	12/03/15	Acetone (1st Internal Standard)	0.215	0.215	0.245	0.245	18.51	18.52
			Benzene (2nd Internal Standard)	1.050	1.050	1.048	1.048	2.54	2.54
			Tetrachloroethene (3rd Internal Standard)	0.452	0.452	0.455	0.455	3.96	3.92
3			(1st Internal Standard)						
			(2nd Internal Standard)						
			(3rd Internal Standard)						
4			(1st Internal Standard)						
			(2nd Internal Standard)						
			(3rd 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.

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: ARL

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:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	conc. Average ~~RRF~~ (initial)	Reported conc ~~RRF~~ (CC)	Recalculated Conc. ~~RRF~~ (CC)	Reported ~~%D~~ %R	Recalculated ~~%D~~ %R
1	120115D10.D	12/01/15	Acetone (1st Internal Standard)	40.00	39.65	39.59	99	99
	(12/01/15)		Benzene (2nd Internal Standard)	5.00	5.21	5.21	104	104
			Tetrachloroethene (3rd Internal Standard)	5.00	5.18	5.18	104	104
2	120215D02.D	12/02/15	Acetone (1st Internal Standard)	40.00	41.71	41.66	104	104
	(12/01/15)		Benzene (2nd Internal Standard)	5.00	5.33	5.33	107	107
			Tetrachloroethene (3rd Internal Standard)	5.00	5.61	5.61	112	112
3	120315D11.D	12/03/15	Acetone (1st Internal Standard)	40.00	39.98	39.91	100	100
	(12/03/15)		Benzene (2nd Internal Standard)	5.00	5.19	5.19	104	104
			Tetrachloroethene (3rd Internal Standard)	5.00	5.02	5.02	100	100
4	120415D02.D	12/04/15	Acetone (1st Internal Standard)	40.00	36.52	36.48	91	91
	(12/03/15)		Benzene (2nd Internal Standard)	5.00	5.07	5.08	101	101.5
			Tetrachloroethene (3rd Internal Standard)	5.00	5.53	5.53	111	111

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.

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: Qm
2nd reviewer: AR

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: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	5.000	4.70	94	94	Ø
Bromofluorobenzene		4.77	95	95	Ø
1,2-Dichlorobenzene-d4		4.96	99	99	Ø
1,2-Dichloroethane-d4		5.01	100	100	Ø

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: APL

METHOD: GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy 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 = I LCSC - LCSDC I * 2/(LCSC + LCSDC)   LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: B15L005-BS1

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	5.00	NA	5.26	NA	105	105				
Trichloroethene			4.96		99	99				
Benzene			5.04		101	101				
Toluene			5.14		103	103				
Chlorobenzene			5.09		102	102				

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.

LDC #: 35641A1

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [signature]
2nd reviewer: APL

METHOD: GC/MS VOA (EPA Method 524.2)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 2, Acetone:

Conc. = $\frac{(36766)(5.00)(1)}{(226313)(0.207)(1)(\quad)}$

= 3.924068139 ≈ 3.9 µg/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

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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 (April 1 through June 30, 2013) are as follows:

Remedial System	Total Operation Hours	Percentage of Operation
Groundwater Treatment	2,204	99.8%

Tables D-1 through D-3 present GWTS shutdown summaries for October, November, and December 2015 respectively.

Table D-1. GWTS Shutdown Summary, October 2015

Total	0.0	Hours in month: 744	Percent operational: 100.0

GWTS = groundwater treatment system

Table D-2. GWTS Shutdown Summary, November 2015

Date	Duration, hours	Reason	
11/23/2015 – 11/23/2015	1.5	LGAC carbon changeout.	
Total	1.5	Hours in month: 720	Percent operational: 99.8

LGAC = liquid-phase granular-activated carbon
GWTS = groundwater treatment system

Table D-3. GWTS Shutdown Summary, December 2015

Date	Duration, hours	Reason	
12/16/2015-12/16/2015	2.0	Performed effulent totalizer certification.	
Total	2.0	Hours in month: 744	Percent operational: 99.7

GWTS = groundwater treatment system

Appendix E

Operation and Maintenance Process Logs

Groundwater/Soil Vapor Sampling Field Data Logs

URS Corporation

Modesto, Superfund Site

Process Data Sheet

Groundwater Treatment System

			Hour Meter	Utility Power		System Influent Flow	System Influent Pressure	System Influent Total Flow	System Influent pH	Anti-Scalant Sequestrant	Air Stripper Water Influent Pressure	Air Stripper Water Effluent Pressure	Air Stripper Water Flow	Air Stripper Water Pressure	Air Stripper Water Influent Pressure	Air Stripper Water Effluent Pressure	Air Stripper Water Flow
										T-3	Bag Filter F-1			Pump P-3	Bag Filter F-2		
Initials	Date	Time	Hrs.	kW	kWh	GPM	PSI	Gallons	pH	Gallons	PSI	PSI	GPM	PSI	PSI	PSI	GPM
GB	10/8/15	8:03	79267	15.98	88354	47	31	—	7.50	22	12	12	~~22~~ 56	62	60	55.5	54
GB	10/15/15	7:41	79435	15.98	90571	47	31	—	—	18	12.5	12	56	67	60	57	55
GB	10/22/15	8:17	79603	15.98	92434	47	31	—	—	27	13	12	56	61.5	60	57	57
GB	10/29/15	8:51	79772	15.98	94489	47.5	31	—	—	23	14	12	55	65	60	59	56
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 Sump Pressure	Air Stripper Vapor Effluent Pressure	Air Stripper Vapor Influent P.I.D.	Air Stripper Vapor Effluent P.I.D.	Air Stripper Vapor Temp	Air Stripper Vapor Flow	Liquid Carbon Influent Pressure	Liquid Carbon Mid-Bed Pressure	Liquid Carbon Effluent Pressure	Ion Exchange Influent Pressure	Ion Exchange Mid-Bed Pressure	Ion Exchange Flow	System Effluent Flow	System Effluent Pressure	System Effluent pH	System Effluent Effluent Total Flow	Radiation Meter Outside GWTS	Radiation Meter 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
10.5	4	0.2	0.0	69.5	615	37	29	25	17	10	36	48	3.5	7.69	26194	—	—
13	5.5	—	—	69.8	610	38	30	25	17	10	36	48	4.0	—	30847	—	—
13	6	—	—	69.1	615	37	28	24	16.5	10	35	47	3.5	—	35515	—	—
13	6	—	—	69	620	41	31	26	18	10	37	49	4	—	40180	—	.
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 Pressure	SVE Influent Temp	SVE Influent Flow	SVE Influent Dilution	Blower Hour Meter	Blower Effluent Pressure	Blower Temp	Blower Flow	Filter Influent Pressure	Filter Effluent Pressure	Vapor Influent P.I.D.	Vapor Effluent P.I.D.	Vapor Temp	Vapor Flow	Radiation Meter Outside SVE	Radiation Meter Inside SVE
												VGAC Vessel		Stack			
Date	Time	in. H2O	°F	CFM	Yes/No	Hrs	in. H2O	°F	CFM	in. H2O	in. H2O	ppm	ppm	°F	CFM	mR/hr Peak	mR/hr Peak
		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: ______________

10/8/15 36/48 75%

10/15/15 36/48 75%

10/22/15 35/47 74%

10/29/15 37/49 = 76%

URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto SF
Period: 10/1/15 to 10/31/15
(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.)
10/15	GB	79435	Added Sequestrant	Y / N			Y / N		
10/15	GB	79435	Lubed Pumps & Blower	Y / N			Y / N		
10/22	GB	79603	Changed Bag Filters	Y / N			Y / N		
10/29	GB	79772	Changed Bag Filters	Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		

URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto SF

Shutdown Date:_______ Startup Date:_______
Shutdown Time:_______ Startup Time:_______
Shutdown Purpose or Cause:
(None)
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:_______

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	10/8/ 2015	10/15/ 2015	10/22/ 2015	10/29/ 2015	/ /
WEEKLY	Task Performed (Technician Initials or Value)				
Groundwater TreatmentSystem					
Record Process Logs	GB	GB	GB	GB	
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		N			
Clean up compound area					
Drain VGAC condensate			A		
Perform autodialer operational check					
Inspection of Spill Response Kit					
Inspection of Emergency Response Plan/MSDS Binder					

Task Description	Performed		
MONTHLY	Date	Initials	Reading
Check fire extinguisher	10/29	GB	
Inspect EW-1R vault	10/22		
Inspect VI Mitigation operations - "Part House"	10/15		
Replace Auto Dialer Batteries (if necessary)	OK		
Quarterly			
Interlock Checks Groundwater	(9-17)	GB	
Interlock Checks SVE	N/A		
Collect Well Flow read at SVE-02	N/A		
Collect Well Flow read at SVE-03			
Collect Well Flow read at SVE-04			
ANNUAL			
Collect Amp radings	(12-24-14)	GB	
Instrument Calibration			
System Effluent Flow Meter (Performed in June and December)	6-15-15	GB	

Notes:

Reviewed by Date:

Date: 10/8/15
Weather: Clear 64° ØWND
Sampler: George Bradshaw

SAMPLE COLLECTION RECORD
MODESTO SUPERFUND SITE

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
8:03	GWTS Effluent	2691400 gal.	48

Time	Sample Location - Test Method		Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
9:17	EFF-1002	E524.2	Effluent	SP-07	3	40 ml VOA	HCl	7.69	1070	21.3
9:17	EFF-1002	SM5210B	Effluent	SP-07	1	1 Liter Poly	None	↓	↓	↓
9:17	EFF-1002	SM2540D/SM2540C	Effluent	SP-07	1	1 Liter Poly	None	↓	↓	↓
9:17	EFF-1002	D5174	Effluent	SP-07	1	250 ml Poly	HNO3	↓	↓	↓
9:26	IEXEFF-1002	D5174	IEX Effluent	SP-10	1	250 ml Poly	HNO3	7.88	1050	21.2
9:29	IEX Mid-1002	D5174	IEX Mid	SP-06	1	250 ml Poly	HNO3	7.94	1050	21.1
9:36	CRB EFF-1002	E524.2	CRB Effluent	SP-05	5	40 ml VOA	HCl	8.04	1050	21.1
9:43	CRB Mid-1002	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCl	8.12	1050	21.0
9:46	MW-104-NS	E524.2	FD (CRB MID)	SP-04	3	40 ml VOA	HCl	↓	↓	↓
9:52	CRB INF-1002	E524.2	CRB Influent	SP-03	3	40 ml VOA	HCl	8.22	1050	21.2
10:00	GWTS-INF-1002	E524.2	Influent	SP-01	3	40 ml VOA	HCl	7.50	1070	20.8
10:00	GWTS-INF-1002	D5174	Influent	SP-01	1	250 ml Poly	HNO3	↓	↓	↓
10:03	MW-101-NS	D5174	FD (Influent)	SP-01	1	250 ml Poly	HNO3	↓	↓	↓
8:00	MW-301-4Q15	E524.2	TB	xxxxx	2	40 ml VOA	HCl	n/a	n/a	n/a
10:30	GWTS Stack-1002	TO-15	GWTP VGAC Effluent	SP-09	1	1 Liter Summa	None	#0096	Start -30 "Hg	END -5"Hg
10:37	MW-109-NS	TO-15	FD (GWTP VGAC Eff)	SP-09	1	1 Liter Summa	None	#0081	-30"	-5"
10:43	GWTS Pr GAC-1002	TO-15	GWTP VGAC Influent	SP-08	1	1 Liter Summa	None	#0166	-30"	-5"

Sampler Signature	Date
George Bradshaw	10/8/15

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: Flow	System Influent: Pressure	System Influent: Total Flow	System Influent: pH	Anti-Scalent Sequestrant	Air Stripper Water: Influent Pressure	Air Stripper Water: Effluent Pressure	Air Stripper Water: Flow	Air Stripper Water: Pressure	Air Stripper Water: Influent Pressure	Air Stripper Water: Effluent Pressure	Air Stripper Water: Flow
										T-3	Bag Filter F-1	Bag Filter F-1		Pump P-3	Bag Filter F-2	Bag Filter F-2	
Initials	Date	Time	Hrs.	KW	KWh	GPM	PSI	Gallons	pH	Gallons	PSI	PSI	GPM	PSI	PSI	PSI	GPM
GB	11/5/15	7:00	79939	—	—	47	31	—	7.38	19	11.4	12	57	63	59.2	58.2	56
GB	11/12/15	9:15	80109	—	—	47.5	31	—	—	15	11.5	12	57.5	59.5	60	61	58
GB	11/19/15	8:49	80277	—	—	47.5	30.5	—	—	20	11.4	9.4	58	63	58.1	56.1	58
GB	11/23/15	8:49	80371	15.98	01840	48	30	—	—	18	11.0	9.0	58	62	57.0	55.0	58
GB	11/30/15	8:30	80539			48	30	—	—	15	7.5	4.5	62	70	60	59	56
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: Sump Pressure	Air Stripper Vapor: Effluent Pressure	Air Stripper Vapor: Influent P.I.D.	Air Stripper Vapor: Effluent P.I.D.	Air Stripper Vapor: Temp	Air Stripper Vapor: Flow	Liquid Carbon: Influent Pressure	Liquid Carbon: Mid-Bed Pressure	Liquid Carbon: Effluent Pressure	Ion Exchange: Influent Pressure	Ion Exchange: Mid-Bed Pressure	Ion Exchange: Flow	System Effluent: Flow	System Effluent: Pressure	System Effluent: pH	System Effluent: Effluent Total Flow	Radiation Meter: Outside GWTS	Radiation Meter: Inside GWTS
Air Stripper Trays	Air Stripper Trays	VGAC Vessel	VGAC Vessel	Stack	Stack												
in. H2O	in. H2O	ppm	ppm	°F	CFM	PSI	PSI	PSI	PSI	PSI	GPM	Gpm	PSI in H2O	pH	x/Gallons	mR/hr Peak	mR/hr Peak
14 8	6	—	—	—	—	39	29	25	17	10	35	48	4.0	7.73	44792	—	—
14	6.5	—	—	68.4	635	43	32	27	18	11	37	50	5.0	—	49573	—	—
14	7	—	—	68.5	625	42	32	26.5	18	10	36	50	4.5	—	54277	—	—
14	7	—	—	68.4	620	41	32	30	22	12	34	48	4.5	—	56936	—	0.02
15	8	—	—	68.1	610	37	29	27	18	11	37	47	4.5	—	61666	—	—
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: Pressure	SVE Influent: Temp	SVE Influent: Flow	SVE Influent: Dilution	Blower: Hour Meter	Blower: Effluent Pressure	Blower: Temp	Blower: Flow	Filter: Influent Pressure	Filter: Effluent Pressure	Vapor: Influent P.I.D.	Vapor: Effluent P.I.D.	Vapor: Temp	Vapor: Flow	Radiation Meter: Outside SVE	Radiation Meter: Inside SVE
												VGAC Vessel	VGAC Vessel	Stack	Stack		
Date	Time	in. H2O	°F	CFM	Yes/No	Hrs.	in. H2O	°F	CFM	in. H2O	in. H2O	ppm	ppm	°F	CFM	mR/hr Peak	mR/hr Peak
		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: _______________

11/5 - 35/48 = 73%
11/12 - 37/50 = 74%
11/19 - 36/50 = 72%
11/23 - 34/48 = 71%

11/30 - 76%

URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto SF
Period: 11/1/15 to 11/30/15
(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.)
11/12	GB	80109	Added Sequestrant	Y / N			Y / N		
11/12	GB	80109	Changed Bag Filters	Y / N			Y / N		
11/19	GB	80277	Changed Bag Filters	Y / N			Y / N		
11/23	GB	80371	Performed Carbon Change	Y / N			Y / N		
11/30	GB	80539	Added Sequestrant	Y / N			Y / N		
				Y / N			Y / N		

URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto SF

Shutdown Date: 11/23/15 Startup Date: 11/23/15
Shutdown Time: 1700 Startup Time: 1830 1.5 Hrs.
Shutdown Purpose or Cause:
Shutdown System For LGAC Change
Corrective Actions Taken (if shutdown was unplanned):
Performed By: GB

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	11/5/ 2015	11/12/15	11/19/15	11/23/15	11/30/15
WEEKLY	Task Performed (Technician Initials or Value)				
Groundwater TreatmentSystem					
Record Process Logs	GB	GB	11/19/15	GB	GB
Check Blowers and motors for heat, noise, and vibration			GB		
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	N/A				
Inspect all process piping for leaks					
Clean up compound area					
Drain VGAC condensate	System	Shutdown	11/23/15	5:00 pm	
Perform autodialer operational check					
Inspection of Spill Response Kit					
Inspection of Emergency Response Plan/MSDS Binder					

Task Description	Performed		
MONTHLY	Date	Initials	Reading
Check fire extinguisher	11/5	GB	
Inspect EW-1R vault	~~n/a~~ 11/5	GB	
Inspect VI Mitigation operations - "Part House"	n/a	GB	
Replace Auto Dialer Batteries (if necessary)	n/a	GB	
Quarterly			
Interlock Checks Groundwater	11/12/15	GB	
Interlock Checks SVE	n/a		
Collect Well Flow read at SVE-02			
Collect Well Flow read at SVE-03			
Collect Well Flow read at SVE-04			
ANNUAL			
Collect Amp radings	11/5/15	GB	
Instrument Calibration			
System Effluent Flow Meter (Performed in June and December)	6-15-15	GB	

Notes:

Reviewed by:_________ Date:______

Date: 11/5/15
Weather: Cool, Breezy, Sunny
Sampler: George Bradshaw

SAMPLE COLLECTION RECORD
MODESTO SUPERFUND SITE

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
7:00	GWTS Effluent	4479200	48

Time	Sample Location	Test Method	Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
7:15	MW-302-4Q15	E524.2	TB	xxxxx	2	40 ml VOA	HCl	n/a	n/a	n/a
7:32	EFF-1101	E524.2	Effluent	SP-07	3	40 ml VOA	HCl	7.73	1160	18.1
7:32	EFF-1101	SM5210B	Effluent	SP-07	1	1 Liter Poly	None	"	"	"
7:32	EFF-1101	SM2540D/SM2540C	Effluent	SP-07	1	1 Liter Poly	None	"	"	"
7:32	EFF-1101	Title 22	Effluent	SP-07	1	250 ml Poly	None	"	"	"
	EFF-1101	D5174	Effluent	SP-07	1	1 250 ml Poly	HNO3			
7:40	IEXEFF-1101	D5174	IEX Effluent	SP-10	1	1 250 ml Poly	HNO3	7.56	1060	18.8
7:43	IEX Mid-1101	D5174	IEX Mid	SP-06	1	1 250 ml Poly	HNO3	7.53	1060	19.2
7:46	Pre IEX-1101	D5174	IEX Influent	SP-05	1	1 250 ml Poly	HNO3	7.55	1060	19.0
	CRB EFF-1101	E524.2	CRB Effluent	SP-05	3	40 ml VOA	HCl			
7:51	CRB Mid-1101	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCl	7.62	1050	18.7
7:56	CRB INF-1101	E524.2	CRB Influent	SP-03	3	40 ml VOA	HCl	7.71	1050	18.7
8:03	GWTS-INF-1101	E524.2	Influent	SP-01	3	40 ml VOA	HCl	7.38	1080	18.8
8:14	GWTS Stack-1101	TO-15	GWTP VGAC Effluent	SP-09	1	1 Liter Summa	None	#0162	Start -30	End -5
8:21	GWTS Pr GAC-1101	TO-15	GWTP VGAC Influent	SP-08	1	1 Liter Summa	None	#0165	Start -30	End -5
	SVE Stack-1101	TO-15	SVE Stack Effluent	SP-12	1	400 ml Summa	None			
	SVE Pre GAC-1101	TO-15	SVE Manifold Influent	SP-11	1	400 ml Summa	None			

Sampler Signature	Date
George Bradshaw	11/5/15

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: Flow	System Influent: Pressure	System Influent: Total Flow	System Influent: pH	Anti-Scalent Sequestrant	Air Stripper Water: Influent Pressure	Air Stripper Water: Effluent Pressure	Air Stripper Water: Flow	Air Stripper Water: Pressure	Air Stripper Water: Influent Pressure	Air Stripper Water: Effluent Pressure	Air Stripper Water: Flow
										T-3	Bag Filter F-1			Pump P-3		Bag Filter F-2	
Initials	Date	Time	Hrs	kW	kWh	GPM	PSI	Gallons	pH	Gallons	PSI	PSI	GPM	PSI	PSI	PSI	GPM
GB	12/8/15	8:25	80731	—	—	48	30	n/a	7.40	28	7.3	5.3	63	63	58.4	56.4	57
GB	12/16/15	11:57	80924	15.98	8418	48	31	n/a	—	24	7.4	4.4	62	64	57.7	56.7	57
GB	12/23/15	8:37	81089	15.98	10426	48	30	n/a	—	20	7.5	4.5	58	63	58.3	56.3	58
GB	12/29/15	7:52	81232	15.98	12157	48	30	n/a	—	16	7.0	4.0	62	62	57.6	54.6	58
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

1/16

GroundWater Treatment System

Air Stripper Vapor: Sump Pressure	Air Stripper Vapor: Effluent Pressure	Air Stripper Vapor: Influent P.I.D.	Air Stripper Vapor: Effluent P.I.D.	Air Stripper Vapor: Temp	Air Stripper Vapor: Flow	Liquid Carbon: Influent Pressure	Liquid Carbon: Mid-Bed Pressure	Liquid Carbon: Effluent Pressure	Ion Exchange: Influent Pressure	Ion Exchange: Mid-Bed Pressure	Ion Exchange: Flow	System Effluent: Flow	System Effluent: Pressure	System Effluent: pH	System Effluent: Effluent Total Flow	Radiation Meter: Outside GWTS	Radiation Meter: Inside GWTS
Air Stripper Trays		VGAC Vessel		Stack													
in. H2O	in. H20	ppm	ppm	°F	CFM	PSI	PSI	PSI	PSI	PSI	GPM	Gpm	PSI ~~in. H2O~~	pH	~~GPM~~ Gallons	mR/hr Peak	mR/hr Peak
17	10	0	0	68.5	520	40.5	32	29	20	12	40	51	5.0	7.53	67154	—	—
14	7	—	—	65.5	635	41	32	29	20	12	38	52	5	—	72623	.	—
14	7	—	—	68.1	625	40.5	31	28.5	19	11	37	52	5	—	77326	—	—
14	7	—	—	67.4	605	39	30	28	19	11	37	51	5	—	81410	0.1	0.1
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: Pressure	SVE Influent: Temp	SVE Influent: Flow	SVE Influent: Dilution	Blower: Hour Meter	Blower: Effluent Pressure	Blower: Temp	Blower: Flow	Filter: Influent Pressure	Filter: Effluent Pressure	Vapor: Influent P.I.D.	Vapor: Effluent P.I.D.	Vapor: Temp	Vapor: Flow	Radiation Meter: Outside SVE	Radiation Meter: Inside SVE
												VGAC Vessel		Stack			
Date	Time	in. H2O	°F	CFM	Yes/No	Hrs.	in. H2O	°F	CFM	in. H2O	in. H2O	ppm	ppm	°F	CFM	mR/hr Peak	mR/hr Peak
		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: ______________

12/8 40/51 = 78%

12/16 38/52 = 73%

12/23 37/52 = 71%

12/29 37/51 = 73%

URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto GW
Period: 12/1/15 to 12/31/15
(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.)
12/8/15	GB	80731	Changed Bag Filters	Y / N (N circled)			Y / N		
12/16/15	GB	80924	Flow Meter Cert.	Y / N (N circled)			Y / N		
12/16/15	GB	80924	Cleaned Air Stripper	Y / N (N circled)			Y / N		
12/29/15	GB	81232	Changed Bag Filters	Y / N (N circled)			Y / N		
12/29/15	GB	81232	Added Sequestrant	Y / N (N circled)			Y / N		
12/29/15	GB	—	Inspected SVE Unit	Y / N (N circled)			Y / N		

URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto SF

Shutdown Date: 12/16/15 Startup Date: 12/16/15
Shutdown Time: 0830 Startup Time: 1030 2 Hours
Shutdown Purpose or Cause:
Shutdown System to Perform Flow Meter Certifications.
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:__________

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	12/8/15	12/16/15	12/23/15	12/29/15	/ /
WEEKLY	Task Performed (Technician Initials or Value)				
Groundwater TreatmentSystem					
Record Process Logs	GB	GB	GB	GB	
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	N/A				
Perform autodialer operational check					
Inspection of Spill Response Kit					
Inspection of Emergency Response Plan/MSDS Binder					

Task Description	Performed		
MONTHLY	Date	Initials	Reading
Check fire extinguisher	12/23/15	GB	
Inspect EW-1R vault /EW-2	12/23/15	GB	
Inspect VI Mitigation operations - "Part House"	N/A		
Replace Auto Dialer Batteries (if necessary)	12/29/15	GB	
Quarterly			
Interlock Checks Groundwater	11/23/15	GB	
Interlock Checks SVE	N/A		
Collect Well Flow read at SVE-02			
Collect Well Flow read at SVE-03			
Collect Well Flow read at SVE-04			
ANNUAL			
Collect Amp radings	12/23/15	GB	
Instrument Calibration			
System Effluent Flow Meter (Performed in June and December)	12/16/15	GB	

Notes:

Reviewed by ________ Date: ________

Date: 12/8/15
Weather: Cold, Foggy
Sampler: George Bradshaw

SAMPLE COLLECTION RECORD
MODESTO SUPERFUND SITE

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
8:25	GWTS Effluent	6715400	51

Time	Sample Location - Test Method		Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
0900	MW-303-4Q15	E524.2	TB	xxxxx	2	40 ml VOA	HCl	n/a	n/a	n/a
0910	MW-401-4Q15	E524.2	FB	xxxxx	3	40 ml VOA	HCl	n/a	n/a	n/a
0917	EFF-1202	E524.2	Effluent	SP-07	3	40 ml VOA	HCl	7.53	1050	19.3
0917	EFF-1202	SM5210B	Effluent	SP-07	1	1 Liter Poly	None	7.53	1050	19.3
0917	EFF-1202	SM2540D/SM2540C	Effluent	SP-07	1	1 Liter Poly	None	7.53	1050	19.3
	EFF-1202	D5174	Effluent	SP-07	1	1 250 ml Poly	HNO3			
0924	IEXEFF-1202	D5174	IEX Effluent	SP-10	1	1 250 ml Poly	HNO3	7.51	1050	19.5
0929	IEX Mid-1202	D5174	IEX Mid	SP-06	1	1 250 ml Poly	HNO3	7.51	1050	19.7
0932	Pre IEX-1202	D5174	IEX Influent	SP-05	1	1 250 ml Poly	HNO3	7.58	1040	19.4
0935	MW-105-1202	D5174	IEX Influent - FD	SP-05	1	1 250ml Poly	HNO3	7.58	1040	19.4
	CRB EFF-1202	E524.2	CRB Effluent	SP-05	3	40 ml VOA	HCl			
0940	CRB Mid-1202	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCl	7.62	1040	19.8
0945	CRB INF-1202	E524.2	CRB Influent	SP-03	3	40 ml VOA	HCl	7.75	1040	19.8
0948	MW-103-1202	E524.2	CRB Influent - FD	SP-03	3	40 ml VOA	HCl	7.75	1040	19.8
0957	GWTS-INF-1202	E524.2	Influent	SP-01	3	40 ml VOA	HCl	7.40	1060	19.3
1017	GWTS Stack-1202	TO-15	GWTP VGAC Effluent	SP-09	1	1 Liter Summa	None	#2062	-30"	-5"
1024	GWTS Pr GAC-1202	TO-15	GWTP VGAC Influent	SP-08	1	1 Liter Summa	None	#2077	-30"	-5"
								#1738	UNUSED	

Sampler Signature: George Bradshaw
Date: 12/8/15

Notes:

FD = Field Duplicate
FB = Field Blank (ambient)
NS = Normal Sample
TB = Trip Blank

Scan COCs to:
URS Attn: Debbie Casagrande (916) 679-2040

WELL GAUGING DATA

Project # ~~RARE~~ 151123-ET1 Date ~~18~~ 11/23/15 Client RARE

Site 941 McHenry Ave, Modesto, CA

Well ID	Well Size (in.)	Time Gauged	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC
MW-01A	4	1455					48.94	100.90	
MW-02A	4	0820					48.09	97.70	
MW-03A	4	1130					50.17	93.40	
MW-04A	4	1150					49.95	88.36	
MW-04B	2	1155					49.67	153.71	
MW-04C	2	1200					50.64	237.35	
MW-05A	2	0800					48.54	89.18	
MW-06A	2	1405					47.70	82.18	
MW-07A	2	1430					47.73	88.71	
MW-08A	2	0835					49.47	88.80	
MW-09B	2	0850					49.50	153.62	
MW-10A	2	1600					49.22	90.36	
MW-10B	2	1530					48.95	162.53	
MW-10C	2	1545					50.10	230.07	
MW-11A	2	1255					45.78	91.99	
MW-12A	2	0705					49.75	98.59	
MW-13A	2	1235					47.45	97.75	

WELL GAUGING DATA

Project # 151123-FT1 Date 11/23/15 Client RORE

Site 941 McHenry Ave Modesto, CA

Well ID	Well Size (in.)	Time Gauged	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC
MW-14A	2	1320					47.05	89.90	
MW-15A	2	0650					49.26	101.35	
MW-16A	2	0810					51.76	85.67	
MW-16B	2	0830					51.73	138.87	
MW-16C	2	0855					52.73	235.31	
MW-17A	2	1535					48.77	87.00	
MW-17B	2	1525					48.90	138.83	
MW-17C	2	1450					50.22	231.20	
MW-18A	2	1340					49.11	65.70	
MW-19A	2	0725					50.60	101.19	
MW-19B	2	0730					51.04	147.65	
MW-20A	2	1220					50.10	95.69	
MW-20B	2	1235					50.26	162.03	
MW-20C	2	1255					51.15	234.95	
MW-21A	2	1318					51.37	100.29	
MW-22A	2	1328					51.53	99.31	
MW-23A	2	1120					47.17	60.30	

WELL GAUGING DATA

Project # 151123-ET1 Date 11/23/15 Client RMRE

Site 941 McHenry Ave Modesto, CA

Well ID	Well Size (in.)	Time Gauged	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC
MW-24B	2	0645					52.17	154.99	
MW-25B	2	1320					51.56 ~~51.53~~	155.12	
MW-26B	2	0715					49.27	154.79	
MW-27B	2	1635					48.62	154.83	
MW-28B	2	0750					47.69	154.55	
MW-29B	2	1150					47.64	154.80	
MW-30A	2	1040					45.13	92.83	
MW-30B	2	1055					45.40	155.55	
MW-31A	2	1010					46.07	99.52	
MW-32B	2	1420					51.43	155.00	
MW32C	2	1425					52.12	236.61	
MW-33B	2	1650					51.37	161.43	
MW-34B	2	0740					45.30	153.65	
MW-35B	2	1125					47.70	168.32	
EW-01R	pump	1115					54.25	—	
EW-02	pump	1650					59.55	—	
~~MW-25A~~									

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RARE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-01A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 100.90	Depth to Water: 48.94
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1455			Retrieved PDB for sampling					
1505			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: -
Sampling Time: 1500	Sampling Date: 11/24/15
Sample I.D.: MW-01A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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WELL MONITORING DATA SHEET

Project #: 151123-ET1	~~Site~~: RARE
Sampler: ET	Date: 11/23/15
Well I.D.: MW-02A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth (TD): 97.70	Depth to Water (DTW): 48.09
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, 2" Rediflo pump, Extraction Pump, Other______

Sampling Method: Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ______

Flow Rate=______

______(Gals.) X ______ = ______ Gals.
1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	$radius^2 * 0.163$

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	Observations
0820			Retrieved PDB for			Sample		
0830			Replaced with new PDB					

Did well dewater? Yes No	Gallons actually evacuated: —	
Sampling Date: 11/23/15	Sampling Time: 0825	Depth to Water: 48.09
Sample I.D.: MW-02A	Laboratory: EPA	
Analyzed for: See COC		Other:
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):	
FB I.D. (if applicable): @ Time	Analyzed for:	
D.O. (if req'd): Pre-purge: mg/L	Post-purge: mg/L	
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV	

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-03A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 43.40	Depth to Water: 50.17
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ________________ Pump Depth: ________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1125			Put a	new PDB	bag in			
			Did Not	Sample				

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time:	Sampling Date:
Sample I.D.:	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-EM1	Client: RORE
Sampler: FCT	Start Date: 11/23/15
Well I.D.: MW-04A	Well Diameter: (5?) 2 3 4 6 8 ____
Total Well Depth: 38.36	Depth to Water: 41.95
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________________ Pump Depth: ______________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1135		Put a new	PDB bag in.					
		Did	Not sample					

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time:	Sampling Date:
Sample I.D.:	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: ~~MW-04~~ 57 MW-04B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 153.71	Depth to Water: 49.67
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________ Pump Depth: ______________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1145	Retrieve PDB bag							
1155	Replaced with new PDB							

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1150	Sampling Date: 11/23/15
Sample I.D.: MW-04B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RCRE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-04C	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 237.35	Depth to Water: 50.64
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________________ Pump Depth: ______________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1200			Retrieved	PDB bag				
1210			Replaced	with new	PDB bag			

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time: 1215	Sampling Date: 11/23/15
Sample I.D.: MW-04C	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

WELL MONITORING DATA SHEET

Rare

Project #: 151123-ET1	Site: 941 Rotary Ave
Sampler: ET	Date: 11/25/15
Well I.D.: MW-05A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 89.18	Depth to Water (DTW): 48.54
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type:
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method:
- Disposable Bailer
- Positive Air Displacement
- Electric Submersible
- Waterra
- 2" Rediflo pump
- Extraction Pump
- Other____________

Sampling Method:
- Disposable Bailer
- Extraction Port
- Dedicated Tubing
- Other: ____________

Flow Rate=______________________

________(Gals.) X ____________ = ____________ Gals.
1 Case Volume — Specified Volumes — Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	$radius^2 * 0.163$

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	Observations
0800			Retrieved PDB for sample					
0810			Replaced with new PDB					

Did well dewater? Yes (No)	Gallons actually evacuated: —	
Sampling Date: 11/25/15	Sampling Time: 0815	Depth to Water: 48.54
Sample I.D.: MW-05A	Laboratory: EPA	
Analyzed for: See COC	Other:	
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):	
FB I.D. (if applicable): @ Time	Analyzed for:	
D.O. (if req'd): Pre-purge: mg/L	Post-purge: mg/L	
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV	

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MS/MSD Collected (9)

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-01A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 82.18	Depth to Water: 47.70
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1405		Retrieved PDB For Sample						
1415		Replaced with new PDB						

Did well dewater? Yes No	Amount actually evacuated: -
Sampling Time: 1410	Sampling Date: 11/24/15
Sample I.D.: MW-01A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORA
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-07A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 88.31	Depth to Water: 47.73
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ________ Pump Depth: ________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1430			Retrieved PDB for Sampling					
1440			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 1435	Sampling Date: 11/24/15
Sample I.D.: MW-07A	Laboratory: EPA
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

MS/MSD taken (9)

WELL MONITORING DATA SHEET

Project #: 151123-ET1	Site: RARE
Sampler: ET	Date: 11/23/15
Well I.D.: MW-08A	Well Diameter: 2 3 4 6 8 ___
Total Well Depth (TD): 88.00	Depth to Water (DTW): ~~48~~ 49.47
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:

Purge Method: Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, 2" Rediflo pump, Extraction Pump, Other______

Sampling Method: Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ______

Flow Rate=______

______(Gals.) X ______ = ______ Gals.
1 Case Volume   Specified Volumes   Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	$radius^2 * 0.163$

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	Observations
0835			Retrieved PDB for sample					
0845			Replaced with new PDB					

Did well dewater? Yes No   Gallons actually evacuated: —

Sampling Date: 11/25/15   Sampling Time: 0840   Depth to Water: 49.47

Sample I.D.: MW-08A   Laboratory: EPA

Analyzed for: See COC   Other:

EB I.D. (if applicable): @ Time   Duplicate I.D. (if applicable):

FB I.D. (if applicable): @ Time   Analyzed for:

D.O. (if req'd): Pre-purge: mg/L   Post-purge: mg/L

O.R.P. (if req'd): Pre-purge: mV   Post-purge: mV

WELL MONITORING DATA SHEET

Project #: 151123-ET1	~~Site:~~ RMRS
Sampler: ET	Date: 11/23/15
Well I.D.: MW-09B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth (TD): 153.62	Depth to Water (DTW): 49.50
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, 2" Rediflo pump, Extraction Pump, Other______

Sampling Method: Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ______

Flow Rate=______________

______(Gals.) X ______ = ______ Gals.
1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	$radius^2 * 0.163$

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	Observations
0850			Retrieved	PDB for	Sample			
1400			Replaced	with new	PDB			

Did well dewater? Yes No	Gallons actually evacuated: —	
Sampling Date: 11/25/15	Sampling Time: 0855	Depth to Water: 49.50
Sample I.D.: MW-09B	Laboratory: EPA	
Analyzed for: See COC	Other:	
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):	
FB I.D. (if applicable): @ Time	Analyzed for:	
D.O. (if req'd): Pre-purge: mg/L	Post-purge: mg/L	
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV	

WELL MONITORING DATA SHEET

Project #: 151173-ET1	Client: RMR
Sampler: ET	Date: 11/23/15
Well I.D.: MW-10A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth (TD): 90.36	Depth to Water (DTW): 49.22
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other________

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ________

________(Gals.) X ________ = ________ Gals.
1 Case Volume   Specified Volumes   Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1600			Retrieved PDB for Sampling			
1610			Replaced with new PDB			

Did well dewater? Yes No	Gallons actually evacuated: —
Sampling Date: 11/24/15 Sampling Time: 1605	Depth to Water: 49.22
Sample I.D.: MW-10A	Laboratory: EPA
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5) Other: See COC
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5) Other:
D.O. (if req'd): Pre-purge: mg/L	Post-purge: mg/L
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RARE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-10B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 162.53	Depth to Water: 48.95
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1530			Retrieved	PDB	for Sampling			
1540			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1535	Sampling Date: 11/24/15
Sample I.D.: MW-10B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RMG
Sampler: ET	Date: 11/23/15
Well I.D.: MW-10C	Well Diameter: 2 3 4 6 8 ____
Total Well Depth (TD): 230.10	Depth to Water (DTW): 50.10
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other________

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ________

________(Gals.) X ________ = ________ Gals.
1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1545			Removed PDB for Sampling			
1555			Replaced with new PDB			

Did well dewater? Yes No   Gallons actually evacuated: —

Sampling Date: 11/24/15   Sampling Time: 1550   Depth to Water: 50.10

Sample I.D.: MW-10C   Laboratory: EPA

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See COC

EB I.D. (if applicable): @ Time   Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RARE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW 11A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 91.99	Depth to Water: 45.78
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________ Pump Depth: ______________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1255			Retrieved PDB for Sample					
1305			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 1300	Sampling Date: 11/24/15
Sample I.D.: MW-11A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 15113-571	Client: RCRB
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-12A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 18.57	Depth to Water: 4.95
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other______

Flow Rate: ______ Pump Depth: ______

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0705			Retrieved	PDB	For Sample			
0715			Replaced	with	new PDB			

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 0710	Sampling Date: 11/24/15
Sample I.D.: MW-12A	Laboratory: ECA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-13A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 97.75	Depth to Water: 77.45
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1235			Removed	PDB for	Sampling			
1245			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1240	Sampling Date: 11/23/15
Sample I.D.: MW-13A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ~~MW-14A~~ (?) ET	Start Date: 11/23/15
Well I.D.: MW-14A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 88.90	Depth to Water: 47.05
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other______________

Flow Rate: ______________________ Pump Depth: ______________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1320			Retrieved	PDB for	sample			
1330			Replaced	PDB with	new one			

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1325	Sampling Date: 11/24/15
Sample I.D.: MW-14A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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WELL MONITORING DATA SHEET

Project #: 151123-FT1	Client: RORB
Sampler: FT	Date: 11/23/15
Well I.D.: MW-15A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth (TD): 101.35	Depth to Water (DTW): 48.26
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other______

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ______

______(Gals.) X ______ = ______ Gals.
1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0650			Retrieved PDB	for Sample		
0705			Replaced with	new PDB		

Did well dewater? Yes No	Gallons actually evacuated: —	
Sampling Date: 11/25	Sampling Time: 0700	Depth to Water: 48.26
Sample I.D.: ~~0700~~ MW-15A	Laboratory: EPA	
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5)	Other: See COC
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):	
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5)	Other:
D.O. (if req'd): Pre-purge: mg/L	Post-purge: mg/L	
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV	

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-FT1	Client: RORF
Sampler: FT	Start Date: 11/23/15
Well I.D.: MW-16A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 85.67	Depth to Water: 51.76
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0810			Removed PDB For sampling					
0820			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: -
Sampling Time: 0815	Sampling Date: 11/24/15
Sample I.D.: MW-16A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-E11	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-16B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 138.87	Depth to Water: 57.73
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0830			Retrieved PDB For Sample					
0840			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 0835	Sampling Date: 11/24/15
Sample I.D.: MW-16B	Laboratory: ECA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: Rope
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-16L	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 235.31	Depth to Water: 52.77
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________ Pump Depth: ______________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0855		Removed	PDB bag.		When it	was pulled		
		up, it had a	hole at the	bottom	fit.	No		
		water so	No Sample					
0900	Replaced	with	new	PDB bag				

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time:	Sampling Date: 11/24/15
Sample I.D.: MW-16L	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-17A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 87.00	Depth to Water: 48.77
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________ Pump Depth: ______________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
11/23 1535			Retrieved	PDB	for sample			
1545		(Attempted)	Replace	PDB with new one				
~~45~~								
1620	-	PDB would	not go	down all	the	way.	Stopped at	49'
	-	~~No~~	~~new~~	~~PDB~~ ET				
11/24 0930	Went	back on	11/24	for	another	Attempt.		
	Was	able to	place	new PDB				

Did well dewater? Yes No	Amount actually evacuated: -
Sampling Time: 1540	Sampling Date: 11/23/15
Sample I.D.: MW-17A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151117-ET1	Client: RMF
Sampler: ET	Start Date: 11/13/15
Well I.D.: MW-17B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 138.83	Depth to Water: 48.90
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ________ Pump Depth: ________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1545			Set new PDB					
			No sample					

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time:	Sampling Date:
Sample I.D.:	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 15H13-ET1	Client: RWQCB
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-17C	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 231.20	Depth to Water: 58.22
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other

Flow Rate: ________ Pump Depth: ________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1455			Removed	PDB	For Sample			
1505			Replaced	with	new PDB			

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 1500	Sampling Date: 11/23/15
Sample I.D.: MW-17C	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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(MS/MSD Collected) (3)

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RRE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-13A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 65.70	Depth to Water: 49.11
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1340			Retrieved	PDB	for sampling			
1350			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 1345	Sampling Date: 11/24/15
Sample I.D.: MW-13A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RARE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-19A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 191.19	Depth to Water: 50.60
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0725			Remove	PDB For	Sampling			
0731			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 0730	Sampling Date: 11/24/15
Sample I.D.: MW-19A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RAAE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-19B1	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 197.65	Depth to Water: 51.04
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0730			Retrieved	PDB				
0740			Unable	to set	new PDB			
0800			Stopped	at 50 ft				
11/24 1630	Same	Day	Revisited	well and	was			
	able	to put a	new	PDB down				

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 0735	Sampling Date: 11/24/15
Sample I.D.: MW-19B1	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: ROMB
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-20A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 35.69	Depth to Water: 30.10
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other____________

Flow Rate: ______________________ Pump Depth: ______________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1225		Placed new PDB bag.						
			No sample time					

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time:	Sampling Date:
Sample I.D.:	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-20B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 162.03	Depth to Water: 50.26
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________________ Pump Depth: ______________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1223			Removed PDB For Sample					
1225			Placed new PDB bag					

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time: 1230	Sampling Date: 11/23/15
Sample I.D.: MW-20B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-20C	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 234.95	Depth to Water: 51.15
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1300			Removed	PDB for	Sampling			
1310			Placed	new PDB				

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1315	Sampling Date: 11/23/15
Sample I.D.: MW-20C	Laboratory: EPA
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: ROLE
Sampler: ~~MW-21A~~ ET	Start Date: 11/23/15
Well I.D.: MW-21A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 100.24	Depth to Water: 51.37
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1320			Retrieved PDB for Sample					
1330			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: -
Sampling Time: 1325	Sampling Date: 11/23/15
Sample I.D.: MW-21A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RARE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-28A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 99.31	Depth to Water: 57.53
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________ Pump Depth: ______________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1330			Removed PDB for sample					
1340			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1335	Sampling Date: 11/23/15
Sample I.D.: MW-28A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RNRE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-23A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 69.30	Depth to Water: 47.17
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other______________

Flow Rate: ________________________ Pump Depth:__________________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1120			Retrieved PDB for Sample					
1130			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1125	Sampling Date: 11/24/15
Sample I.D.: MW-23A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-24B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 154.97	Depth to Water: 52.17
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0645			Remove PDB for sample					
0655			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: -
Sampling Time: 0650	Sampling Date: 11/24/15
Sample I.D.: MW-24B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-FT1	Client: ROAF
Sampler: FT	Start Date: 11/27/15
Well I.D.: MW-75B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 155.12	Depth to Water: 56.56
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ________________ Pump Depth: ________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1320			. Put new PDB bag					
			No Sample					

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: —	Sampling Date: —
Sample I.D.: —	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RMRE
Sampler: ET	Date: 11/23/15
Well I.D.: MW-26B	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 154.79	Depth to Water (DTW): 49.27
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other____________

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ____________

__________(Gals.) X ____________ = ____________ Gals.
1 Case Volume   Specified Volumes   Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0715		Removed PDB for sampling				
0725		Replaced with new PDB				

Did well dewater? Yes (No)	Gallons actually evacuated: —
Sampling Date: 11/25/15 Sampling Time: 0720	Depth to Water: 49.27
Sample I.D.: MW-26B	Laboratory: EPA
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5) Other: See COC
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5) Other:
D.O. (if req'd): Pre-purge: mg/L	Post-purge: mg/L
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151113-ET1	Client: RARE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-27B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 154.83	Depth to Water: 48.62
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ________________ Pump Depth: ________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1635			Retrieved	PDB for	Sample			
1645			Replaced	w/ a new	PDB			

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1640	Sampling Date: 11/23/15
Sample I.D.: MW-27B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: ROAE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-28B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 154.55	Depth to Water: 47.69
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ______________ Pump Depth: ______________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0950			Retrieved	PDB for	sample			
1000			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 0955	Sampling Date: 11/24/15
Sample I.D.: MW-28B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-29B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 154.80	Depth to Water: 47.64
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other______________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1150			Retrieved PDB for sample					
1200			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time: 1155	Sampling Date: 11/24/15
Sample I.D.: MW-29B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-30A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 97.83	Depth to Water: 45.13
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1040			Removed	PDB for	sample			
1050			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: -
Sampling Time: 1045	Sampling Date: 11/24/15
Sample I.D.: MW-30A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RARE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-30B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 155.55	Depth to Water: 45.40
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1055			Retrieved PDB for sampling					
1105			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: -
Sampling Time: 1100	Sampling Date: 11/24/15
Sample I.D.: MW-30B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RARE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-31A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 99.52	Depth to Water: 46.07
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1010			Remove	PDB for	sampling			
1020			Replace	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1015	Sampling Date: 11/24/15
Sample I.D.: MW-31A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 15/123-ET1	Client: RoRB
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-32B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 155.00	Depth to Water: 51.43
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other______________

Flow Rate: ________________________ Pump Depth:________________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1420			Put new PDB bag down well					
			Did not sample					

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time:	Sampling Date:
Sample I.D.:	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RORB
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-32C	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 236.61	Depth to Water: 52.12
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1425			Retrieved PDB for sample					
1435			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time: 1430	Sampling Date: 11/23/15
Sample I.D.: MW-32C	Laboratory: ERA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RMLE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-33B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 161.43	Depth to Water: 56.31
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other______________

Flow Rate: ______________________ Pump Depth: ______________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1650			Retrieved	PDB	For Sample			
1700			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1655	Sampling Date: 11/23/15
Sample I.D.: MW-33B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

WELL MONITORING DATA SHEET

Project #: 151123-EF1	Client: RORE
Sampler: EI	Date: 11/23/15
Well I.D.: ~~MW-37B~~ MW-34B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth (TD): 153.65	Depth to Water (DTW): 45.30
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other______

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ______

______(Gals.) X ______ = ______ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0740			Retrieved PDB for sample			
0750			Replaced with new PDB			

Did well dewater? Yes No	Gallons actually evacuated: –
Sampling Date: 11/25/15 Sampling Time: 0745	Depth to Water: 45.70
Sample I.D.: MW-34B	Laboratory: EPA
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5)	Other: See COC
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5)	Other:
D.O. (if req'd): Pre-purge: mg/L	Post-purge: mg/L
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV

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150 ml

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RoRE
Sampler: ET	Start Date: 11/23/15
Well I.D.: MW-35B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 16832	Depth to Water: 17.70
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth:____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1625	Placed new PDB bag.							
		Did Not Sample						

Did well dewater? Yes No	Amount actually evacuated:
Sampling Time:	Sampling Date:
Sample I.D.:	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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LOW FLOW WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: RMRF
Sampler: ET	Start Date: 11/23/15
Well I.D.: EW-01R	Well Diameter: 2 3 4 6 8 valve/port
Total Well Depth: Pump	Depth to Water: 54.25
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other

Flow Rate: Pump Depth:

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1110	20.1	7.15	1100	7	5.21	193		

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 1115	Sampling Date: 11/23/15
Sample I.D.: EW-01R	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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WELL MONITORING DATA SHEET

Project #: 151123-ET1	Client: LORE
Sampler: ET	Date: 11/23/15
Well I.D.: EW-02	Well Diameter: 2 3 4 6 8 port
Total Well Depth (TD):	Depth to Water (DTW): 59.55
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other________

Sampling Method: Bailer, Disposable Bailer, Extraction Port, ~~Dedicated Tubing~~, Other: ________

________(Gals.) X ________ = ________ Gals.
1 Case Volume   Specified Volumes   Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	D.O. / ORP Observations
1650	21.5	7.69	10~~8~~33	5	—	5.02 / 129

Did well dewater? Yes No	Gallons actually evacuated: —
Sampling Date: 11/24/15 Sampling Time: 1650	Depth to Water:
Sample I.D.: EW-02	Laboratory: EPA
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5)	Other: See CoC
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5)	Other:
D.O. (if req'd): Pre-purge: mg/L	Post-purge: mg/L
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV

Pg 1 of 5

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 151123-ET1

CLIENT: RORE, Inc.

SITE: Modesto Superfund Site
941 McHenry Ave.
Modesto, CA

LAB: **EPA Lab Region 9** DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION ____

Report and Invoice to:
RORE - 5685 Redwood Dr, Ste 100, Rohnert Park, CA 94928
Attn: John McGuire
phone - (707) 246-5399 / email - jmcguire@roreinc.com

Lab Case Number: R15S40

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	DATE	TIME	MATRIX (S= SOIL W=H_2O)	CONTAINERS TOTAL	CONTAINERS TYPE	C = COMPOSITE ALL CONTAINERS	VOCs (524.2)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
EW-01R	11/23/15	1115	W	3	Amber VOAs		X				
AW-04B	11/23/15	1150	W	3	Amber VOAs		X				
MW-04C	11/23/15	1205	W	3	Amber VOAs		X				
AW-20B	11/23/15	1230	W	3	Amber VOAs		X				
MW-20C	11/23/15	1305	W	3	Amber VOAs		X				
MW-21A	11/23/15	1325	W	3	Amber VOAs		X				
AW-22A	11/23/15	1335	W	3	Amber VOAs		X				
MW-32C	11/23/15	1420	W	3	Amber VOAs		X				
MW-17C	11/23/15	1500	W	8	Amber VOAs		X	MS/MSD			
MW-17A	11/23/15	1540	W	3	Amber VOAs		X				

SAMPLING COMPLETED DATE 11/25/15 TIME 0855 SAMPLING PERFORMED BY Eric Tanner

RESULTS NEEDED NO LATER THAN **As contracted**

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	11/25/15	1605	[signature] (Fridge)	11/25/15	1605
[signature]	11/30/15	16:30	FED EX	11/30/15	16:30 BW
[signature]	12/1/15	10:50	[signature] R9 Lab	12/1/15	10:50

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

Rec'd hand delivered w/ seals intact 4°C.

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 151123-ET1

CLIENT: RORE, Inc.

SITE: Modesto Superfund Site
941 McHenry Ave.
Modesto, CA

LAB: EPA Lab Region 9 | DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

Report and Invoice to:
RORE - 5685 Redwood Dr, Ste 100, Rohnert Park, CA 94928
Attn: John McGuire
phone - (707) 246-5399 / email - jmcguire@roreinc.com

Lab Case Number: R15S40

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL	CONTAINERS TYPE	C = COMPOSITE ALL CONTAINERS	VOCs (524.2)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-27B	11/23/15	1640	W	3	Amber VOAs		X				
MW-33B	11/23/15	1655	W	3	Amber VOAs		X				
MW-24B	11/24/15	0650	W	3	Amber VOAs		X				
MW-12A	11/24/15	0710	W	3	Amber VOAs		X				
MW-19A	11/24/15	0730	W	3	Amber VOAs		X				
MW-19B1	11/24/15	0735	W	3	Amber VOAs		X				
MW-16A	11/24/15	0815	W	3	Amber VOAs		X				
MW-16B	11/24/15	0835	W	3	Amber VOAs		X				
MW-28B	11/24/15	0955	W	3	Amber VOAs		X				
MW-31A	11/24/15	1015	W	3	Amber VOAs		X				

SAMPLING COMPLETED DATE 11/25/15 TIME 0855 | SAMPLING PERFORMED BY Eric Tome

RESULTS NEEDED NO LATER THAN **As contracted**

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	11/25/15	1605	(Afyp)	11/25/15	1605
	11/30/15	16:30	FED EX	11/30/15	16:30
	12/1/15	10:50	R9 lab	12/1/15	10:50

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 151123-ET1

CLIENT: RORE, Inc.

SITE: Modesto Superfund Site
941 McHenry Ave.
Modesto, CA

CONDUCT ANALYSIS TO DETECT

LAB: EPA Lab Region 9 | DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
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☐ LIA
☐ OTHER

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Attn: John McGuire
phone - (707) 246-5399 / email - jmcguire@roreinc.com

Lab Case Number: R15S40

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL	CONTAINERS TYPE	C = COMPOSITE ALL CONTAINERS		VOCs (524.2)							ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-30A	11/24/15	1045	W	3	Amber VIAS			X										
MW-30B	11/24/15	1100	W	3	Amb VIAS			X										
MW-23A	11/24/15	1125	W	3	Amber VIAS			X										
MW-29B	11/24/15	1155	W	3	Amber VIAS			X										
MW-13A	11/24/15	1240	W	3	Amber VIAS			X										
MW-11A	11/24/15	1300	W	3	Amber VIAS			X										
MW-14A	11/24/15	1325	W	3	Amber VIAS			X										
MW-19A	11/24/15	1345	W	3	Amber VIAS			X										
MW-06A	11/24/15	1410	W	3	Amber VIAS			X										
MW-07A	11/24/15	1435	W	9	Amber VIAS			X							MS/MSD			

SAMPLING COMPLETED: DATE 11/25/15 TIME 0855 | SAMPLING PERFORMED BY: Eric Tanner

RESULTS NEEDED NO LATER THAN: **As contracted**

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	11/25/15	1645	[signature] (Fridge)	11/25/15	1645
~~[signature]~~	~~11/30/15~~	~~16:30~~	~~FED EX~~	~~11/30/15~~	~~16:30~~ DW
[signature]	12/1/15	10:50	[signature] R9 Lab	12/1/15	1050

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

BLAINE
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1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
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CHAIN OF CUSTODY BTS # 151123-ET1

CLIENT: RORE, Inc.

SITE: Modesto Superfund Site
941 McHenry Ave.
Modesto, CA

CONDUCT ANALYSIS TO DETECT

LAB: **EPA Lab Region 9** DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION ____

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phone - (707) 246-5399 / email - jmcguire@roreinc.com

Lab Case Number: R15S40

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL	CONTAINERS TYPE	C = COMPOSITE ALL CONTAINERS		VOCs (524.2)						ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-01A	11/24/15	1500	W	3	Amber VIAL			X									
MW-10B	11/24/15	1535	W	3	Amber VIAL			X									
MW-10C	11/24/15	1550	W	3	Amber VIAL			X									
MW-10A	11/24/15	1605	W	3	Amber VIAL			X									
EW-02	11/24/15	1650	W	3	Amber VIAL			X									
MW-15A	11/25/15	0700	W	3	Amber VIAL			X									
MW-26B	11/25/15	0720	W	3	Amber VIAL			X									
MW-34B	11/25/15	0745	W	3	Amber VIAL			X									
MW-05A	11/25/15	0815	W	9	Amber VIAL			X						MS/MSD			
MW-02A	11/25/15	0825	W	3	Amber VIAL			X									

SAMPLING COMPLETED — DATE 11/25/15 — TIME 0835 — SAMPLING PERFORMED BY Eric Tanner

RESULTS NEEDED NO LATER THAN **As contracted**

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	11/25/15	1605	[signature] (Eric)	11/25/15	1605
~~[signature]~~	~~11/30/15~~	~~16:30~~	~~FED EX~~	~~11/30/15~~	~~16:30~~ KW
[signature]	12/1/15	10.50	[signature] R9 Lab	12/1/15	1050

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY
BTS #

CLIENT: RORE, Inc.
SITE: Modesto Superfund Site
941 McHenry Ave.
Modesto, CA

LAB: **EPA Lab Region 9** DHS #

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☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

Report and Invoice to:
RORE - 5685 Redwood Dr, Ste 100, Rohnert Park, CA 94928
Attn: John McGuire
phone - (707) 246-5399 / email - jmcguire@roreinc.com

Lab Case Number: R15S40

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL $W=H_2O$	CONTAINERS TOTAL	CONTAINERS TYPE	C = COMPOSITE ALL CONTAINERS		VOCs (524.2)							ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-08A	11/25/15	0840	W	3	Amber Vials			X										
MW-09B	11/25/15	0855	W	3	Amber Vials			X										

SAMPLING COMPLETED: DATE 11/25/15 TIME 0855 SAMPLING PERFORMED BY Eric Tanner

RESULTS NEEDED NO LATER THAN **As contracted**

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	11/25/15	1615	[signature] (Fridge)	11/25/15	1615
~~[signature]~~	~~11/30/15~~	~~16:30~~	~~FED EX~~	~~11/30/15~~	~~16:30~~
[signature]	12/1/15	10:50	[signature] R9 Lab	12/1/15	10:50

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

WELLHEAD INSPECTION CHECKLIST

Client: RORE
Date: 11/23/15
Site Address: 941 McHenry Ave Modesto CA
Job Number: 151123-ET1
Technician: ET

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-01A			3/3 tabs stripped			X		
MW-02A								
MW-03A	X							
MW-04A	X							
MW-04B	X							
MW-04C	X							
MW-5A			1/2 bolts missing			X		
MW-6A								
MW-07A			1/2 bolts missing			X		
MW-08A		X	1/2 tabs stripped			X		
MW-09B	X	X						
MW-10A	X							
MW-10B			2/2 bolts missing			X		
MW-10C			2/2 bolts missing			X		
MW-11A			1/2 bolts missing			X		
MW-12A			1/2 tabs broken			X		

NOTES:

WELLHEAD INSPECTION CHECKLIST

Client: RARE Date: 11/23/15

Site Address: 941 McHenry Ave, Modesto, CA

Job Number: 151123-ET1 Technician: ET

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-13A			1/2 bolts missing			X		
MW-14A	X							
MW-15A			1/2 bolts missing			X		
MW-16A			2/2 bolts missing			X		
MW-16B	X							
MW-16C			2/2 bolts missing			X	\	
MW-17A	X							
MW-17B	X							
MW-17C	X							
MW-18A	X							
MW-19A			2/2 bolts missing			X		
MW-19B1			1/2 bolts missing			X		
MW-20A	X							
MW-20B			1/2 bolts missing			X		
MW-20C			1/2 bolts missing			X		
MW-21A	X							

NOTES:

WELLHEAD INSPECTION CHECKLIST

Client: RARE
Date: 11/23/15
Site Address: 941 McHenry Ave Modesto, CA
Job Number: 151123-ET1
Technician: ET

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-22A	X							
MW-23A			2/2 bolts missing			X		
MW-24B	\		1/2 bolts missing			X		
MW-25B	X							
MW-26B			1/2 bolts missing			X		
MW-27B			2/2 bolts missing			X		
MW-28B			1/2 tabs broken			X		
MW-29B	X							
MW-30A	X							
MW-30B	X							
MW-31A	X							
MW-32B			1/2 bolts missing			X		
MW-32C			1/2 bolts missing			X		
MW-33B	X							
MW-34B	X							
MW-35B	X							

NOTES:

WELLHEAD INSPECTION CHECKLIST

Client RARE Date 11/23/15

Site Address 941 McHenry Ave Modesto, CA

Job Number 151123-ET1 Technician ET

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
EW-01R	X							
EW-02	X							

NOTES:

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME 941 McHenry Ave

PROJECT NUMBER 151123-ETI

EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
Myron Ultra Meter	621860	11/23/15 0330	pH 10 7 4	10 7.02 4.01	✓	13°C	SJ
|	|	|	Cond 3900	3909	✓	13°C	SJ
|	|	|	ORP 246	245	✓	13°C	SJ

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151209-ET1	Client: RORB
Sampler: ET	Start Date: 12/9/15
Well I.D.: MW-03A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 93.40	Depth to Water: 50.35
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other______

Flow Rate: ______________ Pump Depth: ______________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0905			Retrieved PDB For Sample					
0915			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 0910	Sampling Date: 12/9/15
Sample I.D.: MW-03A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

Blaine Tech Services, Inc. 1680 Rogers Ave., San Jose, CA 95112 (408) 573-0555

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151209-EF1	Client: RORE
Sampler: EF	Start Date: 12/9/15
Well I.D.: MW-04A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 88.36	Depth to Water: 50.00
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other____________

Flow Rate: ______________________ Pump Depth:______________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0805		Removed	PDB for	sample				
0815		Replaced	with	new	PDB			

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 0810	Sampling Date: 12/9/15
Sample I.D.: MW-04A	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

Blaine Tech Services, Inc. 1680 Rogers Ave., San Jose, CA 95112 (408) 573-0555

LOW FLOW WELL MONITORING DATA SHEET

Project #: 15RM-ET	Client: RARB
Sampler: ET	Start Date: 12/9/15
Well I.D.: MW-16C	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 235.31	Depth to Water: 52.39
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other______________

Flow Rate: ____________________________ Pump Depth:______________________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1901			Retrieved PDB for Sample					
1910			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1905	Sampling Date: 12/9/15
Sample I.D.: MW-16C	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 157209-ET1	Client: RORB
Sampler: ET	Start Date: 12/9/15
Well I.D.: MW-17B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 138.83	Depth to Water: 48.83
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________ Pump Depth: ____________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0830			Retrieved	PDB for	sample			
0840			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 0835	Sampling Date: 12/9/15
Sample I.D.: MW-17B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 150209-ET1	Client: RARE
Sampler: ET	Start Date: 12/9/15
Well I.D.: MW-20A	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 85.69	Depth to Water: 50.11
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other________

Flow Rate: ____________________ Pump Depth: ____________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1025			Removed PDB for Sample					
1035			Replaced with new PDB					

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 1030	Sampling Date: 12/9/15
Sample I.D.: MW-20A	Laboratory: ERA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151209-ET1	Client: RORB
Sampler: RT	Start Date: 12/9/15
Well I.D.: MW-25B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 155.12	Depth to Water: 51.30
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other______

Flow Rate: ______________ Pump Depth: ______________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0925			Retrieve	PDB for	Sample			
0935			Replace	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: —
Sampling Time: 0930	Sampling Date: 12/9/15
Sample I.D.: MW-25B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151219-EI1	Client: RORE
Sampler: RT	Start Date: 12/9/15
Well I.D.: MW-32B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 153.00	Depth to Water: 51.36
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other______

Flow Rate: ______ Pump Depth: ______

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0945				Removed	PDB for	Sample		
0955				Replaced with	new	PDB		

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 0950	Sampling Date: 12/9/15
Sample I.D.: MW-32B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

Blaine Tech Services, Inc. 1680 Rogers Ave., San Jose, CA 95112 (408) 573-0555

LOW FLOW WELL MONITORING DATA SHEET

Project #: 151209-ET7	Client: RORB
Sampler: ET	Start Date: 12/9/15
Well I.D.: MW-35B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 162.32	Depth to Water: 48.70
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type:

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other______________

Flow Rate: ______________________ Pump Depth:______________________

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0850			Retrieved	PDB for sample				
0900			Replaced	with new	PDB			

Did well dewater? Yes No	Amount actually evacuated: –
Sampling Time: 0855	Sampling Date: 12/9/15
Sample I.D.: MW-35B	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 151209-EJ1

CLIENT: RORE, Inc.

SITE: Modesto Superfund Site
941 McHenry Ave.
Modesto, CA

LAB: **EPA Lab Region 9** | DHS #

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Lab Case Number: R15S40

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL	CONTAINERS TYPE	C = COMPOSITE ALL CONTAINERS		VOCs (524.2)							ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-04A	12/9/15	0810	W	3	VOAs			X										
MW-17B	12/9/15	0835	W	3	VOAs			X										
MW-35B	12/9/15	0855	W	3	VOAs			X										
MW-03A	12/9/15	0910	W	3	VOAs			X										
MW-25B	12/9/15	0930	W	3	VOAs			X										
MW-32B	12/9/15	0950	W	3	VOAs			X										
MW-16C	12/9/15	1005	W	3	VOAs			X										
MW-20A	12/9/15	1030	W	3	VOAs			X										

SAMPLING COMPLETED — DATE 12/9/15 — TIME 1030 — SAMPLING PERFORMED BY E. Tanner

RESULTS NEEDED NO LATER THAN **As contracted**

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	12/9/15	1520			

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #
Fed Ex	12/9/15	15:30	

Appendix F

Operational History

Table F-1

SYSTEM MAINTENANCE AND MODIFICATIONS TO GROUNDWATER TREATMENT SYSTEM MODESTO SUPERFUND SITE

No.	Event	Start Date	End Date
1	Shut down for influent tank cleanout.	04-Oct-12	04-Oct-12
2	Shut down system to install Timemark at EW-02.	18-Oct-12	18-Oct-12
3	Shut down system to clean out stripper sump.	25-Oct-12	25-Oct-12
4	Changed bag filters.	01-Nov-12	01-Nov-12
5	Changed bag filters.	14-Nov-12	14-Nov-12
6	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
7	Changed bag filters.	29-Nov-12	29-Nov-12
8	Calibrated the sewer outfall flow meter. Changed bag filters.	11-Dec-12	11-Dec-12
9	Changed bag filters due to processing purge water from sampling event.	14-Dec-12	14-Dec-12
10	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
11	Changed bag filters.	03-Jan-13	03-Jan-13
12	GWTS media exchange of LGAC, VGAC, and IX vessels. Spent media removed from site by Baker Filtration.	09-Jan-13	09-Jan-13
13	Changed bag filters.	16-Jan-13	16-Jan-13
14	Primed and painted connex.	17-Jan-13	18-Jan-13
15	Changed bag filters.	30-Jan-13	30-Jan-13
16	LGAC manway gasket replaced and bag filters changed.	14-Feb-13	14-Feb-13
17	Air stripper tray gaskets replaced and the trays and sump were cleaned.	19-Feb-13	19-Feb-13
18	Changed bag filters.	28-Feb-13	28-Feb-13
19	VGAC inlet flange gasket replaced and bag filters chanted.	14-Mar-13	14-Mar-13
20	Changed bag filters.	04-Apr-13	04-Apr-13
21	Changed the two bag filters prior to the stripper.	15-Apr-13	15-Apr-13
22	Changed the bag filter at the stripper effluent.	25-Apr-13	25-Apr-13
23	Changed bag filters.	09-May-13	09-May-13
24	Installed motion detector flood lights.	23-May-13	23-May-13
25	Changed bag filters. Calibrated the sewer outfall flow meter.	30-May-13	30-May-13
26	Primary IX media exchange. Changed bag filters.	13-Jun-13	13-June-13
27	Cleaned out influent tank.	20-Jun-13	20-June-13
28	Changed bag filters.	27-Jun-13	27-June-13
29	Replaced timing relay on blower.	03-Jul-13	03-Jul-13
30	Changed bag filters.	11-Jul-13	11-Jul-13
31	Changed bag filters.	15-Jul-13	15-Jul-13
32	Changed bag filters.	19-Jul-13	19-Jul-13
33	Changed bag filters.	26-Jul-13	26-July-13
34	Changed bag filters. Replaced auto-sampler refrigerator.	02-Aug-13	02-Aug-13
35	Changed bag filters.	05-Aug-13	05-Aug-13
36	Changed bag filters.	08-Aug-13	08-Aug-13
37	Changed bag filters.	19-Aug-13	19-Aug-13
38	Changed bag filters.	22-Aug-13	22-Aug-13
30	Changed bag filters.	05-Sep-13	05-Sep-13
40	Changed bag filters.	17-Sep-13	17-Sep-13
41	Changed two bag filters. Vacuumed out influent tank and stripper sump. Air relief fittings tightened at pipeline after carbon and before IX vessel.	19-Sep-13	19-Sep-13
42	Changed bag filters. New clamps, gaskets, handles, and bolts installed at all three filter assembly locations.	27-Sep-13	27-Sep-13

Table F-1 (Continued)

No.	Event	Start Date	End Date
43	Changed bag filters.	03-Oct-13	03-Oct-13
44	Drained primary LGAC for media exchange.	09-Oct-13	09-Oct-13
45	GWTS media exchange of primary LGAC. Spent media removed from site by Baker Filtration.	10-Oct-13	10-Oct-13
46	Changed bag filters.	17-Oct-13	17-Oct-13
47	Changed bag filters.	28-Oct-13	28-Oct-13
48	Changed bag filters.	07-Nov-13	07-Nov-13
49	Changed bag filters.	14-Nov-13	14-Nov-13
50	Changed bag filters.	21-Nov-13	21-Nov-13
51	Changed bag filters.	26-Nov-13	26-Nov-13
52	Changed bag filters.	05-Dec-13	05-Dec-13
53	Changed bag filters.	12-Dec-13	12-Dec-13
54	Calibrated the sewer outfall meter.	19-Dec-13	19-Dec-13
55	GWTS media exchange of LGAC, VGAC, and IX vessels. Spent media removed by Baker Filtration. Changed bag filters.	20-Dec-13	20-Dec-13
56	Changed bag filters.	26-Dec-13	26-Dec-13
57	Changed bag filters.	30-Dec-13	30-Dec-13
58	Changed bag filters.	01-Jan-14	01-Jan-14
59	Changed bag filters.	16-Jan-14	16-Jan-14
60	Changed bag filters.	23-Jan-14	23-Jan-14
61	Changed bag filters.	30-Jan-14	30-Jan-14
62	Changed bag filters.	06-Feb-14	06-Feb-14
63	Changed pre-stripper bag filters only.	11-Feb-14	11-Feb-14
64	Changed bag filters.	13-Feb-14	13-Feb-14
65	Changed bag filters twice due to cloudy influent tank after shutting down to recalibrate pressure sensors.	20-Feb-14	20-Feb-14
66	Changed pre-stripper bag filters twice.	24-Feb-14	24-Feb-14
67	Changed bag filters.	26-Feb-14	26-Feb-14
68	Changed bag filters. Replaced GWTS VGAC flange, cleaned a rotometer, and calibrated pressure transmitters.	03-Mar-14	03-Mar-14
69	Changed bag filters.	05-Mar-14	05-Mar-14
70	Changed only three bag filters.	06-Mar-14	06-Mar-14
71	Changed only three bag filters.	10-Mar-14	10-Mar-14
72	Changed only three bag filters.	13-Mar-14	13-Mar-14
73	Changed bag filters.	20-Mar-14	20-Mar-14
74	Changed pre-stripper bag filters.	24-Mar-14	24-Mar-14
75	Changed only three bag filters.	28-Mar-14	28-Mar-14
76	Changed bag filters.	02-Apr-14	02-Apr-14
77	Changed pre-stripper bag filters.	07-Apr-14	07-Apr-14
78	Changed bag filters.	10-Apr-14	10-Apr-14
79	Changed bag filters.	17-Apr-14	17-Apr-14
80	Changed bag filters.	24-Apr-14	24-Apr-14
81	Changed bag filters.	01-May-14	01-May-14
82	Changed bag filters.	08-May-14	08-May-14
83	Changed bag filters.	15-May-14	15-May-14
84	GWTS media exchange of the primary LGAC and IX vessels. Spent media removed by Baker Filtration. Repaired outlet screen in vessel IX-2. Changed bag filters.	21-May-14	22-May-14
85	Changed bag filters.	27-May-14	27-May-14
86	Changed pre-stripper bag filters.	29-May-14	29-May-14

Table F-1 (Continued)

No.	Event	Start Date	End Date
87	Changed bag filters.	05-Jun-14	05-Jun-14
88	Changed bag filters.	12-Jun-14	12-Jun-14
89	Changed bag filters. Effluent meter calibration performed by Cooper Controls.	19-Jun-14	19-Jun-14
90	Changed bag filters.	29-Jun-14	29-Jun-14
91	Changed bag filters.	03-Jul-14	03-Jul-14
92	Changed pre-stripper bag filters.	09-Jul-14	09-Jul-14
93	Changed after-stripper bag filter.	10-Jul-14	10-Jul-14
94	Changed pre-stripper bag filters.	14-Jul-14	14-Jul-14
94	Changed bag filters. Installed a Y-strainer at effluent.	17-Jul-14	17-Jul-14
96	Changed pre-stripper bag filters.	21-Jul-14	21-Jul-14
97	Restarted EW-01R.	22 Jul-14	22-Jul-14
98	Changed bag filters.	24-Jul-14	24-Jul-14
99	Changed bag filters.	31-Jul-14	31-Jul-14
100	Changed bag filters.	07-Aug-14	07-Aug-14
101	Changed bag filters.	14-Aug-14	14-Aug-14
102	Changed bag filters.	21-Aug-14	21-Aug-14
103	Changed bag filters.	28-Aug-14	28-Aug-14
104	Changed bag filters. Removed defective isolation valve to IX vessels.	08-Sep-14	08-Sept-14
105	Changed bag filters. Installed new high pressure switch at LGAC influent.	18-Sep-14	18-Sep-14
106	Changed bag filters. Installed high pressure switch.	9-Oct-14	9-Oct-14
107	Repaired stripper effluent pipeline.	20-Oct-14	20-Oct-14
108	Changed bag filters.	30-Oct-14	30-Oct-14
109	GWTS media exchange of the primary LGAC vessel. Spent media removed by Baker Filtration. Changed bag filters.	13-Nov-14	13-Nov-14
110	Changed bag filters.	10-Dec-14	10-Dec-14
111	Pumped out EW-01R vault due to excessive rain.	12-Dec-14	12-Dec-14
112	Effluent meter calibration performed by Cooper Controls.	17-Dec-14	17-Dec-14
113	GWTS media exchange of VGAC and IX (primary only) vessels. Spent media removed by Baker Filtration. Removed unused GAC vessel for scrap.	24-Dec-14	24-Dec-14
114	Installed new auto dialer. Changed bag filters.	31-Dec-14	31-Dec-14
115	Changed bag filters. Cleaned out influent equalization tank. Recalibrated pressure sensors.	2-Jan-15	2-Jan-15
116	Changed bag filters.	8-Jan-15	8-Jan-15
117	Changed bag filters.	19-Jan-15	19-Jan-15
118	Changed bag filters. Repaired leak at sequestrant pump. Recalibrated pressure sensors.	21-Jan-15	21-Jan-15
119	Changed bag filters.	30-Jan-15	31-Jan-15
120	Changed bag filters.	3-Feb-15	3-Feb-15
121	Installed replacement pump and motor in EW-01R. Restarted EW-01R.	5-Feb-15	5-Feb-15
122	Changed bag filters and auto dialer programming corrected.	11-Feb-15	11-Feb-15
123	Balanced EW flows.	18-Feb-15	18-Feb-15
124	Inspected internals of IX secondary vessel.	26-Feb-15	26-Feb-15
125	Changed bag filters.	5-Mar-15	5-Mar-15
126	Changed bag filters.	25-Mar-15	25-Mar-15
127	Changed bag filters and repaired leak at IX transfer hose.	8-Apr-15	8-Apr-15
128	Changed bag filters and collected IX resin profile sample.	22-Apr-15	22-Apr-15
129	Changed bag filters.	30-Apr-15	30-Apr-15
130	Changed bag filters.	14-May-15	14-May-15
131	Changed bag filters and added sequestrant.	28-May-15	28-May-15

Table F-1 (Continued)

No.	Event	Start Date	End Date
132	GWTS media exchange of LGAC and IX (primary only) vessels. Spent media removed by Baker Filtration.	3-Jun-15	3-Jun-15
133	Replaced pressure gauges.	11-Jun-15	11-Jun-15
134	Performed effluent totalizer certification.	15-Jun-15	15-Jun-15
135	Changed bag filters.	19-Jun-15	19-Jun-15
136	Changed bag filters, added sequestrant, and collected IX resin sample.	8-Jul-15	8-Jul-15
137	Changed bag filters and fixed hose leak.	16-Jul-15	16-Jul-15
138	Added sequestrant.	23-Jul-15	23-Jul-15
139	Changed bag filters.	6-Aug-15	6-Aug-15
140	Changed bag filters, replaced pressure gauges, and collected IX resin profile sample.	11-Aug-15	11-Aug-15
141	Installed new pressure transmitter and calibrated pressure sensors for bag filter housing.	19-Aug-15	19-Aug-15
142	Changed bag filters and collected IX resin profile sample.	10-Sep-15	10-Sep-15
143	Installed air relief valves on LGAC vessels.	17-Sep-15	17-Sep-15
144	Changed bag filters and added sequestrant.	24-Sep-15	24-Sep-15
145	Lubed pumps and added sequestrant.	15-Oct-15	15-Oct-15
146	Changed bag filters.	22-Oct-15	22-Oct-15
147	Changed bag filters.	29-Oct-15	29-Oct-15
148	Changed bag filters and added sequestrant.	12-Nov-15	12-Nov-15
149	Changed bag filters.	19-Nov-15	19-Nov-15
150	GWTS media exchange of lead LGAC vessel. Spent media removed by Baker Filtration.	23-Nov-15	23-Nov-15
151	Added sequestrant.	30-Nov-15	30-Nov-15
152	Changed bag filters.	8-Dec-15	8-Dec-15
153	Cleared air stripper and performed effluent totalizer certification.	16-Dec-15	16-Dec-15
154	Changed bag filters and added sequestrant.	29-Dec-15	29-Dec-15

EW = extraction well
GAC = granular activated carbon
GWTS = groundwater treatment system
IX = ion exchange
LGAC = liquid phase granular activated carbon
VGAC = vapor phase granular activated carbon

Appendix G

Well Construction Details, Groundwater Elevations, Analytical Data, Historical PCE Information, and Mass Removed Data

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

Table G-3. Historical through Current Analytical Data included as Excel file on this CD.

Table G-1. Well Construction Details

Well No.	Casing Diameter (inches)	Boring Depth (feet bgs)	Screen Interval (feet bgs)	Top of Casing Elevation (feet msl)[a]
Groundwater Monitoring Wells				
MW-01A	4	101	91-101	91.61
MW-02A	4	96	86-96	90.88[b]
MW-03A	4	94	84-94	91.49[b]
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[b]
MW-07A	2	90	60-90	91.24
MW-08A	2	90	60-90	91.44
MW-09B	2	155	144-154	91.20 [b]
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[b]
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	2	162	152-162	90.65
MW-20C	2	235	225-235	90.79
MW-21A	2	102	90-100	91.75[c]
MW-22A	2	62	50-60	91.69[c]
MW-23A	2	102	89-99	90.26[c]
MW-24B	2	157	145-155	92.93[c]
MW-25B	2	157	145-155	91.78[c]
MW-26B	2	157	145-155	89.71[c]
MW-27B	2	157	145-155	89.34[c]
MW-28B	2	157	145-155	89.21[c]
MW-29B	2	157	145-155	89.74[c]
MW-30A	2	155	89-99	89.58[d]
MW-30B	2	156	145-155	89.57[d]
MW-31A	2	108	90-100	89.57[d]
MW-32B	2	240	145-155	91.75[d]
MW-32C	2	240	226-236	91.86[d]
MW-33B	2	160	150-160	91.34[d]
MW-34B	2	156	145-155	88.06[d]
MW-35B	2	175	159-169	89.33[d]
Groundwater Extraction Wells				
EW-01	5	115	65-95	89.54[d]
EW-01R	6	120	59-109	90.65[b]
EW-02	6	116	60.5-110.5	91.64[e]

Table G-1. (Continued)

Well No.	Casing Diameter (inches)	Boring Depth (feet bgs)	Screen Interval (feet bgs)	Top of Casing Elevation (feet msl)[a]
Soil Vapor Wells				
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
DP-1				91.44
DP-1A	1	40	28-29	
DP-1B	1	40	38-39	
DP-2			-	91.27
DP-2A	1	40	15-16	
DP-2B	1	40	34-35	
DP-3			-	91.86
DP-3A	1	40	19-20	
DP-3B	1	40	29-30	
DP-4			-	91.92
DP-4A	1	40	23-24	
DP-4B	1	40	38.5-39.5	
DP-5			-	91.27
DP-5A	2	37	15-16	
DP-5B	2	37	34-35	
DP-6			-	91.69
DP-6A	2	36	15-16	
DP-6B	2	36	34-35	

[a] Wells resurveyed in February 2003.
[b] Wells resurveyed in September 2006.
[c] Wells installed and surveyed in September 2011.
[d] Well installed between June and August 2013 and surveyed in September 2013.
[e] Well installed June 2012 and surveyed August 2012

bgs = below ground surface
msl = mean sea level

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

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[a]	NA	50.62
			89.14	Aug-00[a]	NA	50.34
			89.14	Nov-00[a]	NA	48.92
			89.14	Feb-01[a]	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[b]	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[a]	NA	50.48
			88.63	Aug-00[a]	NA	50.19
			88.63	Nov-00[a]	NA	48.80
			88.63	Feb-01[a]	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

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[b]	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[a]	NA	50.75
			88.42	Aug-00[a]	NA	50.12
			89.42	Nov-00[a]	NA	48.62
			88.42	Feb-01[a]	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[b]	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

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[a]	NA	50.15
			88.66	Aug-00[a]	NA	50.01
			88.66	Nov-00[a]	NA	48.11
			88.66	Feb-01[a]	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[b]	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

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[a]	NA	50.39
			90.61	Aug-00[a]	NA	50.45
			90.61	Nov-00[a]	NA	48.41
			90.61	Feb-01[a]	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[b]	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[a]	NA	50.23
			89.98	Aug-00[a]	NA	50.21
			89.98	Nov-00[a]	NA	47.96
			89.98	Feb-01[a]	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

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[b]	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[a]	NA	50.86
			91.23	Aug-00[a]	NA	51.06
			91.23	Nov-00[a]	NA	49.24
			91.23	Feb-01[a]	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[b]	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

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[a]	NA	50.24
			91.19	Aug-00[a]	NA	48.38
			91.19	Nov-00[a]	NA	47.72
			91.19	Feb-01[a]	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

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[b]	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[a]	NA	49.66
			90.47	Aug-00[a]	NA	50.67
			90.47	Nov-00[a]	NA	46.94
			90.47	Feb-01[a]	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

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[b]	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[a]	NA	50.83
			89.91	Aug-00[a]	NA	50.64
			89.91	Nov-00[a]	NA	49.38
			89.91	Feb-01[a]	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

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[b]	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[a]	NA	50.01
			91.17	Aug-00[a]	NA	49.45
			91.17	Nov-00[a]	NA	47.28
			91.17	Feb-01[a]	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[b]	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

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[a]	NA	49.21
			89.33	Aug-00[a]	NA	49.30
			89.33	Nov-00[a]	NA	46.88
			89.33	Feb-01[a]	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[b]	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[a]	NA	50.19
			89.81	Aug-00[a]	NA	49.93
			89.81	Nov-00[a]	NA	48.39
			89.81	Feb-01[a]	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

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[b]	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[a]	NA	50.80
			91.75	Aug-00[a]	NA	50.40
			91.75	Nov-00[a]	NA	48.76
			91.75	Feb-01[a]	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[b]	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

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

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[3]	114	59-109	90.65	Aug-06	41.80	48.85
			90.65	Aug-06[b]	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:

[1]Wells re-surveyed in May 2003.

[2]Wells re-surveyed in September 2006

[3]EW-1R is the replacement extraction well. It was installed in August 2006 and started on August 24,

[a]Historical data from Ecology and Environment

[b]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

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)		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
				May-13	41.70	48.95
				Sep-13	43.05	47.60
				Dec-13	43.43	47.22
				Feb-14	43.25	47.40
				Apr-14	42.91	47.74
				Jan-15	46.18	43.36
				Jun-15	40.30	49.24
				Oct-15	53.21	37.44
				Nov-15	54.25	36.40
EW-02			91.64	Dec-12	53.07	38.57
				Mar-13	NA	NA
				May-13	NA	NA
				Sep-13	58.70	32.94
				Dec-13	62.30	29.34
				Feb-14	65.48	26.16
				Apr-14	65.29	26.35
				Jan-15	64.83	26.81
				Jun-15	56.27	35.37
				Oct-15	58.16	33.48
				Nov-15	59.55	32.09
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

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Dec-12	42.94	48.67
				Mar-13	41.89	49.72
				May-13	41.73	49.88
				Sep-13	43.06	48.55
				Dec-13	43.39	48.22
				Feb-14	43.16	48.45
				Apr-14	42.82	48.79
				Sep-14	46.00	45.61
				Jan-15	46.11	45.50
				Jun-15	46.68	44.93
				Oct-15	48.57	43.04
				Nov-15	48.94	42.67
MW-02A	96	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
				May-13	40.95	49.93
				Sep-13	42.28	48.60
				Dec-13	42.59	48.29
				Feb-14	42.40	48.48
				Apr-14	42.08	48.80
				Sep-14	45.09	45.79
				Jan-15	45.21	45.67
				Jun-15	45.80	45.08
				Oct-15	47.55	43.33
				Nov-15	48.09	42.79
MW-03A	94	84 - 94	91.49	Mar-10	46.77	44.72
				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

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				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
				May-13	42.53	48.96
				Sep-13	43.94	47.55
				Dec-13	44.25	47.24
				Feb-14	44.03	47.46
				Apr-14	43.68	47.81
				Sep-14	47.38	44.11
				Jan-15	47.03	44.46
				Jun-15	47.89	43.60
				Oct-15	49.20	42.29
				Nov-15	50.17	41.32
MW-04A	89	78 - 88	91.13	Mar-10	45.39	45.74
				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
				May-13	43.20	47.93
				Sep-13	44.45	46.68
				Dec-13	44.89	46.24
				Feb-14	44.71	46.42
				Apr-14	44.20	46.93
				Sep-14	47.03	44.10
				Jan-15	47.28	43.85
				Jun-15	47.70	43.43
				Oct-15	49.53	41.60
				Nov-15	49.95	41.18
MW-04B	154	144 - 154	91.11	Mar-10	44.70	46.41
				May-10	43.82	47.29
				Aug-10	45.31	45.80

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				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
				May-13	42.35	48.76
				Sep-13	44.31	46.80
				Dec-13	44.16	46.95
				Feb-14	43.77	47.34
				Apr-14	43.40	47.71
				Sep-14	47.56	43.55
				Jan-15	46.81	44.30
				Jun-15	47.53	43.58
				Oct-15	49.61	41.50
				Nov-15	49.67	41.44
MW-04C	237	227 - 237	91.25	Mar-10	43.15	48.10
				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
				May-13	43.88	47.37
				Sep-13	48.05	43.20
				Dec-13	43.99	47.26
				Feb-14	43.86	47.39
				Apr-14	44.57	46.68
				Sep-14	57.40	33.85
				Jan-15	47.05	44.20
				Jun-15	51.38	39.87
				Oct-15	53.30	37.95

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Nov-15	50.64	40.61
MW-05A	90	60 - 90	90.74	Mar-10	44.43	46.31
				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
				May-13	41.17	49.57
				Sep-13	42.45	48.29
				Dec-13	42.91	47.83
				Feb-14	42.71	48.03
				Apr-14	42.32	48.42
				Sep-14	45.38	45.36
				Jan-15	45.61	45.13
				Jun-15	46.18	44.56
				Oct-15	47.95	42.79
				Nov-15	48.54	42.20
MW-06A	90	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
				May-13	40.65	49.07
				Sep-13	41.94	47.78
				Dec-13	42.54	47.18
				Feb-14	42.36	47.36
				Apr-14	41.83	47.89

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Sep-14	44.60	45.12
				Jan-15	45.06	44.66
				Jun-15	45.34	44.38
				Oct-15	47.10	42.62
				Nov-15	47.70	42.02
MW-07A	90	60 - 90	91.24	Mar-10	43.89	47.35
				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
				May-13	40.81	50.43
				Sep-13	41.86	49.38
				Dec-13	42.35	48.89
				Feb-14	42.21	49.03
				Apr-14	41.90	49.34
				Sep-14	44.48	46.76
				Jan-15	45.01	46.23
				Jun-15	45.42	45.82
				Oct-15	47.21	44.03
				Nov-15	47.33	43.91
MW-08A	90	60 - 90	91.44	Mar-10	45.39	46.05
				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
				May-13	42.10	49.34

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Sep-13	43.36	48.08
				Dec-13	43.80	47.64
				Feb-14	44.21	47.23
				Apr-14	43.25	48.19
				Sep-14	46.27	45.17
				Jan-15	46.56	44.88
				Jun-15	47.05	44.39
				Oct-15	48.83	42.61
				Nov-15	49.47	41.97
MW-09B	155	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
				May-13	42.15	49.04
				Sep-13	44.09	47.10
				Dec-13	43.80	47.39
				Feb-14	43.49	47.70
				Apr-14	43.23	47.96
				Sep-14	47.30	43.89
				Jan-15	46.59	44.60
				Jun-15	47.26	43.93
				Oct-15	49.38	41.82
				Nov-15	49.50	41.70
MW-10A	91	60 - 89	90.48	Mar-10	44.68	45.80
				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

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Aug-12	41.62	48.86
				Dec-12	43.37	47.11
				Mar-13	42.27	48.21
				May-13	42.04	48.44
				Sep-13	43.45	47.03
				Dec-13	44.08	46.40
				Feb-14	43.75	46.73
				Apr-14	43.22	47.26
				Sep-14	46.32	44.16
				Jan-15	46.52	43.96
				Jun-15	46.74	43.74
				Oct-15	48.62	41.86
				Nov-15	49.22	41.26
MW-10B	160	153 - 163	90.21	Mar-10	44.01	46.20
				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
				May-13	41.65	48.56
				Sep-13	43.33	46.88
				Dec-13	43.63	46.58
				Feb-14	43.20	47.01
				Apr-14	42.77	47.44
				Sep-14	46.75	43.46
				Jan-15	46.22	43.99
				Jun-15	46.43	43.78
				Oct-15	48.80	41.41
				Nov-15	48.95	41.26
MW-10C	230	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

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				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
				May-13	43.60	46.90
				Sep-13	47.94	42.56
				Dec-13	43.83	46.67
				Feb-14	43.71	46.79
				Apr-14	44.26	46.24
				Sep-14	54.02	36.48
				Jan-15	46.84	43.66
				Jun-15	50.90	39.60
				Oct-15	52.40	38.10
				Nov-15	50.10	40.40
MW-11A	92	70 - 90	89.91	Mar-10	42.15	47.76
				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
				May-13	39.10	50.81
				Sep-13	40.17	49.74
				Dec-13	40.59	49.32
				Feb-14	40.50	49.41
				Apr-14	40.22	49.69
				Sep-14	42.76	47.15
				Jan-15	43.22	46.69
				Jun-15	43.64	46.27
				Oct-15	45.32	44.59
				Nov-15	45.78	44.13
MW-12A	99	87 - 97	91.15	Mar-10	45.17	45.98
				May-10	44.07	47.08

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				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
				May-13	42.45	48.70
				Sep-13	44.17	46.98
				Dec-13	44.43	46.72
				Feb-14	44.05	47.10
				Apr-14	43.60	47.55
				Sep-14	47.20	43.95
				Jan-15	47.16	43.99
				Jun-15	47.42	43.73
				Oct-15	49.55	41.60
				Nov-15	49.75	41.40
MW-13A	99	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
				May-13	40.57	48.70
				Sep-13	41.85	47.42
				Dec-13	42.55	46.72
				Feb-14	42.39	46.88
				Apr-14	41.85	47.42
				Sep-14	44.53	44.74
				Jan-15	45.07	44.20
				Jun-15	45.16	44.11

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Oct-15	46.91	42.36
				Nov-15	47.45	41.82
MW-14A	92	70 - 90	89.79	Mar-10	43.04	46.75
				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
				May-13	40.06	49.73
				Sep-13	41.22	48.57
				Dec-13	41.77	48.02
				Feb-14	41.65	48.14
				Apr-14	41.23	48.56
				Sep-14	43.86	45.93
				Jan-15	44.32	45.47
				Jun-15	44.71	45.08
				Oct-15	46.38	43.41
				Nov-15	47.05	42.74
MW-15A	102	80 - 100	91.76	Mar-10	44.82	46.94
				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
				May-13	41.93	49.83
				Sep-13	43.27	48.49
				Dec-13	43.58	48.18
				Feb-14	43.34	48.42

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Apr-14	43.00	48.76
				Sep-14	46.27	45.49
				Jan-15	46.31	45.45
				Jun-15	46.84	44.92
				Oct-15	48.81	42.95
				Nov-15	49.26	42.50
MW-16A	86	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
				May-13	44.22	47.67
				Sep-13	46.69	45.20
				Dec-13	46.59	45.30
				Feb-14	45.89	46.00
				Apr-14	45.36	46.53
				Sep-14	49.97	41.92
				Jan-15	49.05	42.84
				Jun-15	49.21	42.68
				Oct-15	51.76	40.13
				Nov-15	51.76	40.13
MW-16B	139	129 - 139	91.82	Mar-10	46.48	45.34
				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

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				May-13	44.18	47.64
				Sep-13	46.66	45.16
				Dec-13	46.54	45.28
				Feb-14	45.84	45.98
				Apr-14	45.31	46.51
				Sep-14	49.94	41.88
				Jan-15	49.01	42.81
				Jun-15	49.20	42.62
				Oct-15	51.75	40.07
				Nov-15	51.73	40.09
MW-16C	236	226 - 236	91.64	Mar-10	45.51	46.13
				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
				May-13	45.65	45.99
				Sep-13	50.20	41.44
				Dec-13	46.79	44.85
				Feb-14	45.87	45.77
				Apr-14	46.40	45.24
				Sep-14	55.89	35.75
				Jan-15	49.41	42.23
				Jun-15	51.90	39.74
				Oct-15	55.42	36.22
				Nov-15	52.73	38.91
MW-17A	88	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

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Apr-12	41.04	48.60
				Aug-12	41.10	48.54
				Dec-12	43.07	46.57
				Mar-13	41.92	47.72
				May-13	41.58	48.06
				Sep-13	43.17	46.47
				Dec-13	43.90	45.74
				Feb-14	43.53	46.11
				Apr-14	42.90	46.74
				Sep-14	45.95	43.69
				Jan-15	46.31	43.33
				Jun-15	46.17	43.47
				Oct-15	48.08	41.56
				Nov-15	48.77	40.87
MW-17B	140	129 - 139	89.69	Mar-10	44.21	45.48
				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
				May-13	41.67	48.02
				Sep-13	43.68	46.01
				Dec-13	43.96	45.73
				Feb-14	43.49	46.20
				Apr-14	42.97	46.72
				Sep-14	46.57	43.12
				Jan-15	46.40	43.29
				Jun-15	46.49	43.20
				Oct-15	48.61	41.08
				Nov-15	48.90	40.79
MW-17C	232	222 - 232	89.76	Mar-10	43.06	46.70
				May-10	44.10	45.66
				Aug-10	51.62	38.14
				Nov-10	45.08	44.68
				Mar-11	42.36	47.40

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				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
				May-13	43.60	46.16
				Sep-13	48.60	41.16
				Dec-13	44.23	45.53
				Feb-14	44.06	45.70
				Apr-14	44.55	45.21
				Sep-14	52.17	37.59
				Jan-15	47.42	42.34
				Jun-15	50.48	39.28
				Oct-15	52.72	37.04
				Nov-15	50.22	39.54
MW-18A	66	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
				May-13	41.90	48.24
				Sep-13	43.43	46.71
				Dec-13	44.10	46.04
				Feb-14	43.62	46.52
				Apr-14	43.11	47.03
				Sep-14	46.36	43.78
				Jan-15	46.62	43.52
				Jun-15	46.60	43.54
				Oct-15	48.52	41.62
				Nov-15	49.11	41.03
MW-19A	101	91 - 101	91.22	Mar-10	45.43	45.79

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				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
				May-13	42.96	48.26
				Sep-13	45.04	46.18
				Dec-13	45.08	46.14
				Feb-14	44.56	46.66
				Apr-14	44.14	47.08
				Sep-14	48.35	42.87
				Jan-15	47.84	43.38
				Jun-15	48.03	43.19
				Oct-15	50.43	40.79
				Nov-15	50.60	40.62
MW-19B1	147	137 - 147	91.08	Mar-10	45.55	45.53
				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
				May-13	43.45	47.63
				Sep-13	45.90	45.18
				Dec-13	45.50	45.58
				Feb-14	44.88	46.20
				Apr-14	44.52	46.56
				Sep-14	49.31	41.77
				Jan-15	48.12	42.96

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Jun-15	48.74	42.34
				Oct-15	51.12	39.96
				Nov-15	51.04	40.04
MW-20A	86	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
				May-13	42.70	48.00
				Sep-13	44.47	46.23
				Dec-13	44.90	45.80
				Feb-14	44.39	46.31
				Apr-14	43.88	46.82
				Sep-14	47.57	43.13
				Jan-15	47.41	43.29
				Jun-15	47.55	43.15
				Oct-15	49.79	40.91
				Nov-15	50.10	40.60
MW-20B	162	152 - 162	90.65	Mar-10	45.19	45.46
				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
				May-13	42.85	47.80
				Sep-13	45.05	45.60
				Dec-13	45.01	45.64

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Feb-14	44.43	46.22
				Apr-14	43.94	46.71
				Sep-14	48.28	42.37
				Jan-15	47.43	43.22
				Jun-15	47.88	42.77
				Oct-15	50.19	40.46
				Nov-15	50.26	40.39
MW-20C	235	225 - 235	90.79	Mar-10	43.84	46.95
				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
				May-13	44.24	46.55
				Sep-13	48.59	42.20
				Dec-13	45.08	45.71
				Feb-14	44.35	46.44
				Apr-14	45.14	45.65
				Sep-14	55.00	35.79
				Jan-15	47.91	42.88
				Jun-15	51.09	39.70
				Oct-15	53.35	37.44
				Nov-15	51.15	39.64
MW-21A	102	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
				May-13	44.17	47.58
				Sep-13	46.47	45.28
				Dec-13	46.28	45.47
				Feb-14	45.81	45.94
				Apr-14	45.60	46.15
				Sep-14	49.65	42.10

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Jan-15	48.74	43.01
				Jun-15	49.28	42.47
				Oct-15	51.91	39.84
				Nov-15	51.37	40.38
MW-22A	62	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
				May-13	44.11	47.58
				Sep-13	46.29	45.40
				Dec-13	46.52	45.17
				Feb-14	45.93	45.76
				Apr-14	45.28	46.41
				Sep-14	49.45	42.24
				Jan-15	48.89	42.80
				Jun-15	48.92	42.77
				Oct-15	46.81	44.88
				Nov-15	51.33	40.36
MW-23A	102	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
				May-13	40.35	49.91
				Sep-13	41.48	48.78
				Dec-13	41.80	48.46
				Feb-14	41.76	48.50
				Apr-14	41.45	48.81
				Sep-14	44.08	46.18
				Jan-15	44.30	45.96
				Jun-15	44.95	45.31
				Oct-15	51.52	38.74
				Nov-15	47.17	43.09
MW-24B	157	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

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				May-13	44.81	48.12
				Sep-13	46.91	46.02
				Dec-13	47.00	45.93
				Feb-14	46.47	46.46
				Apr-14	45.99	46.94
				Sep-14	49.87	43.06
				Jan-15	49.41	43.52
				Jun-15	49.75	43.18
				Oct-15	52.02	40.91
				Nov-15	52.17	40.76
MW-25B	157	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
				May-13	44.14	47.64
				Sep-13	46.40	45.38
				Dec-13	46.53	45.25
				Feb-14	45.81	45.97
				Apr-14	45.31	46.47
				Sep-14	48.86	42.92
				Jan-15	48.72	43.06
				Jun-15	49.16	42.62
				Oct-15	51.38	40.40
				Nov-15	51.56	40.22
MW-26B	157	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
				May-13	41.97	47.74
				Sep-13	44.18	45.53
				Dec-13	44.46	45.25
				Feb-14	43.87	45.84
				Apr-14	43.25	46.46
				Sep-14	47.07	42.64
				Jan-15	46.83	42.88
				Jun-15	46.76	42.95
				Oct-15	48.98	40.73
				Nov-15	49.27	40.44

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
MW-27B	157	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
				May-13	41.42	47.92
				Sep-13	43.62	45.72
				Dec-13	43.93	45.41
				Feb-14	43.41	45.93
				Apr-14	42.82	46.52
				Sep-14	46.41	42.93
				Jan-15	46.21	43.13
				Jun-15	46.21	43.13
				Oct-15	48.32	41.02
				Nov-15	48.62	40.72
MW-28B	157	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
				May-13	40.60	48.61
				Sep-13	42.40	46.81
				Dec-13	42.61	46.60
				Feb-14	42.36	46.85
				Apr-14	41.89	47.32
				Sep-14	45.21	44.00
				Jan-15	45.15	44.06
				Jun-15	45.44	43.77
				Oct-15	47.39	41.82
				Nov-15	47.69	41.52
MW-29B	157	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
				May-13	40.60	49.14
				Sep-13	42.33	47.41
				Dec-13	42.50	47.24
				Feb-14	42.26	47.48

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Apr-14	41.84	47.90
				Sep-14	45.20	44.54
				Jan-15	45.06	44.68
				Jun-15	45.44	44.30
				Oct-15	47.44	42.30
				Nov-15	47.64	42.10
MW-30A	155	89 - 99	89.58	Sep-13	39.85	49.73
				Dec-13	40.06	49.52
				Feb-14	40.04	49.54
				Apr-14	39.72	49.86
				Sep-14	42.34	47.24
				Jan-15	42.64	46.94
				Oct-15	44.79	44.79
				Nov-15	45.13	44.45
MW-30B	156	145 - 155	89.57	Sep-13	40.73	48.84
				Dec-13	40.01	49.56
				Feb-14	39.97	49.60
				Apr-14	39.89	49.68
				Sep-14	43.44	46.13
				Jan-15	42.69	46.88
				Jun-15	43.85	45.72
				Oct-15	45.58	43.99
				Nov-15	45.40	44.17
MW-31A	108	90 - 100	89.57	Sep-13	40.60	48.97
				Dec-13	41.33	48.24
				Feb-14	41.06	48.51
				Apr-14	40.93	48.64
				Sep-14	42.12	47.45
				Jan-15	43.85	45.72
				Jun-15	44.03	45.54
				Oct-15	46.18	43.39
				Nov-15	46.07	43.50
MW-32B	240	145 - 155	91.75	Sep-13	46.70	45.05
				Dec-13	46.25	45.50
				Feb-14	45.51	46.24
				Apr-14	44.94	46.81
				Sep-14	49.92	41.83
				Jan-15	48.67	43.08
				Jun-15	48.91	42.84
				Oct-15	51.23	40.52
				Nov-15	51.43	40.32
MW-32C	240	226 - 236	91.86	Sep-13	51.00	40.86

TABLE G-2(b)
GROUNDWATER MONITORING WELL WATER TABLE ELEVATION
MODESTO GROUNDWATER SUPERFUND SITE

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)
				Dec-13	47.00	44.86
				Feb-14	45.91	45.95
				Apr-14	45.97	45.89
				Sep-14	55.04	36.82
				Jan-15	49.33	42.53
				Jun-15	51.43	40.43
				Oct-15	52.08	39.78
				Nov-15	52.12	39.74
MW-33B	160	150 - 160	91.34	Sep-13	46.70	44.64
				Dec-13	46.35	44.99
				Feb-14	45.51	45.83
				Apr-14	44.87	46.47
				Sep-14	49.79	41.55
				Jan-15	--	--
				Oct-15	51.31	40.03
				Nov-15	51.37	39.97
MW-34B	156	145 - 155	88.06	Sep-13	39.95	48.11
				Dec-13	40.57	47.49
				Feb-14	40.00	48.06
				Apr-14	39.82	48.24
				Sep-14	42.99	45.07
				Jan-15	43.00	45.06
				Jun-15	43.35	44.71
				Oct-15	45.12	42.94
				Nov-15	45.30	42.76
MW-35B	175	159 - 169	89.33	Sep-13	49.05	40.28
				Dec-13	43.37	45.96
				Feb-14	42.81	46.52
				Apr-14	42.38	46.95
				Sep-14	45.82	43.51
				Jan-15	45.74	43.59
				Jun-15	45.84	43.49
				Oct-15	48.09	41.24
				Nov-15	47.70	41.63

--	not measured
ft bgs	feet below ground surface
MSL	mean sea level
MW	monitoring well
NA	not available
TOC	top of casing

FIGURE G-4(a)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

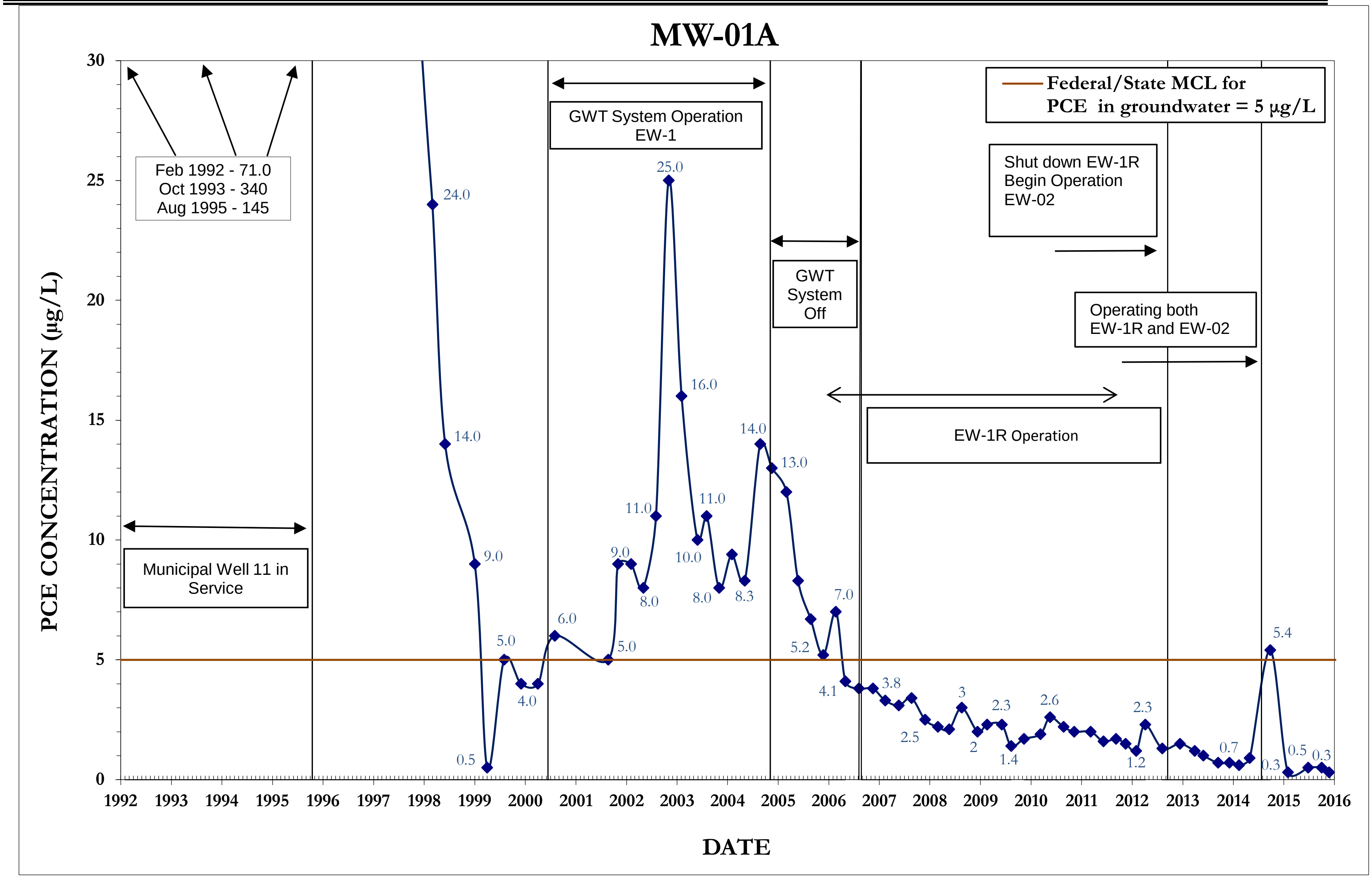


FIGURE G-4(b)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

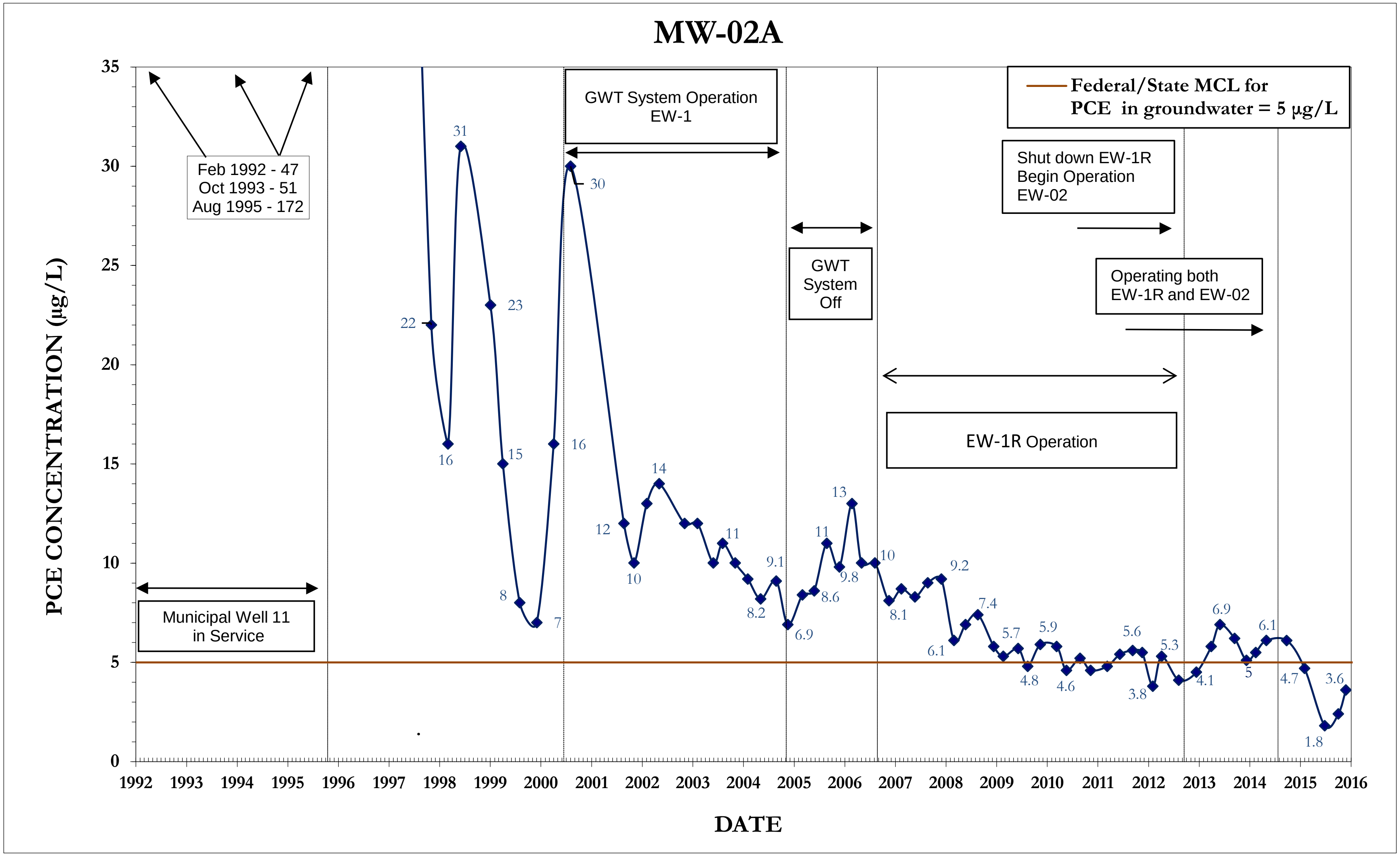


FIGURE G-4(c)

**HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA**

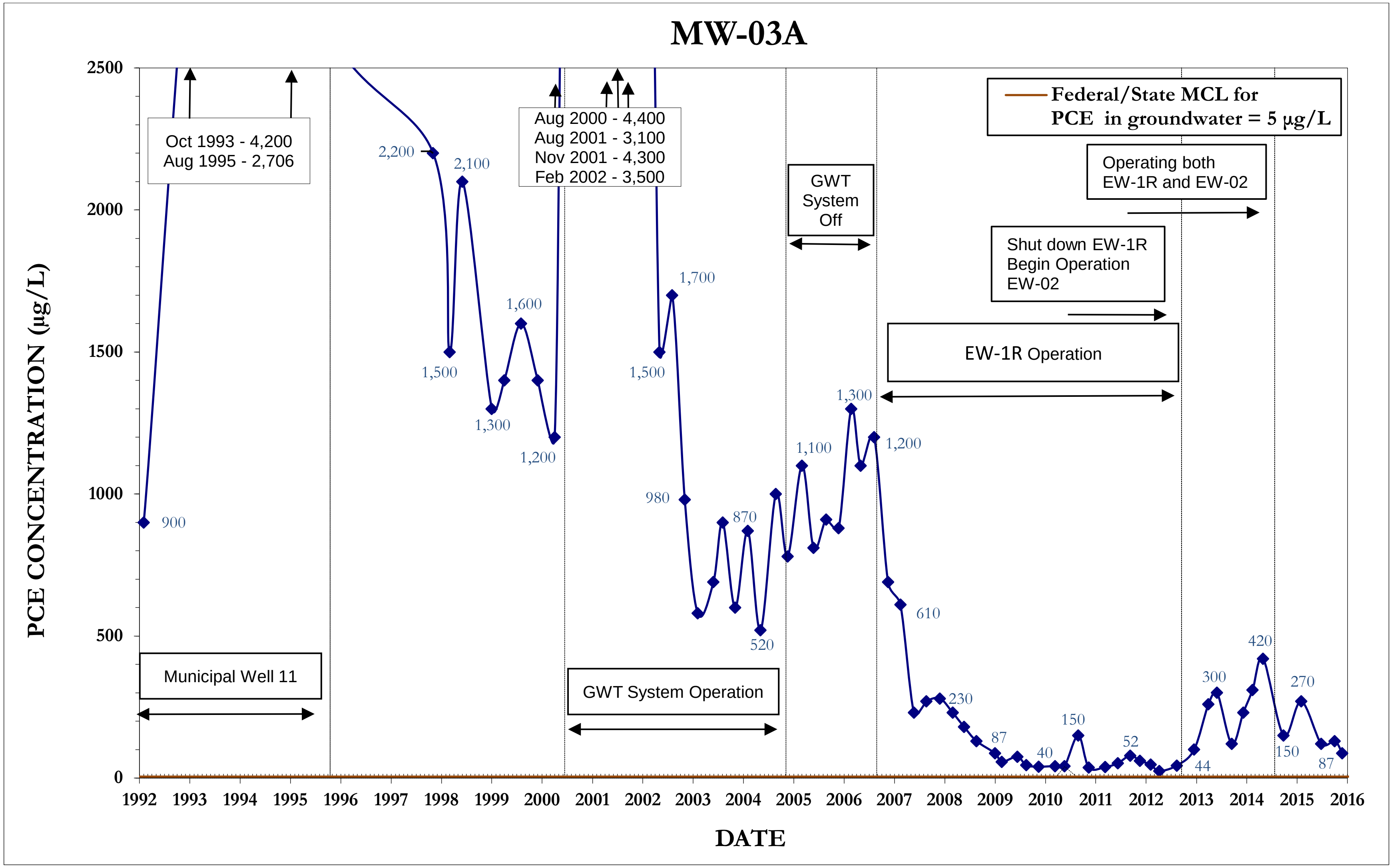


FIGURE G-4(d)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

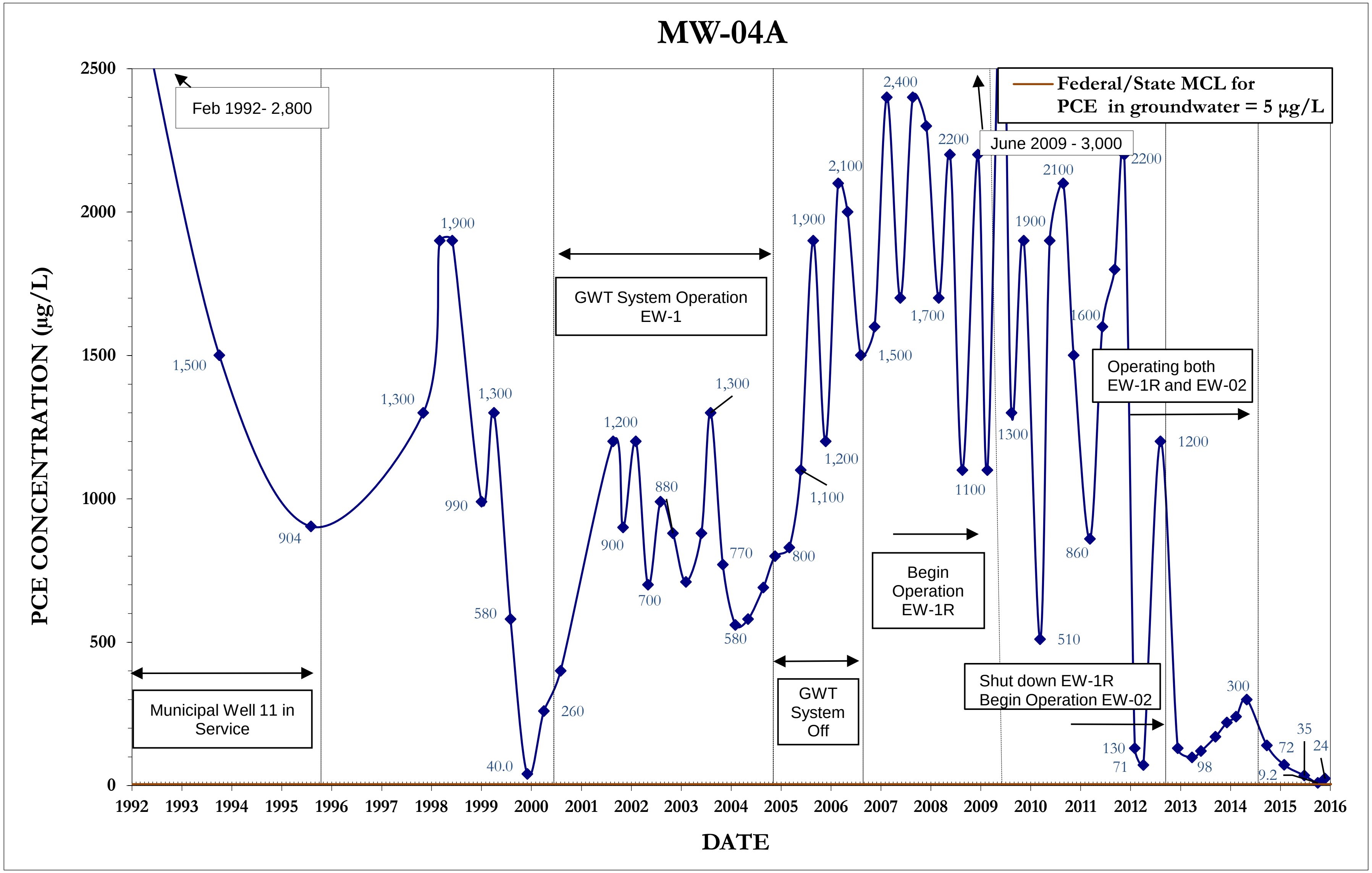


FIGURE G-4(e)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

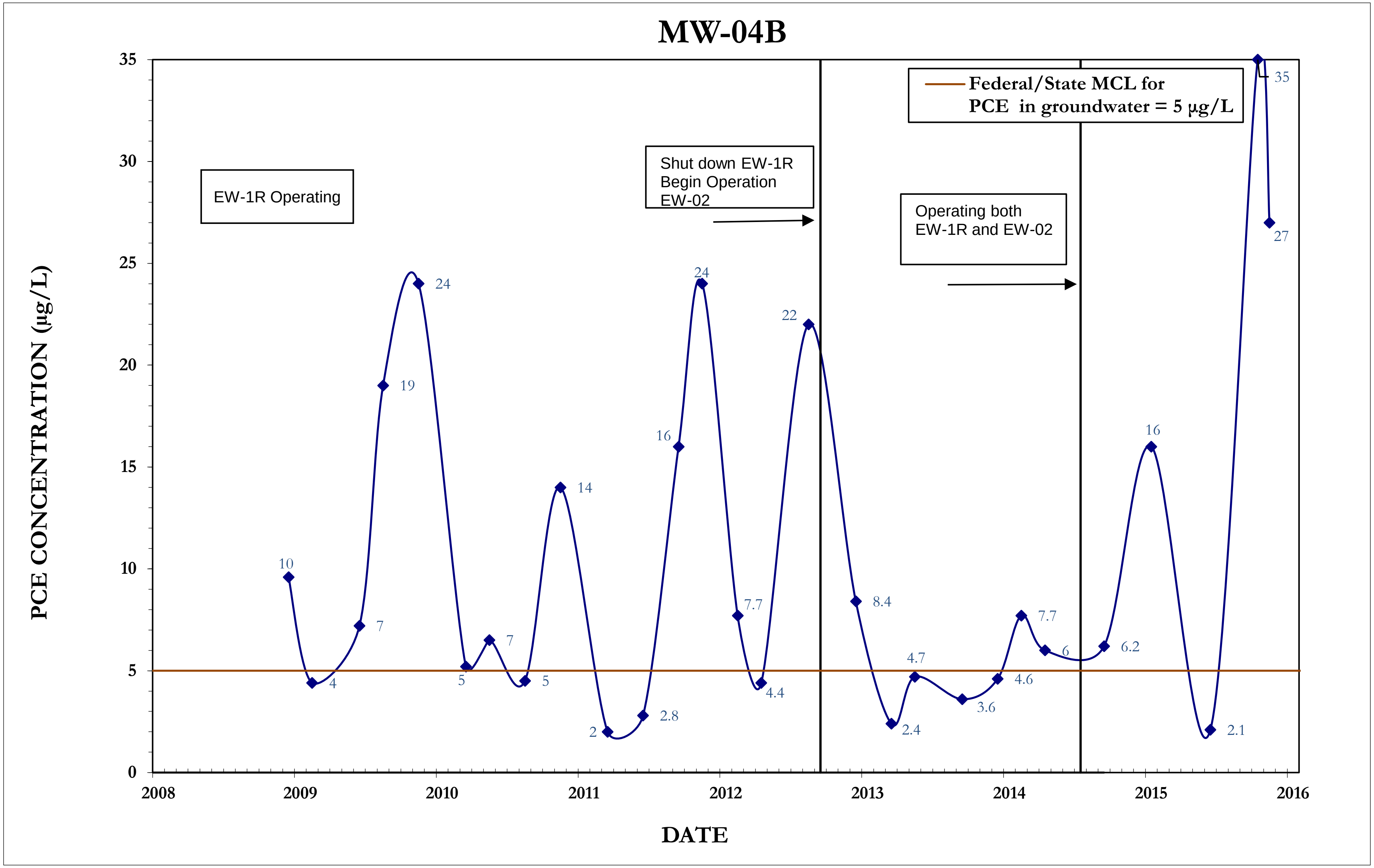


FIGURE G-4(f)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

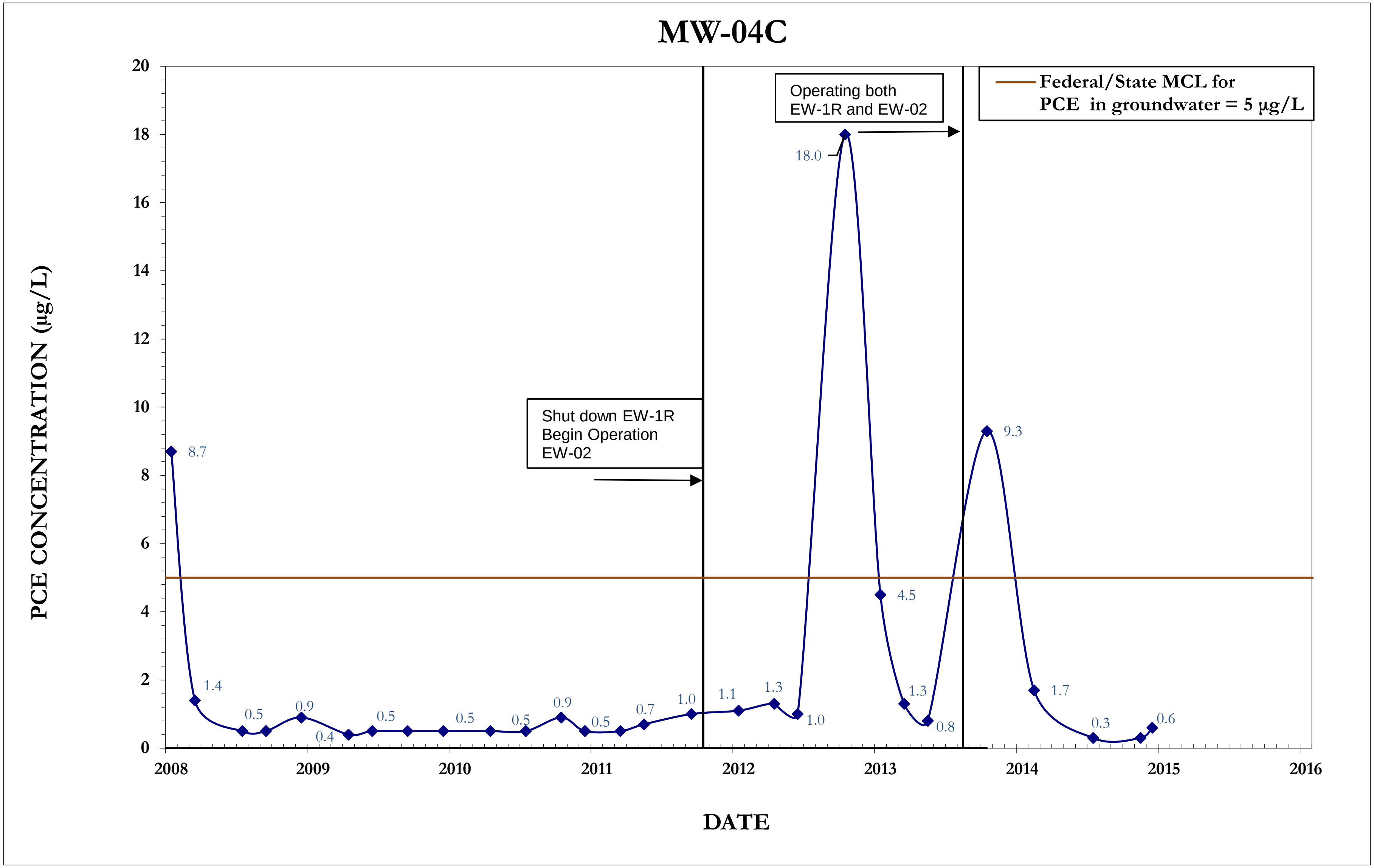


FIGURE G-4(g)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

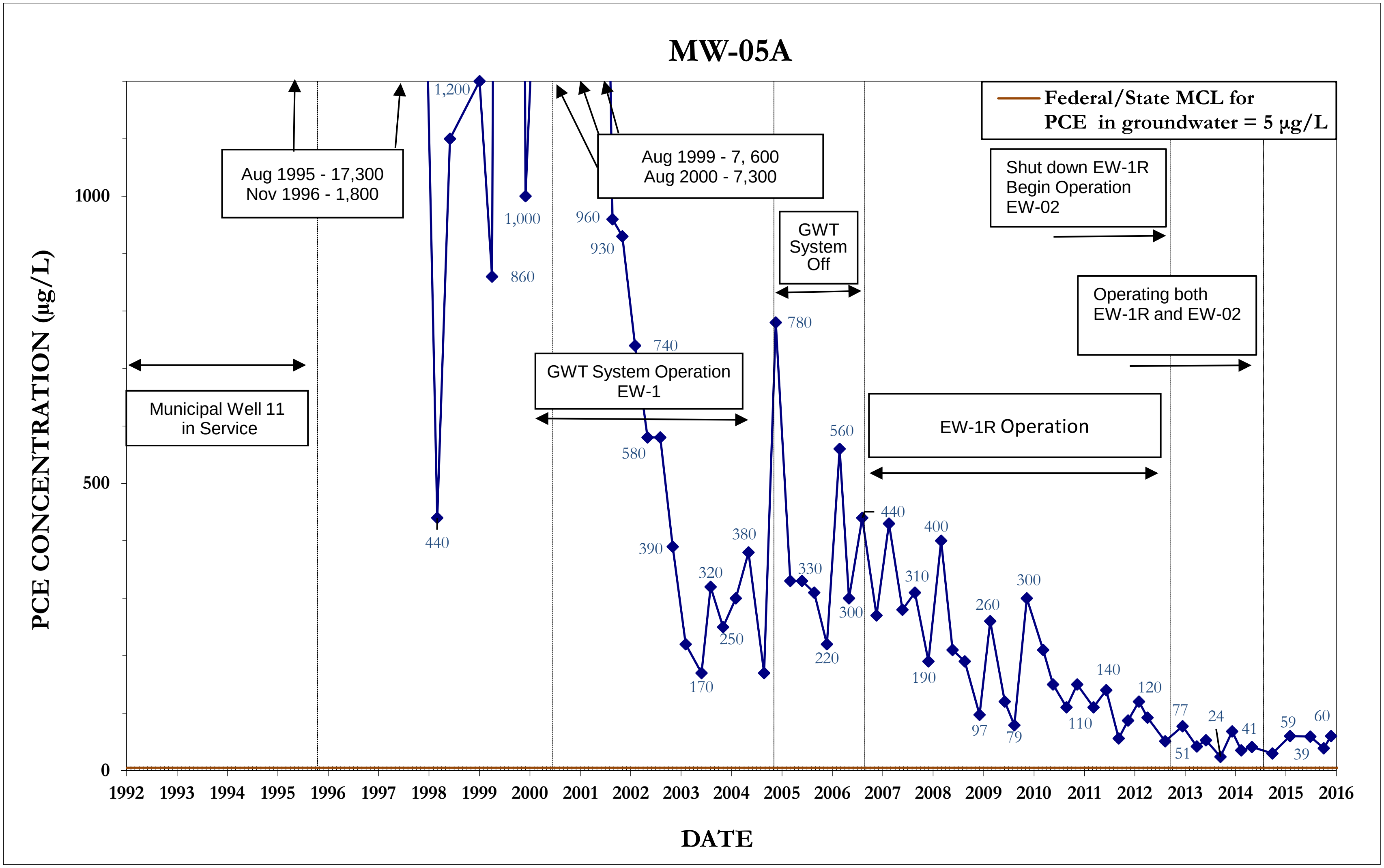


FIGURE G-4(h)

HISTORICAL PCE CONCENTRATION IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

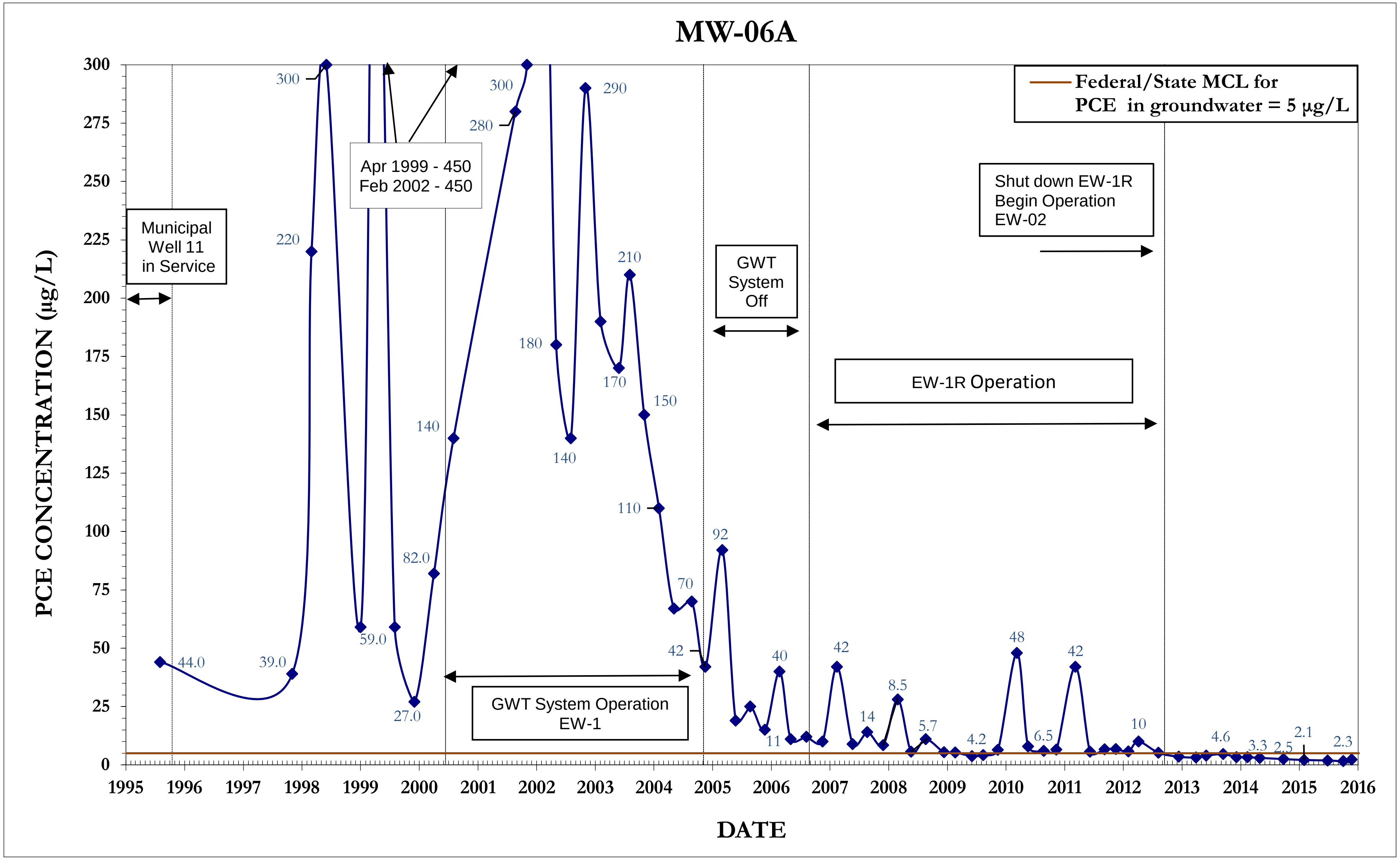


FIGURE G-4(i)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

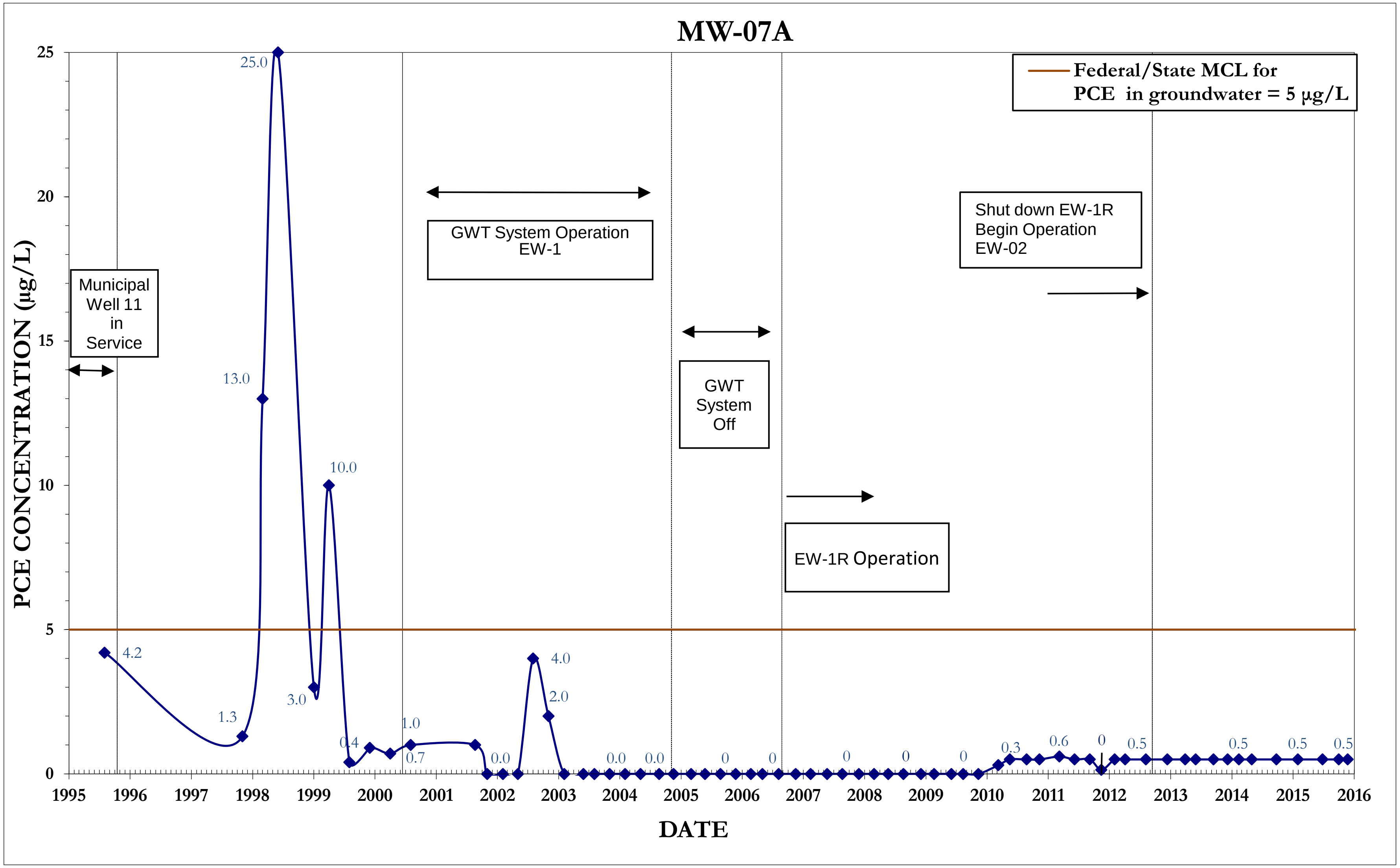


FIGURE G-4(j)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

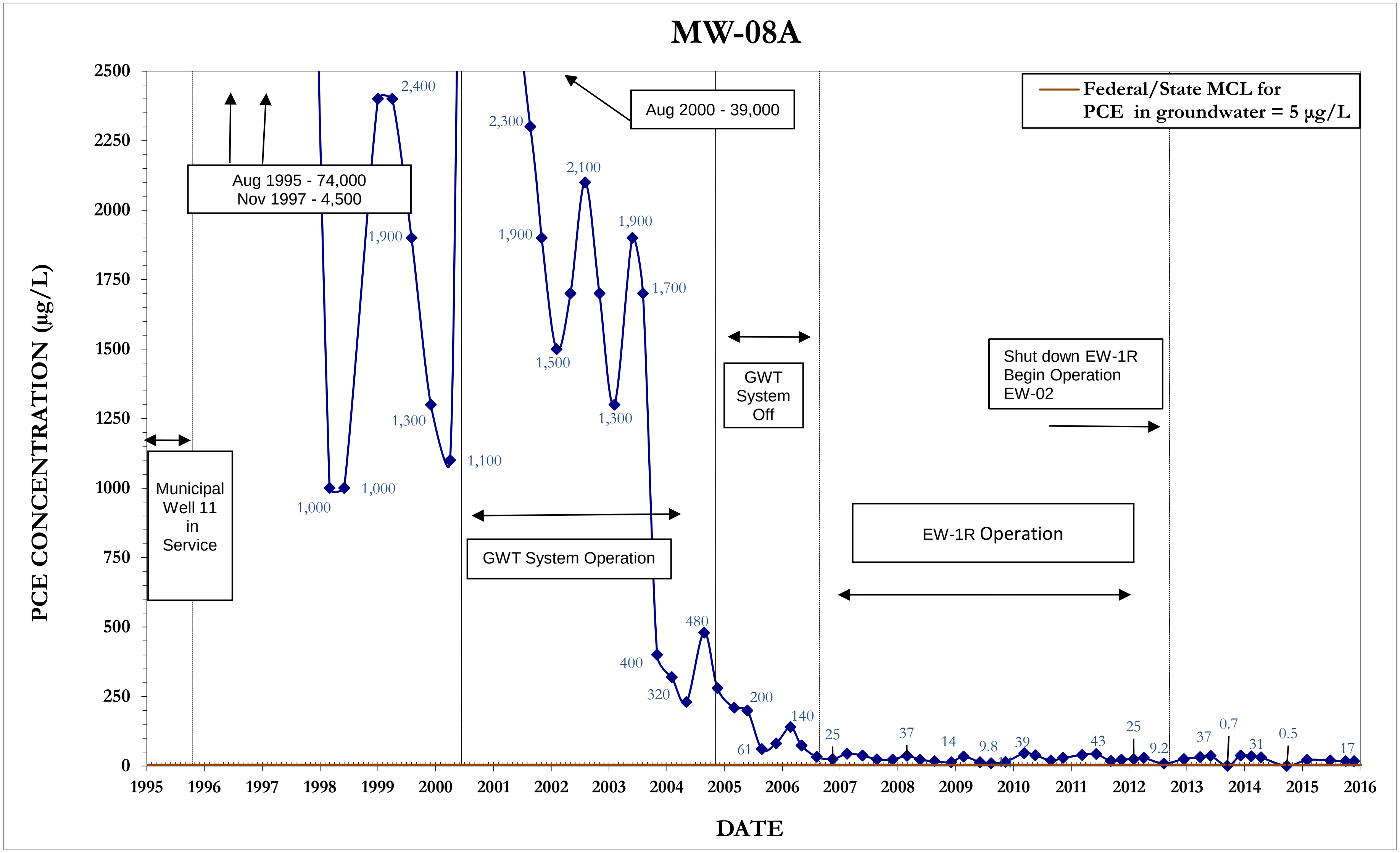


FIGURE G-4(k)

HISTORICAL PCE CONCENTRATIONS IN GROUDNWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

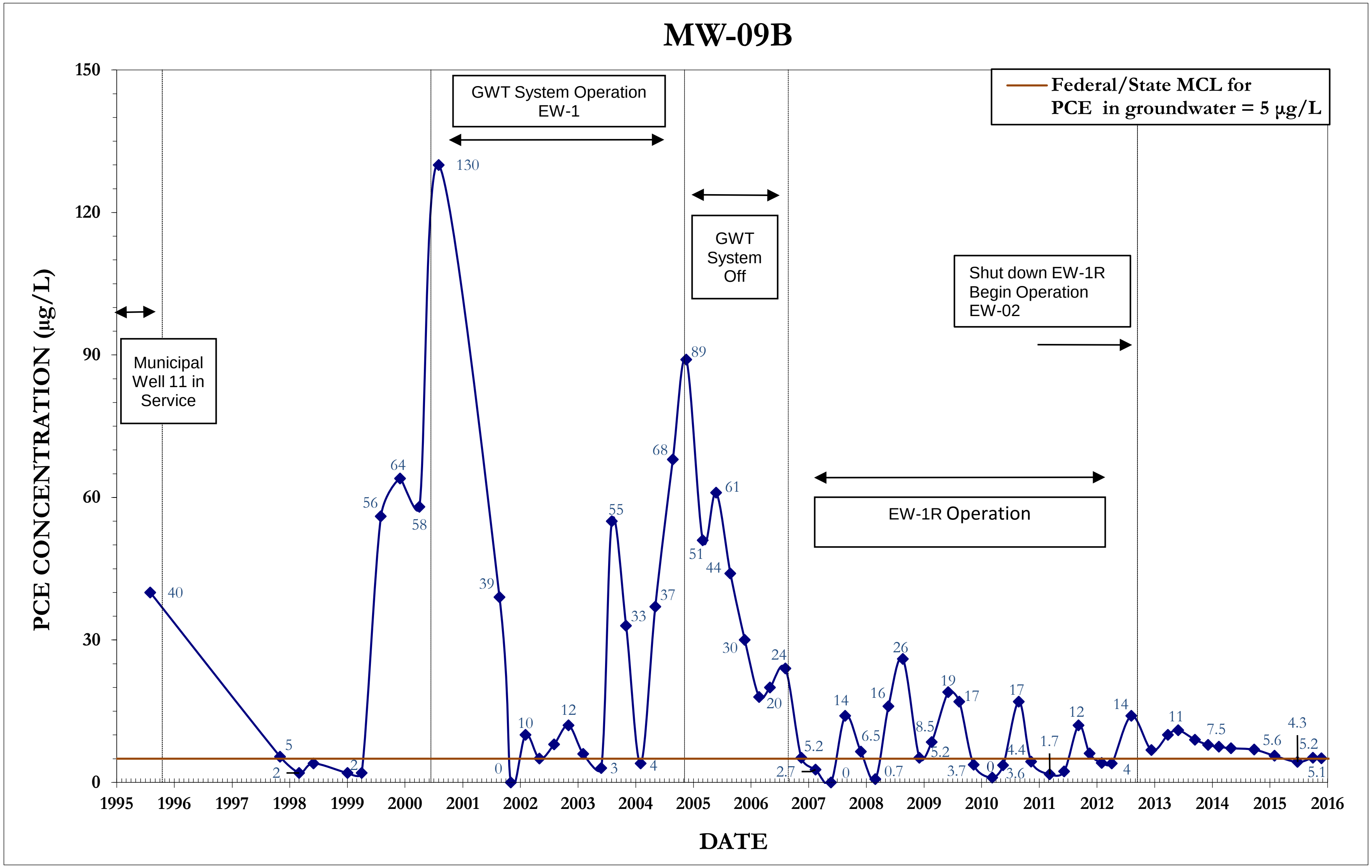


FIGURE G-4(l)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

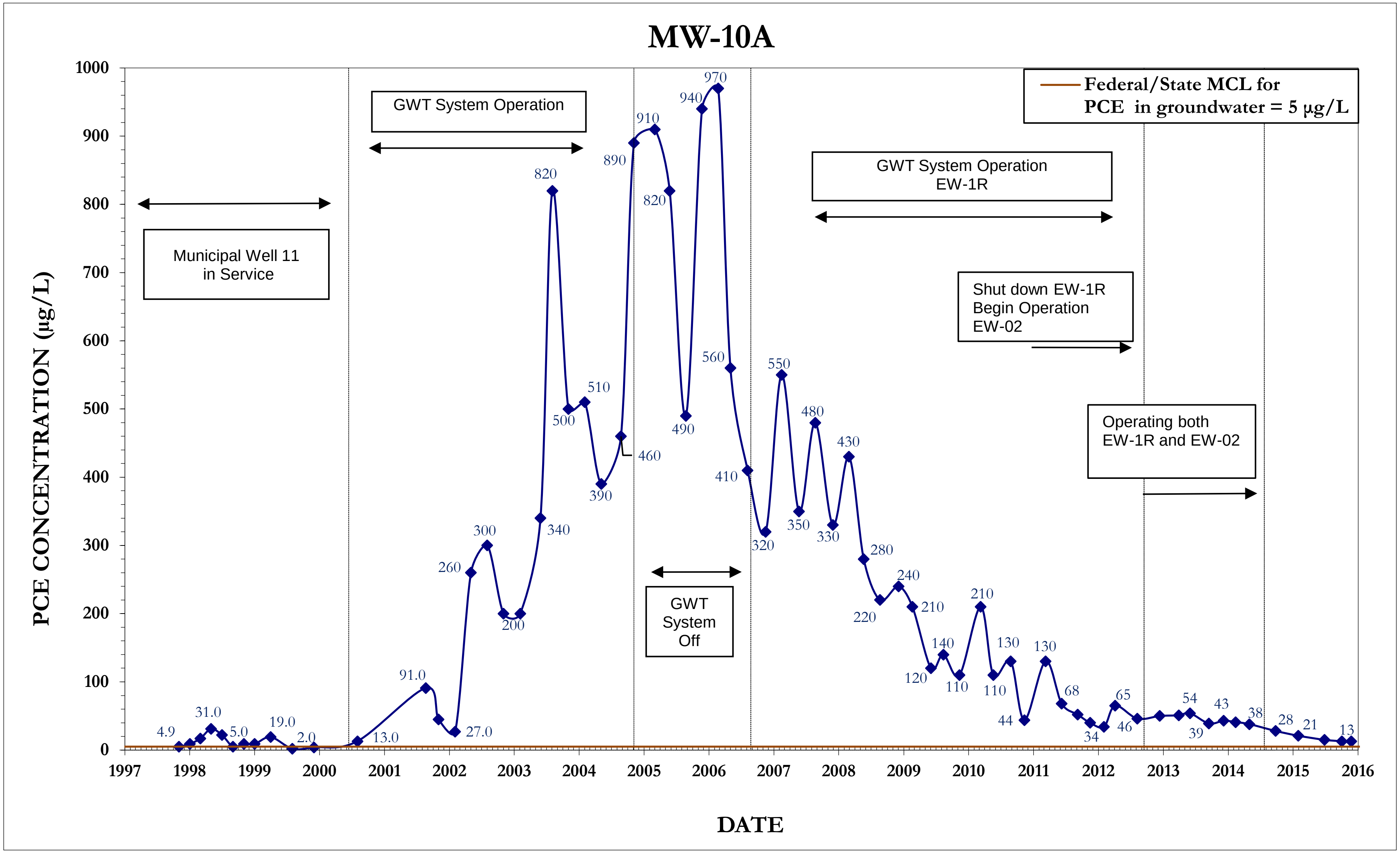


FIGURE G-4(m)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

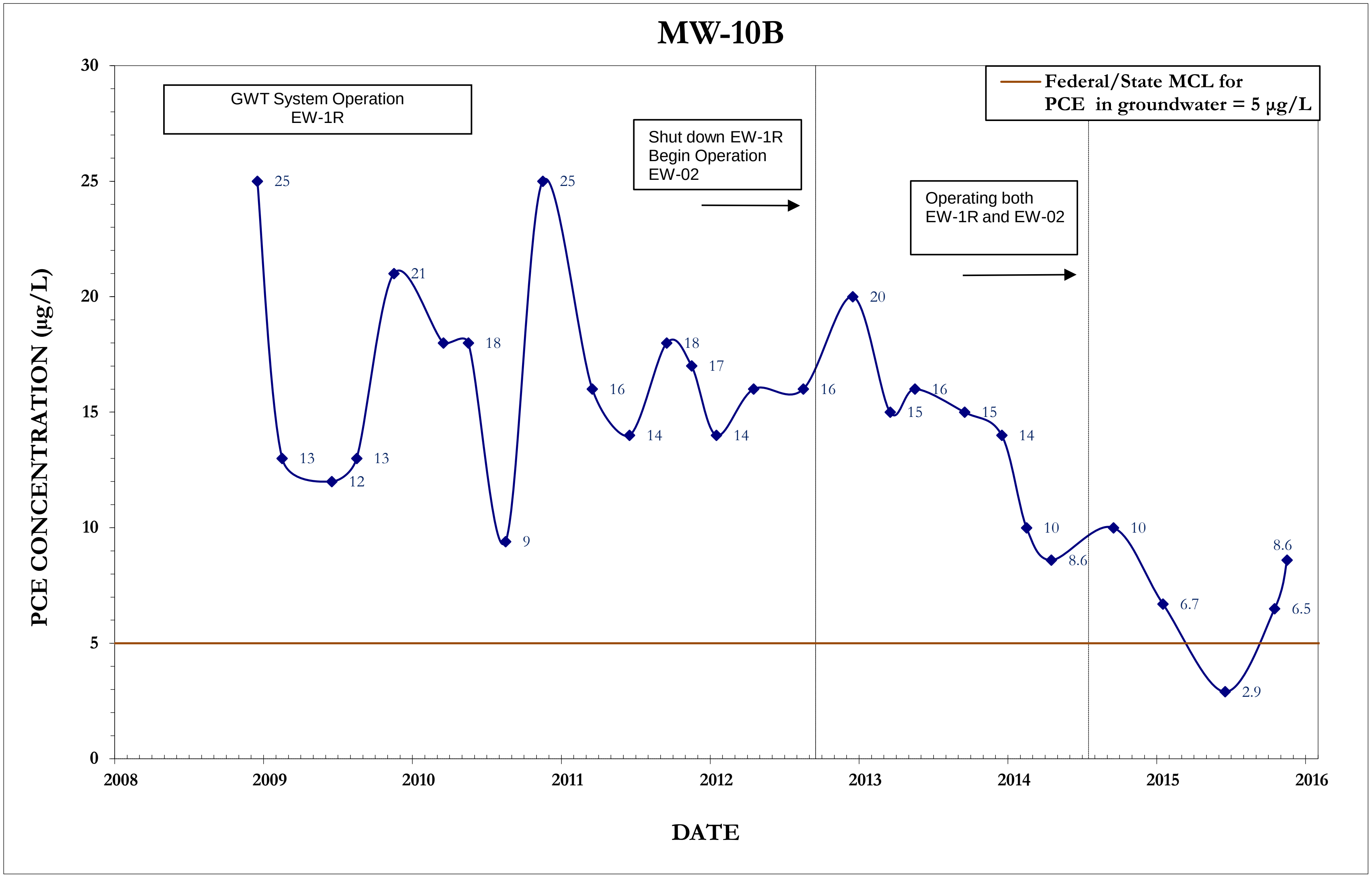


FIGURE G-4(n)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

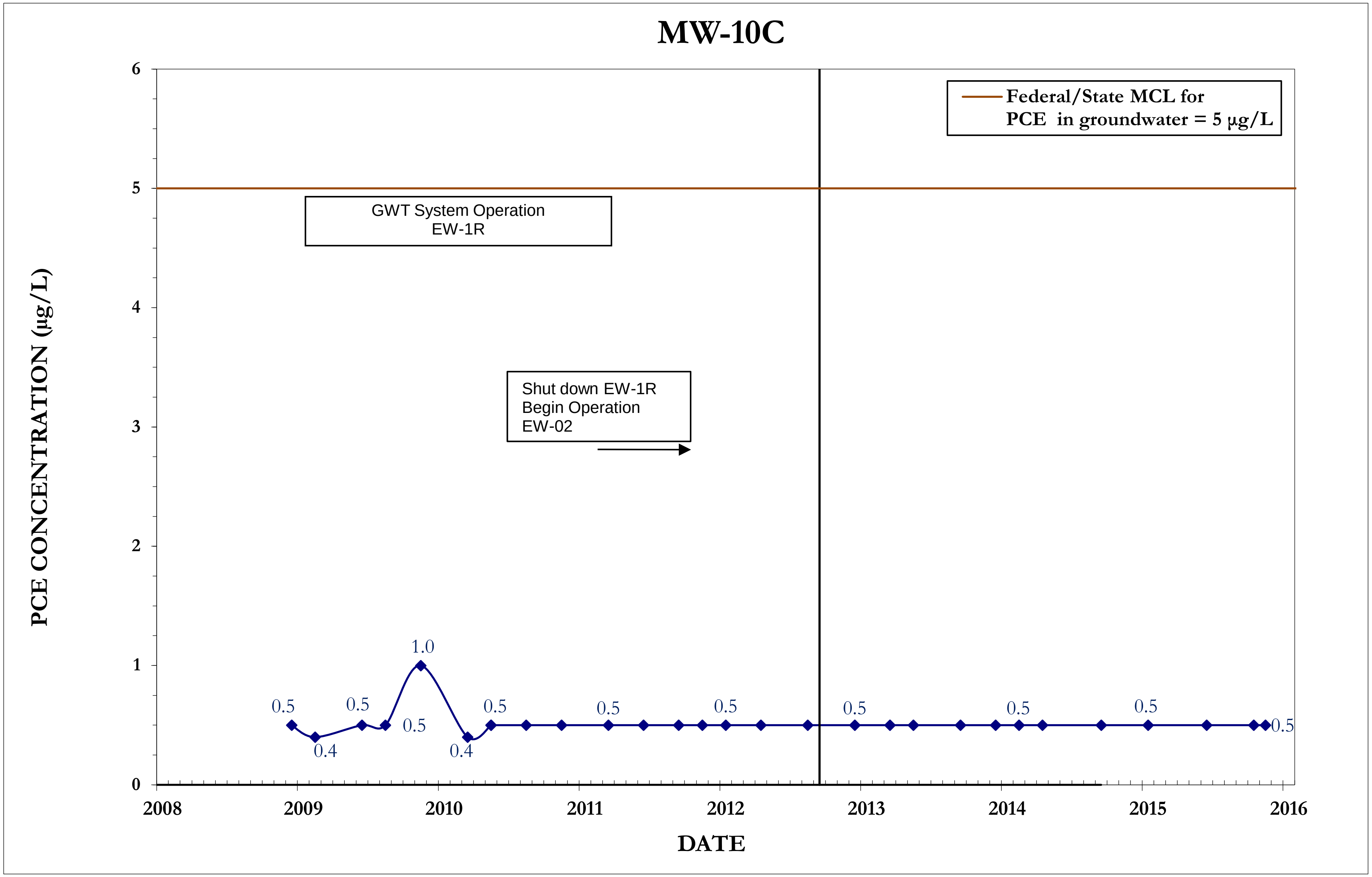


FIGURE G-4(o)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

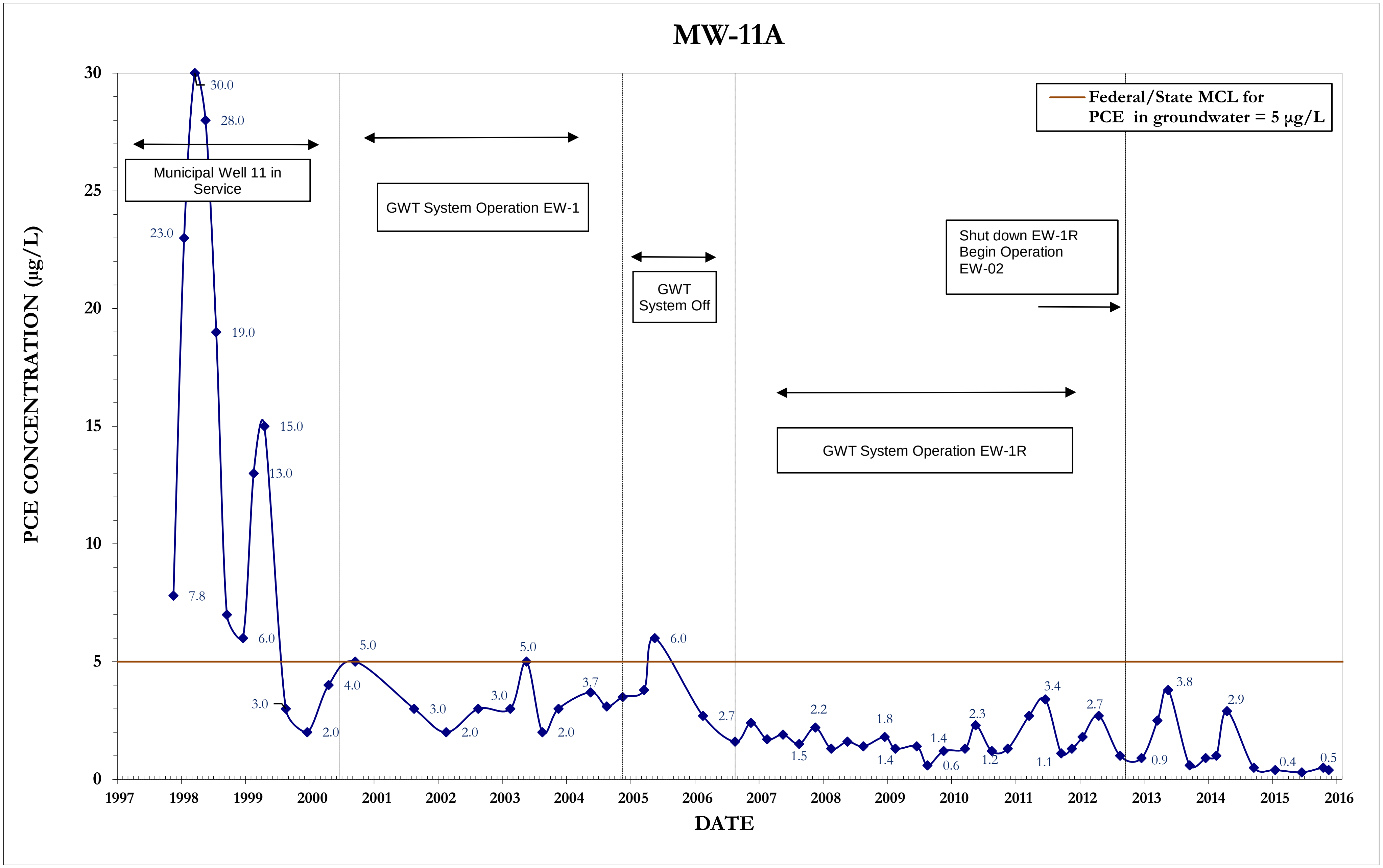


FIGURE G-4(p)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

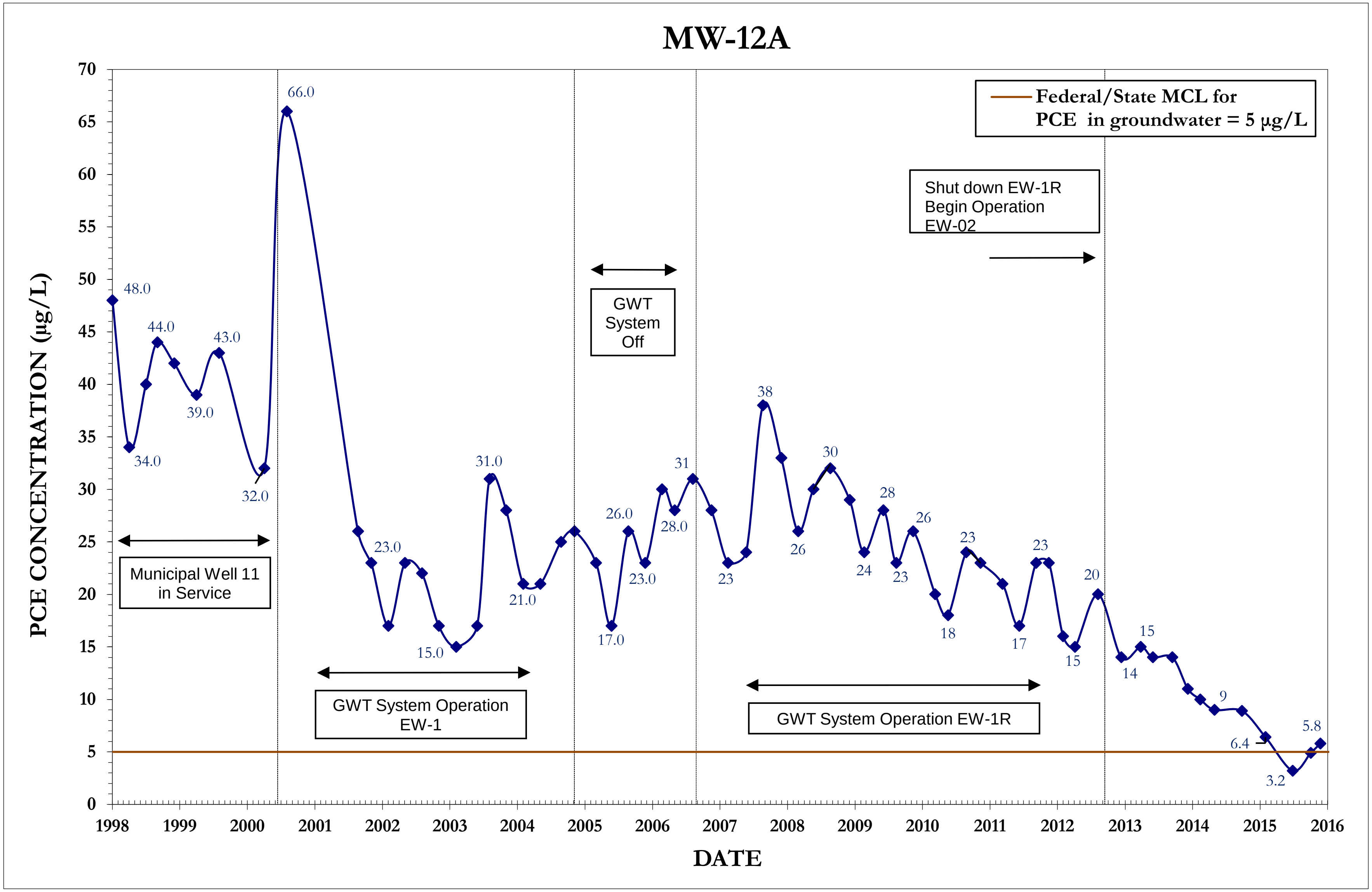


FIGURE G-4(q)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

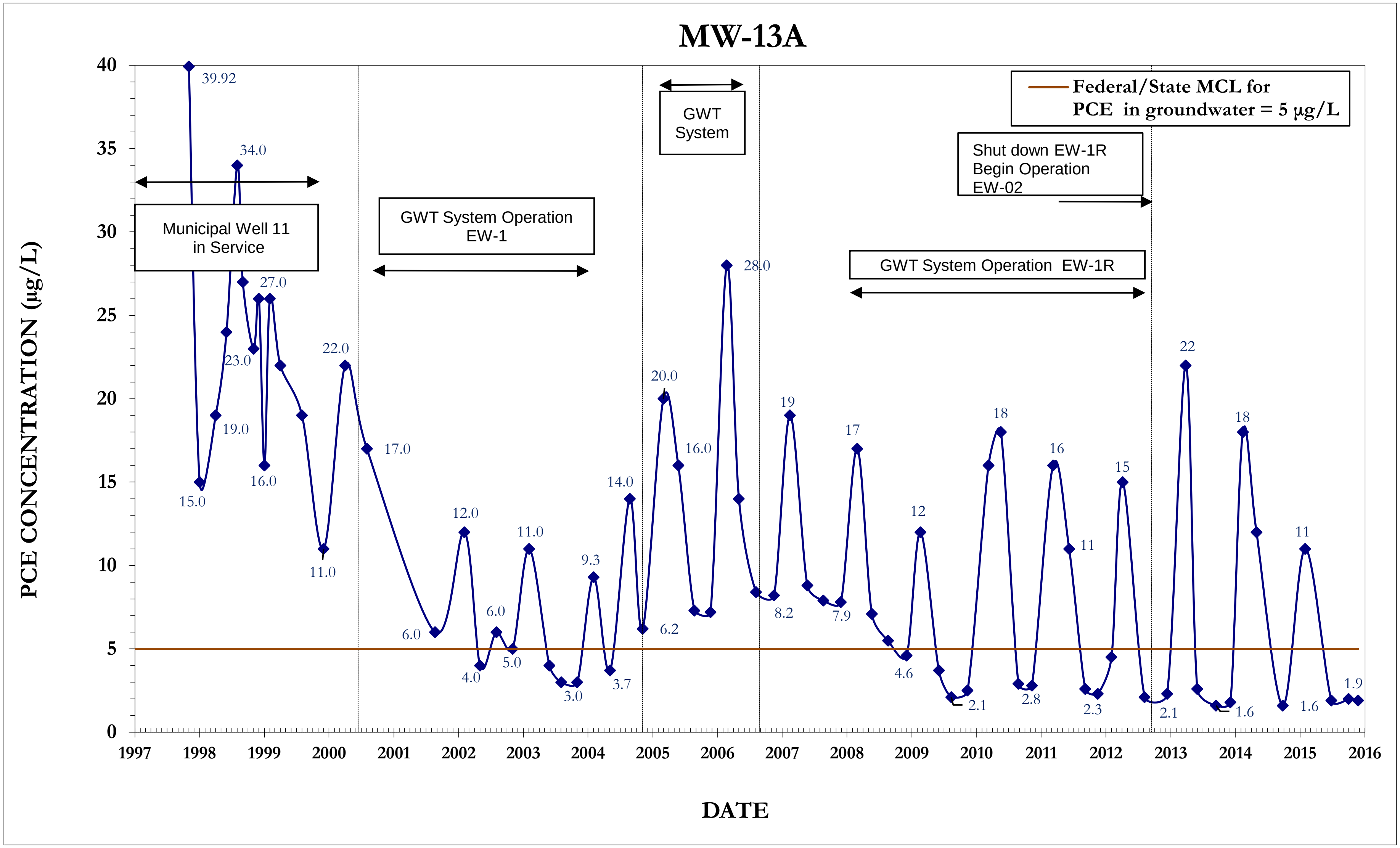


FIGURE G-4(r)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

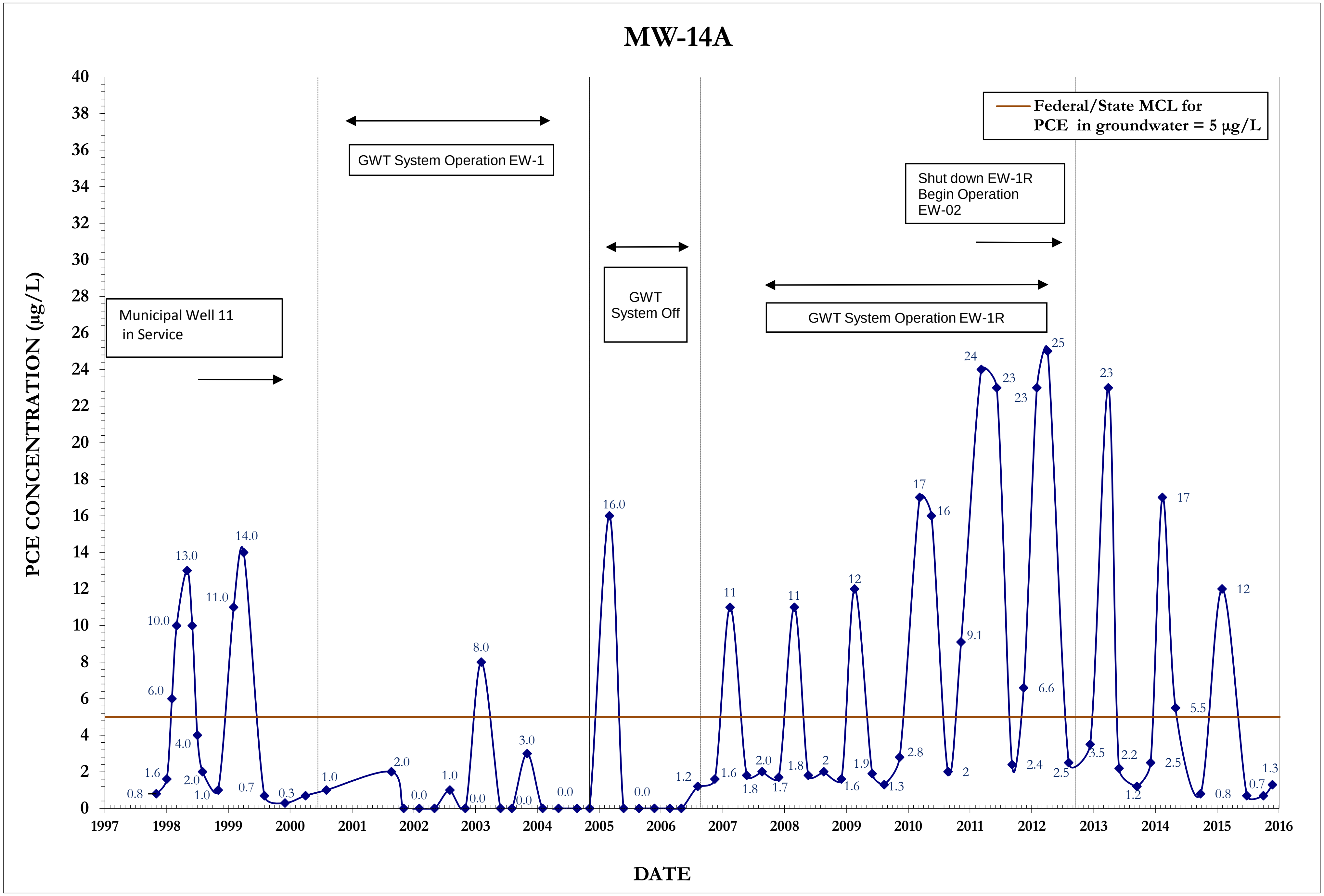


FIGURE G-4(s)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

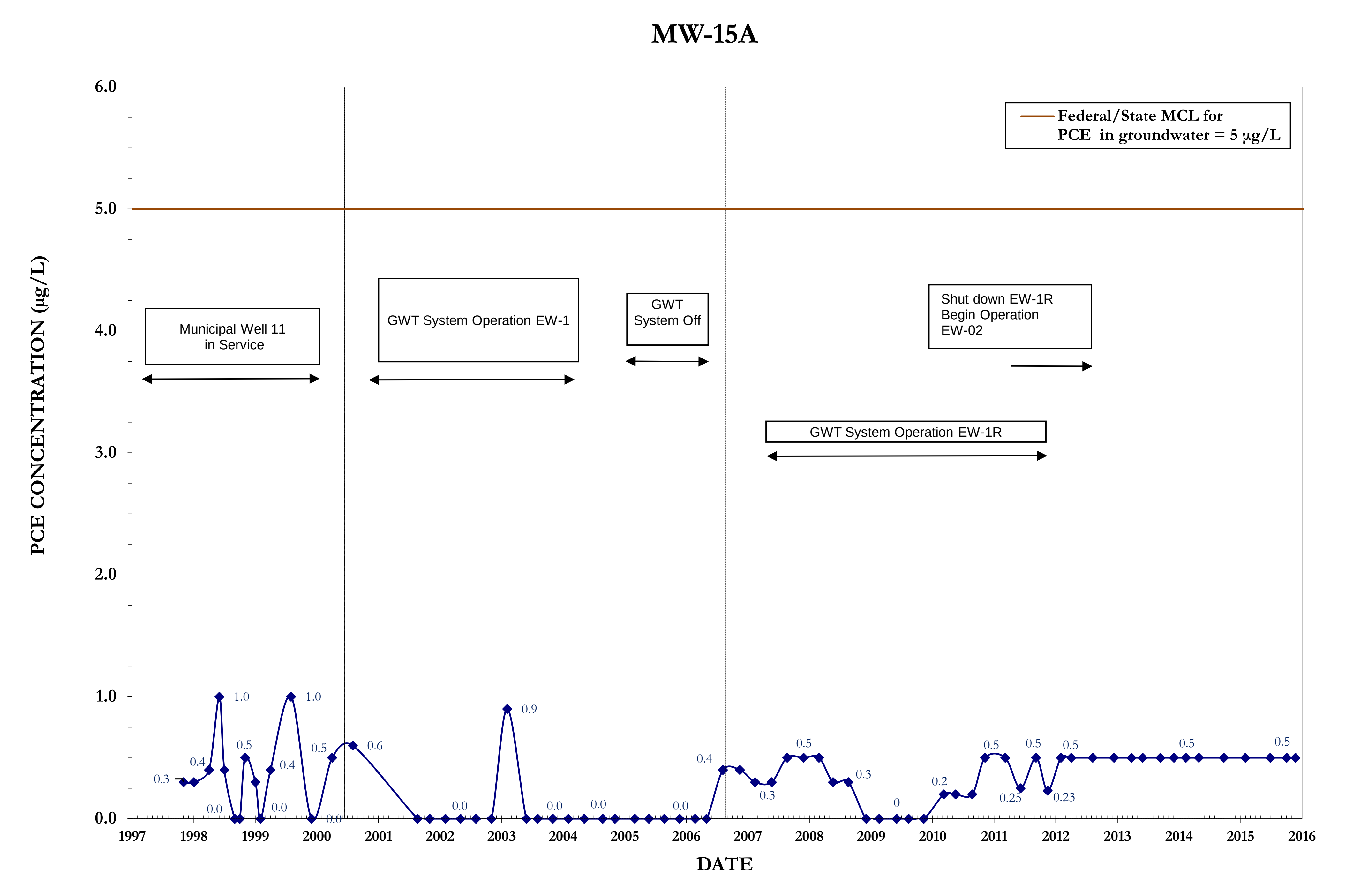


FIGURE G-4(t)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

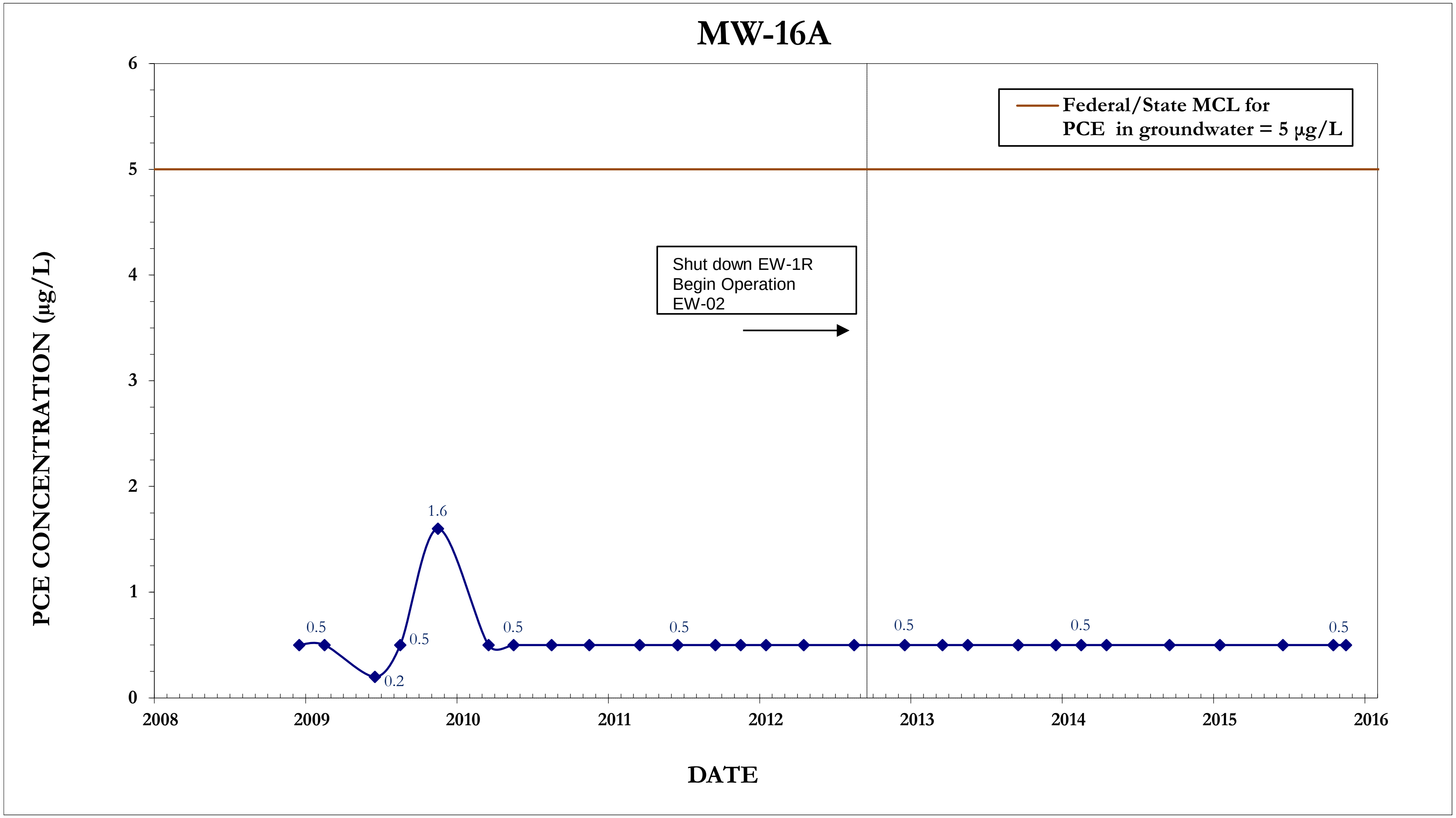


FIGURE G-4(u)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

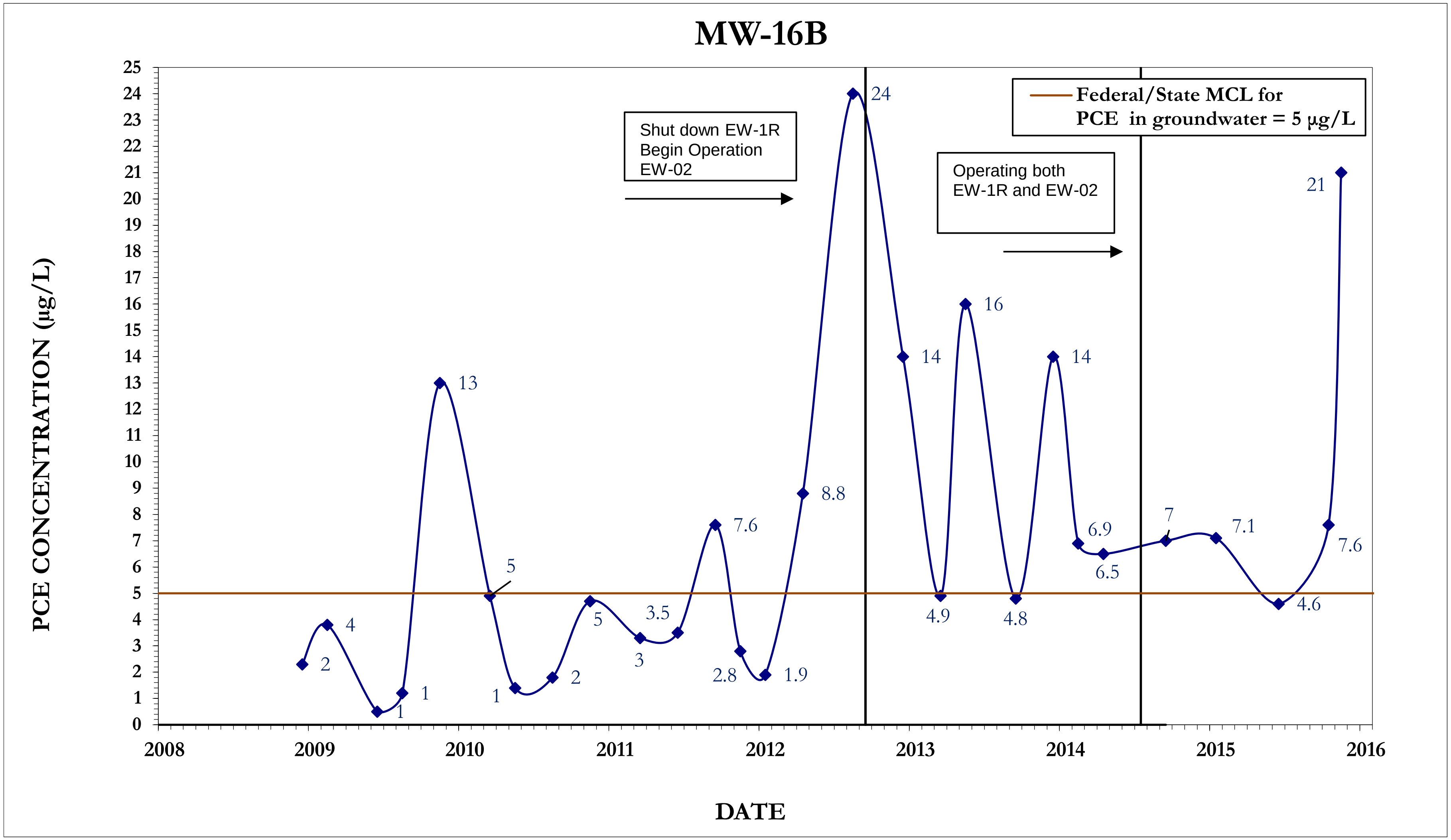


FIGURE G-4(v)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

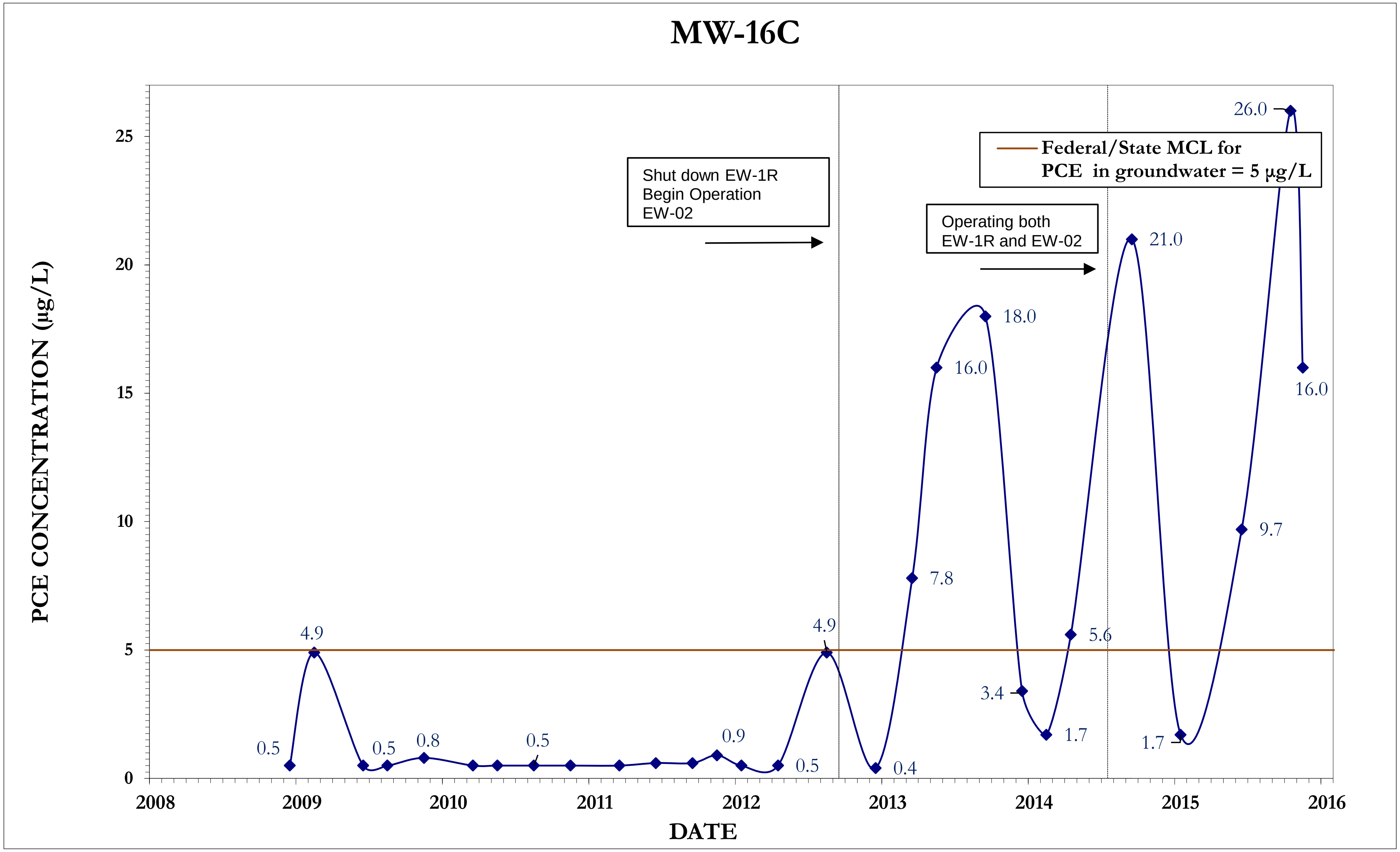


FIGURE G-4(w)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

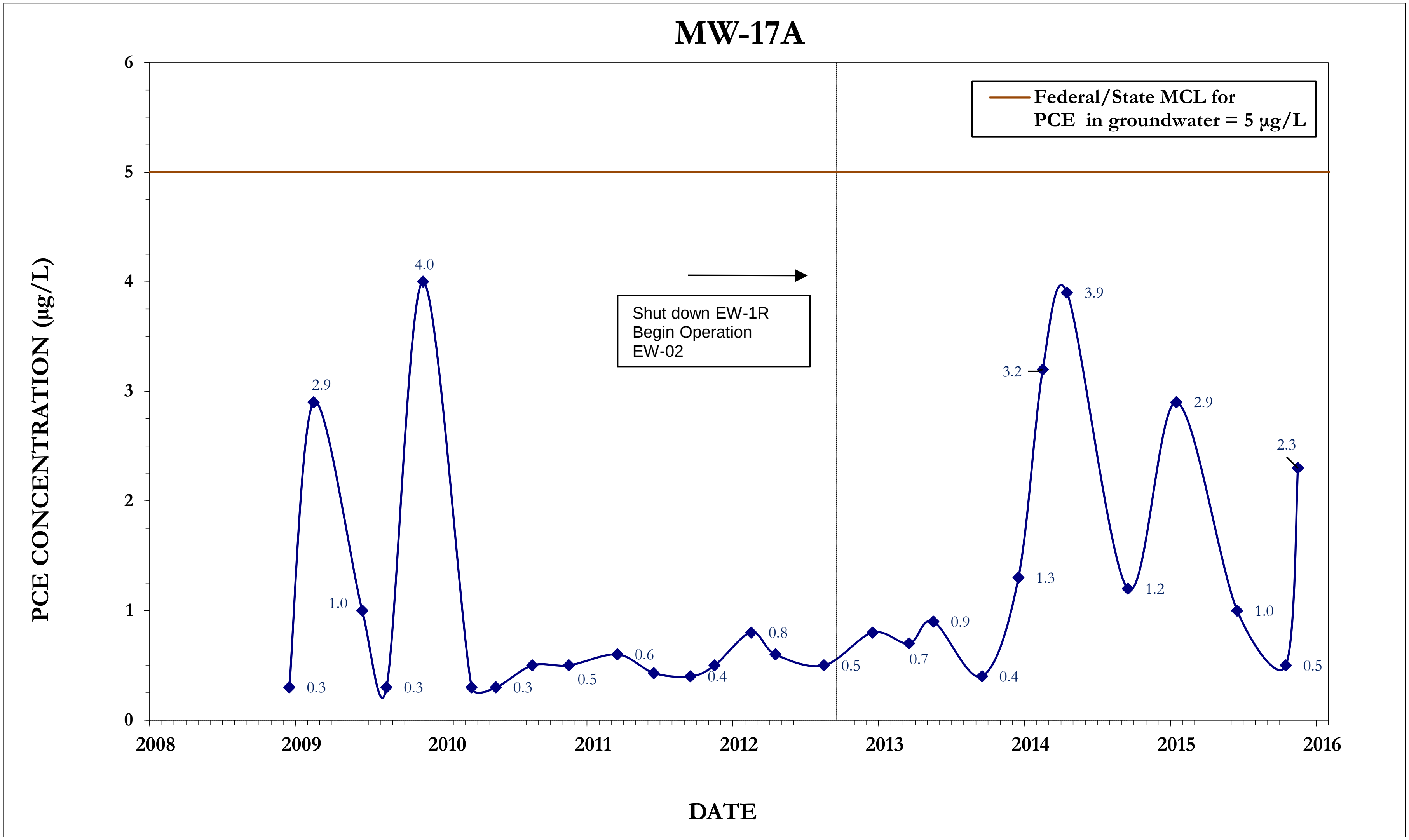


FIGURE G-4(x)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

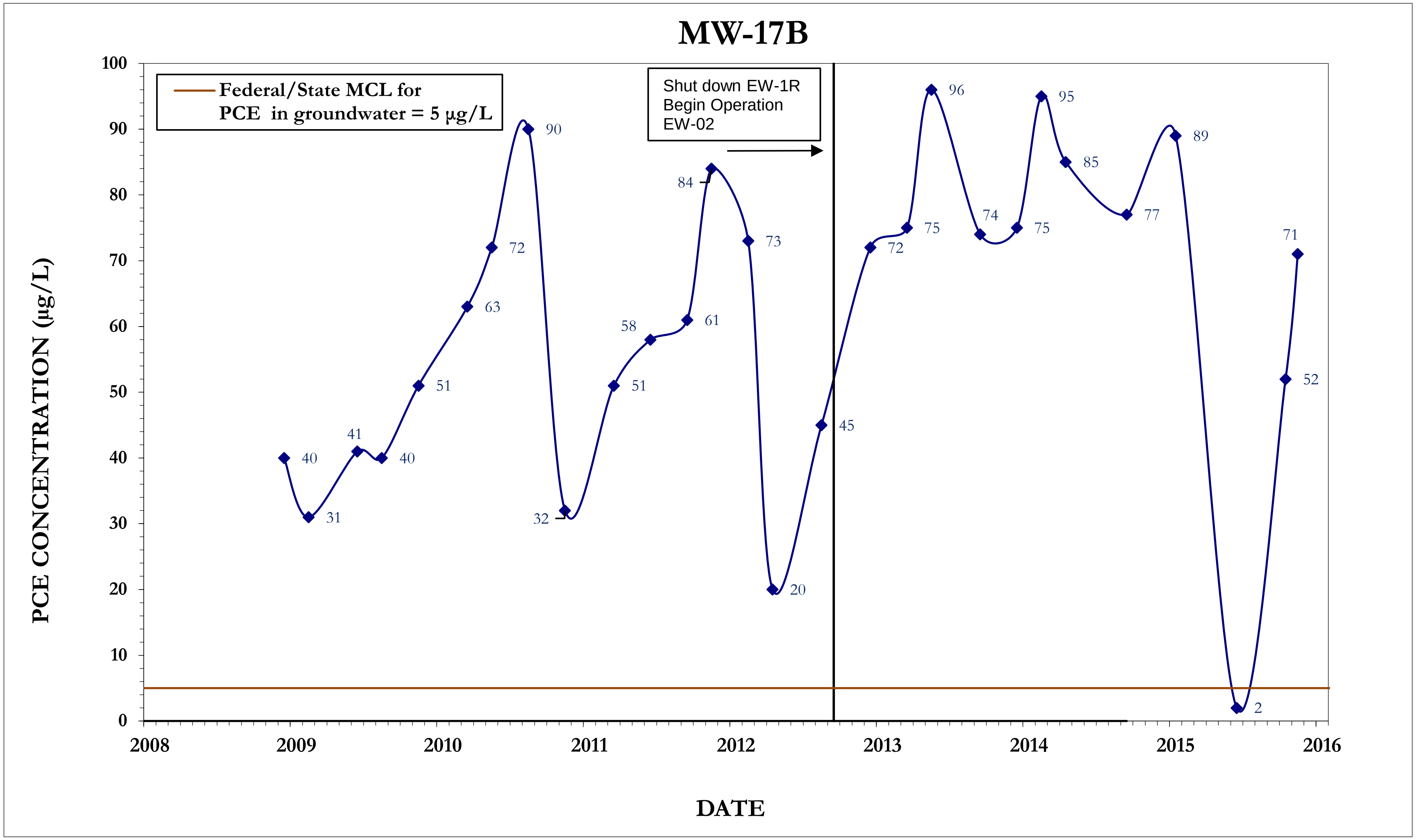


FIGURE G-4(y)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

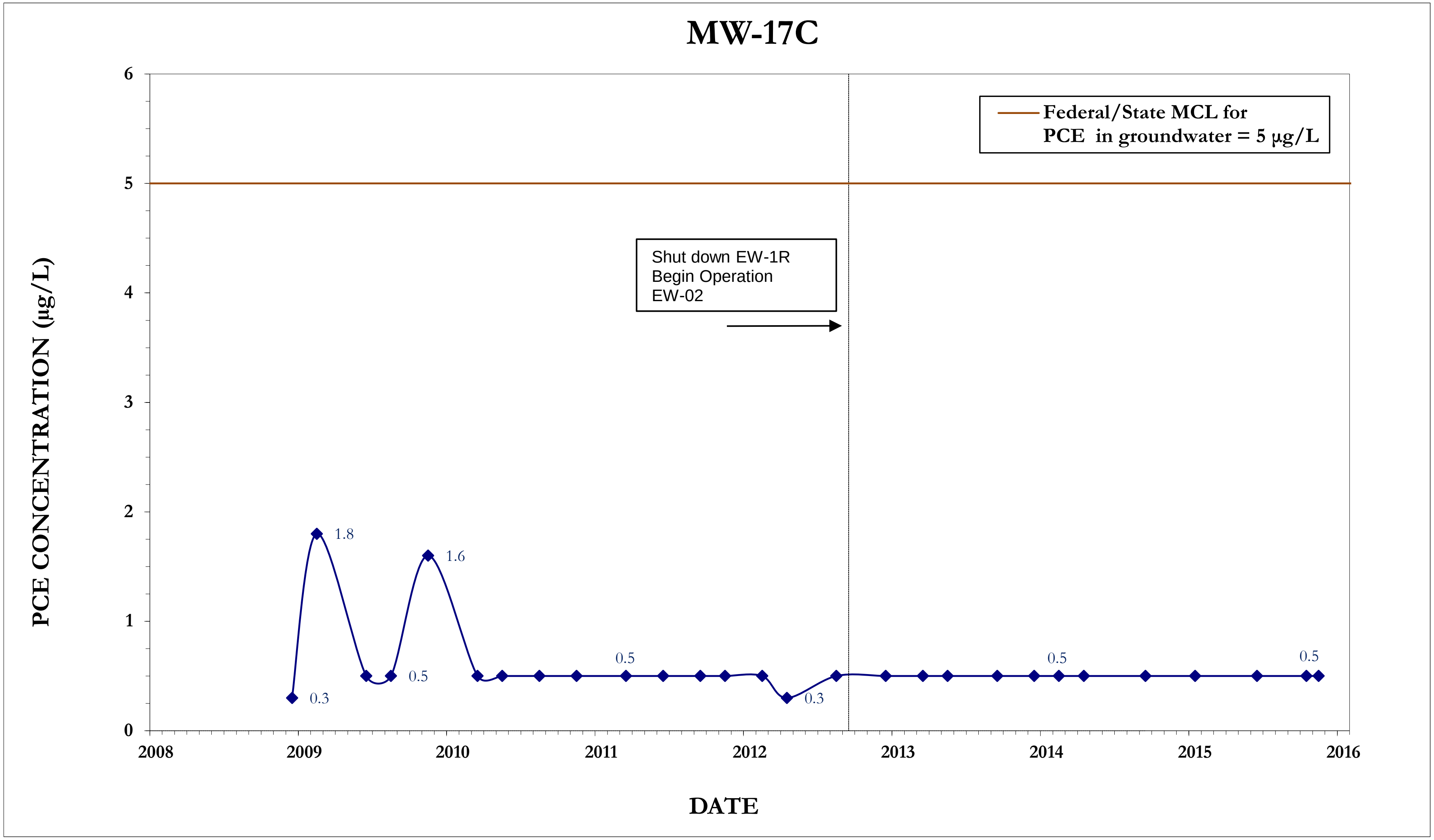


FIGURE G-4(z)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

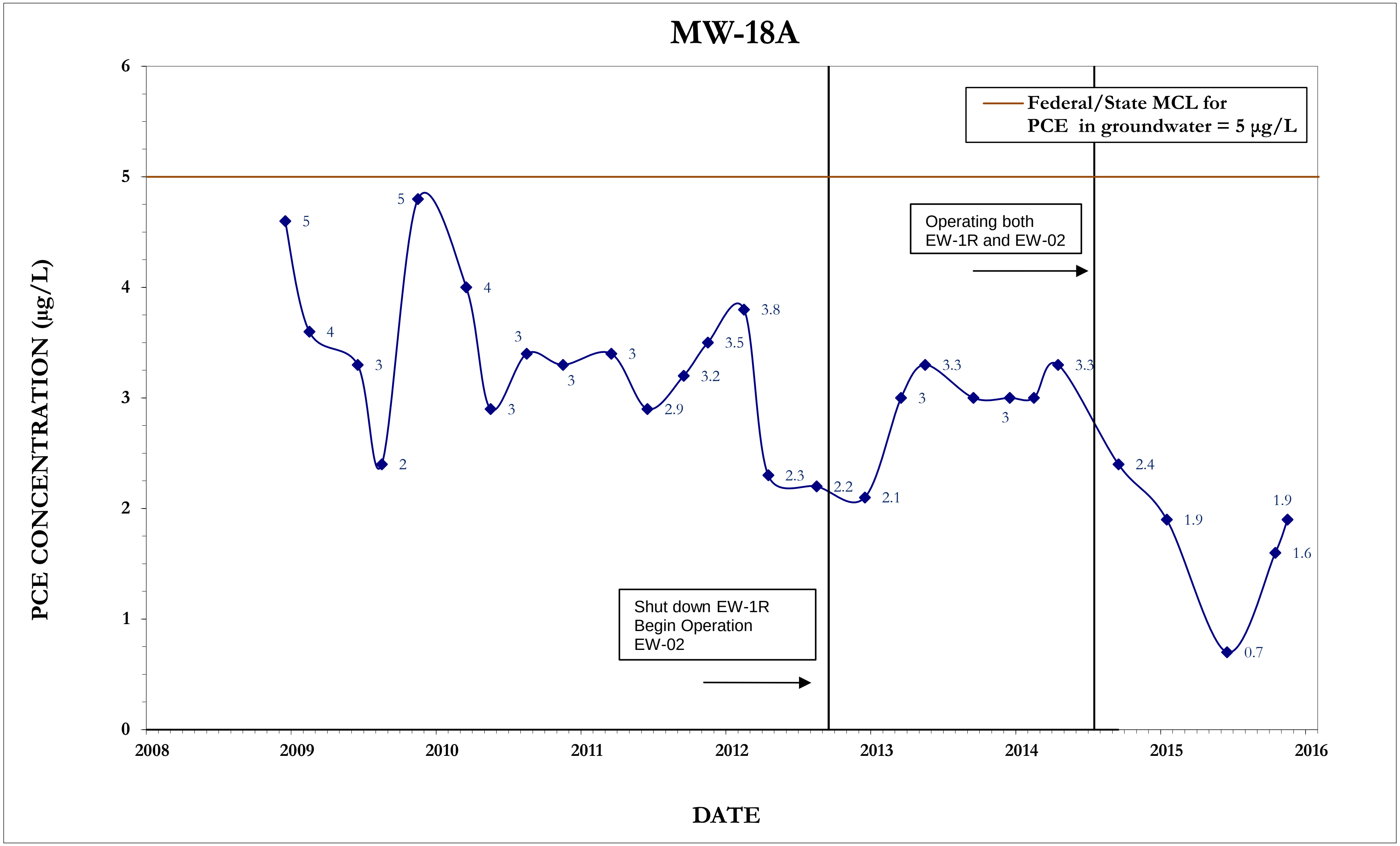


FIGURE G-4(aa)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

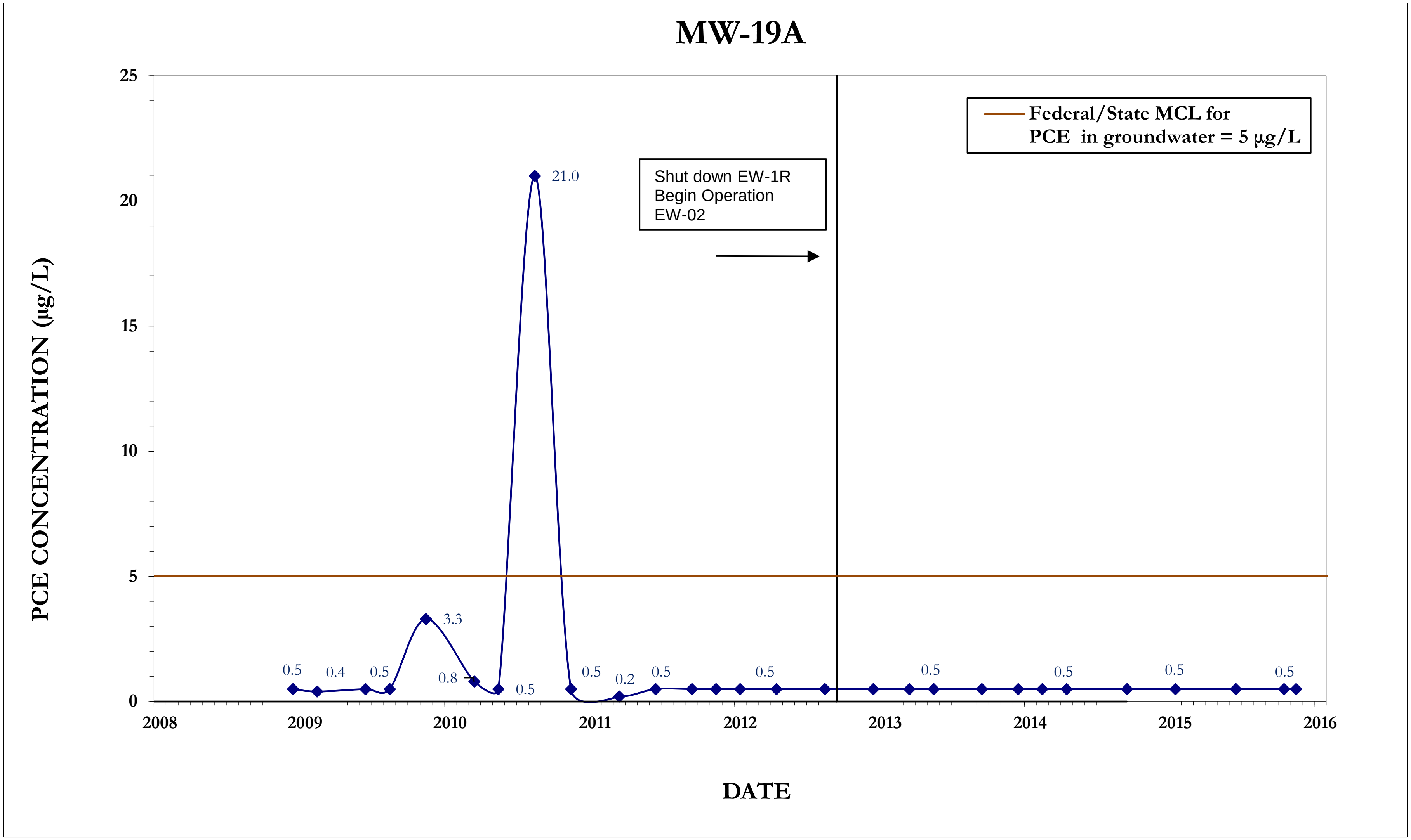


FIGURE G-4(ab)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

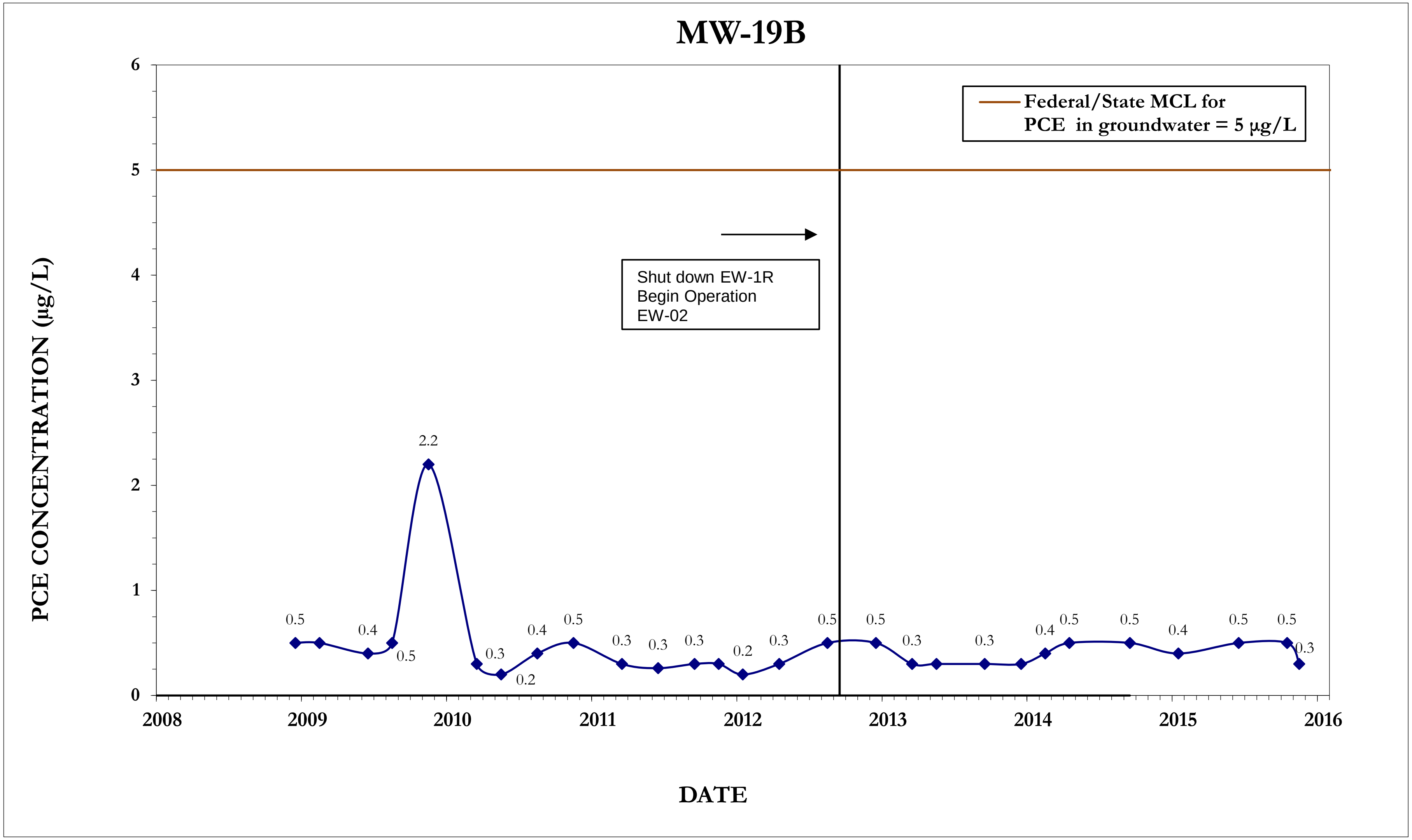


FIGURE G-4(ac)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

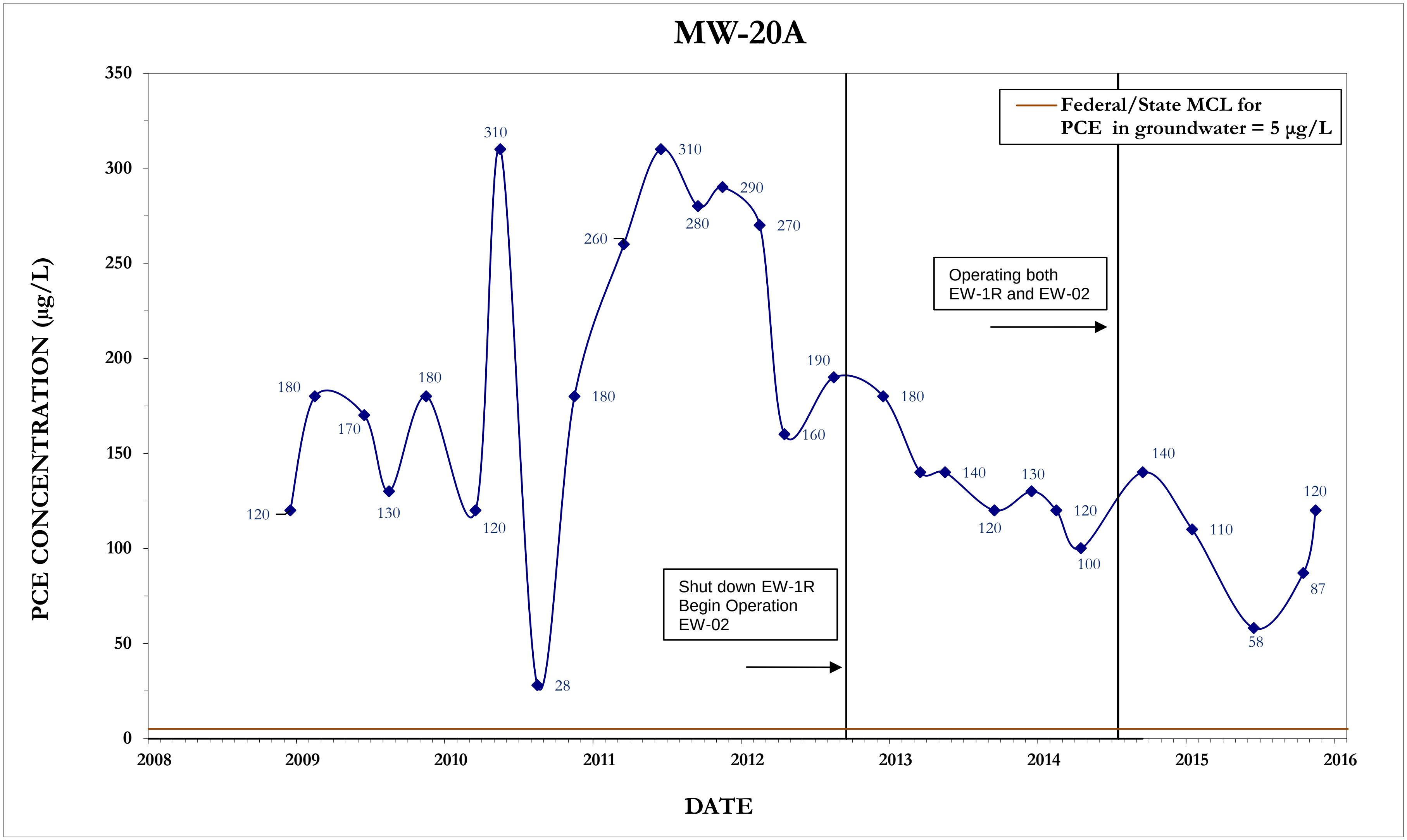


FIGURE G-4(ad)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

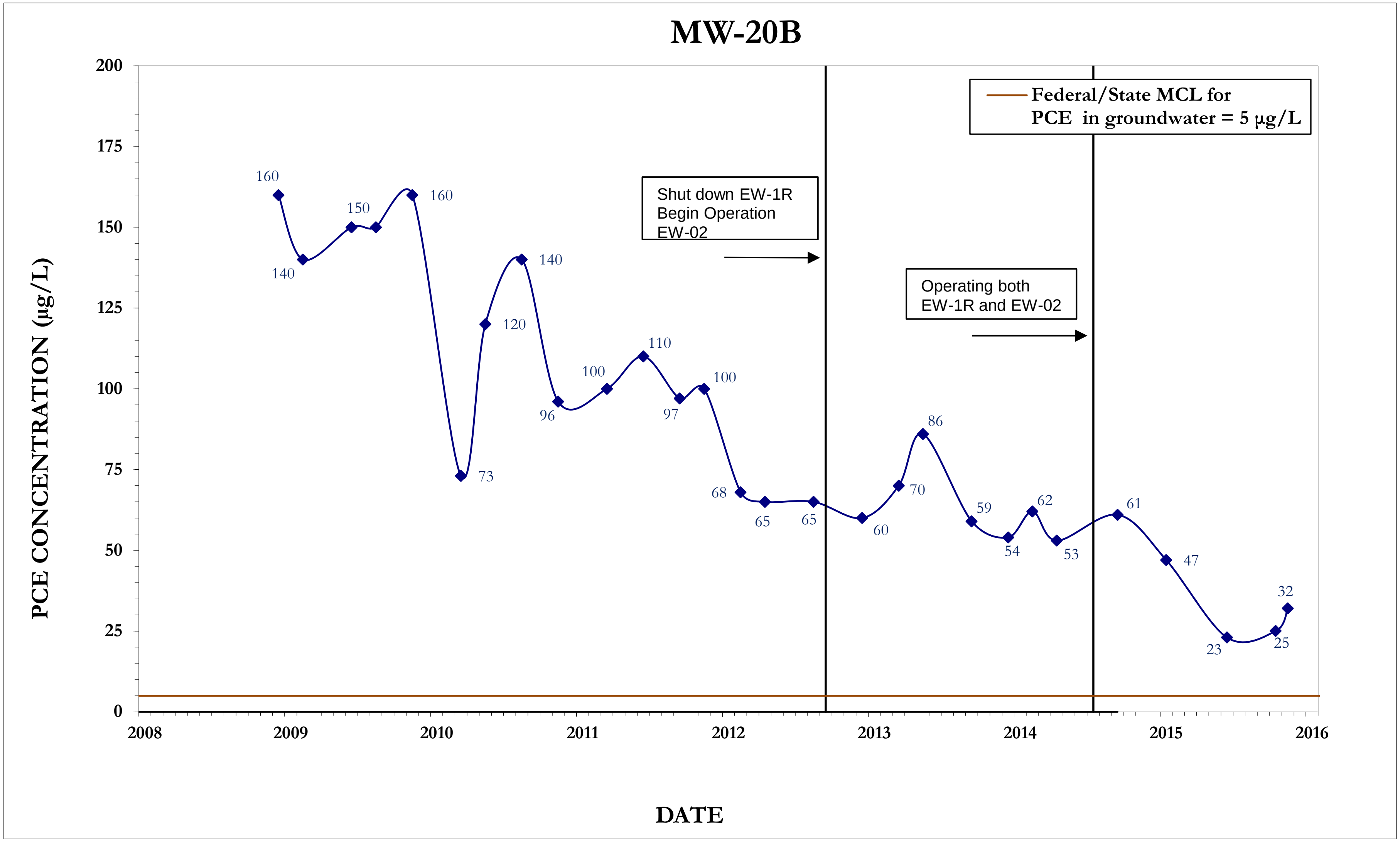


FIGURE G-4(ae)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

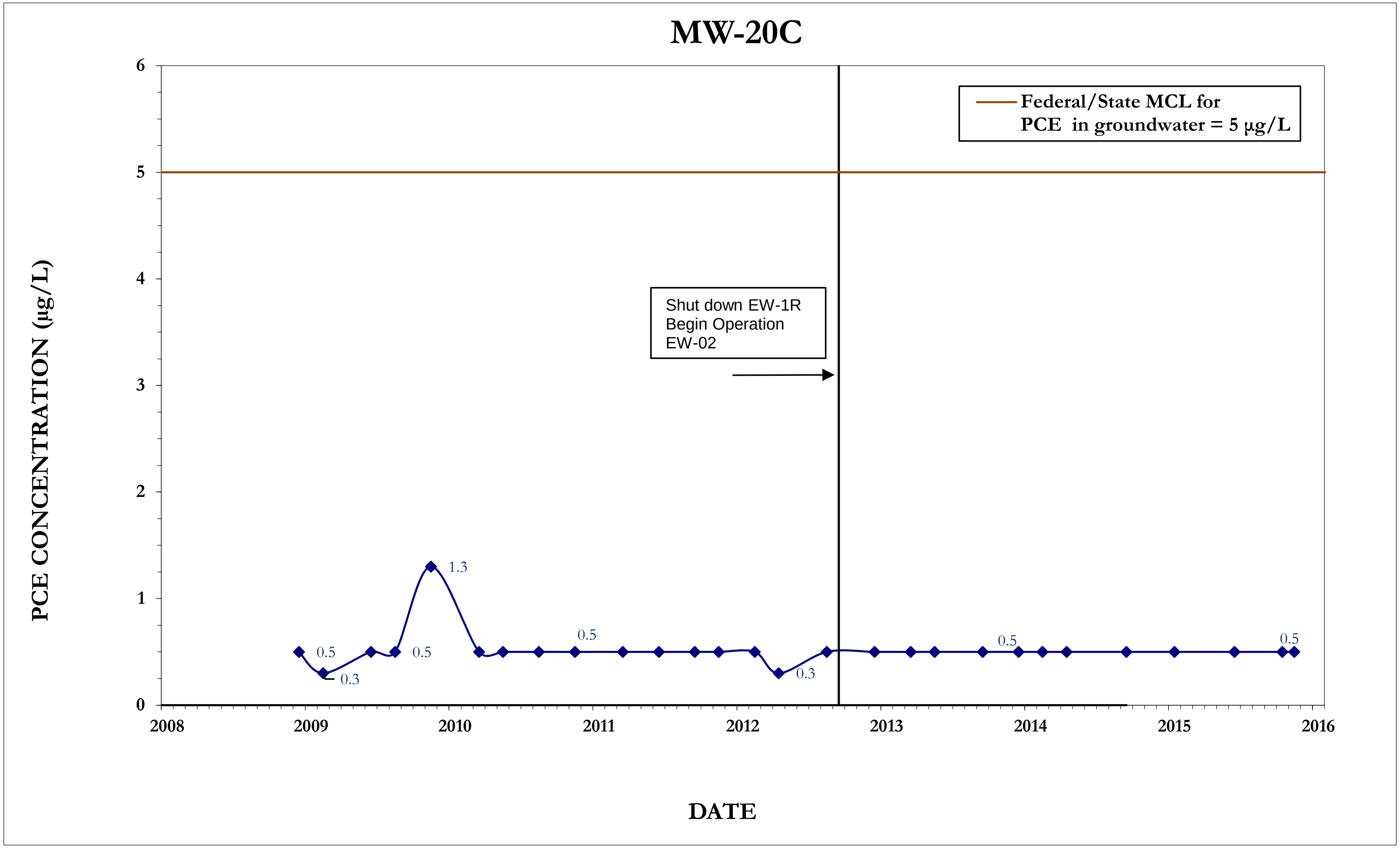


FIGURE G-4(af)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

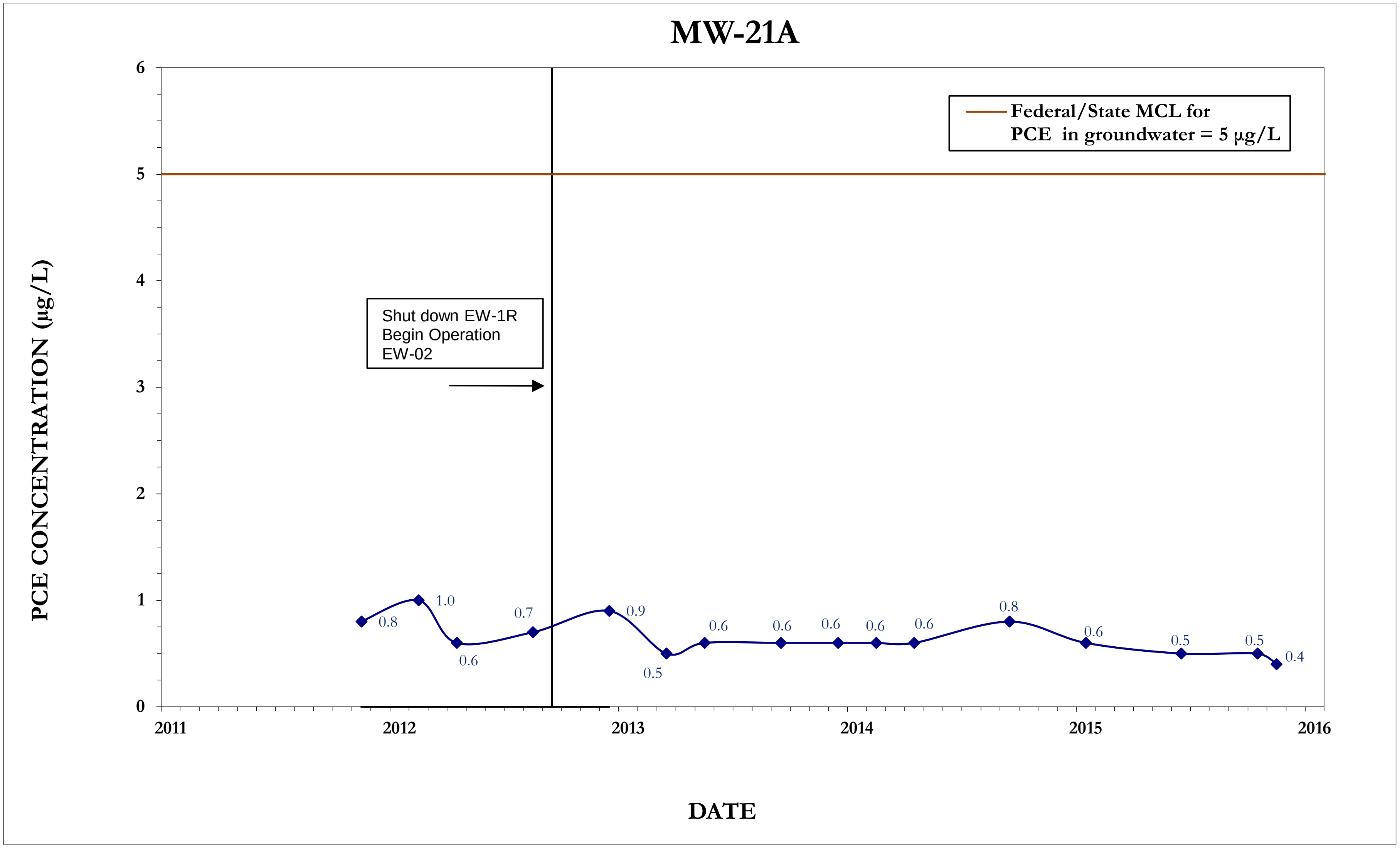


FIGURE G-4(ag)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

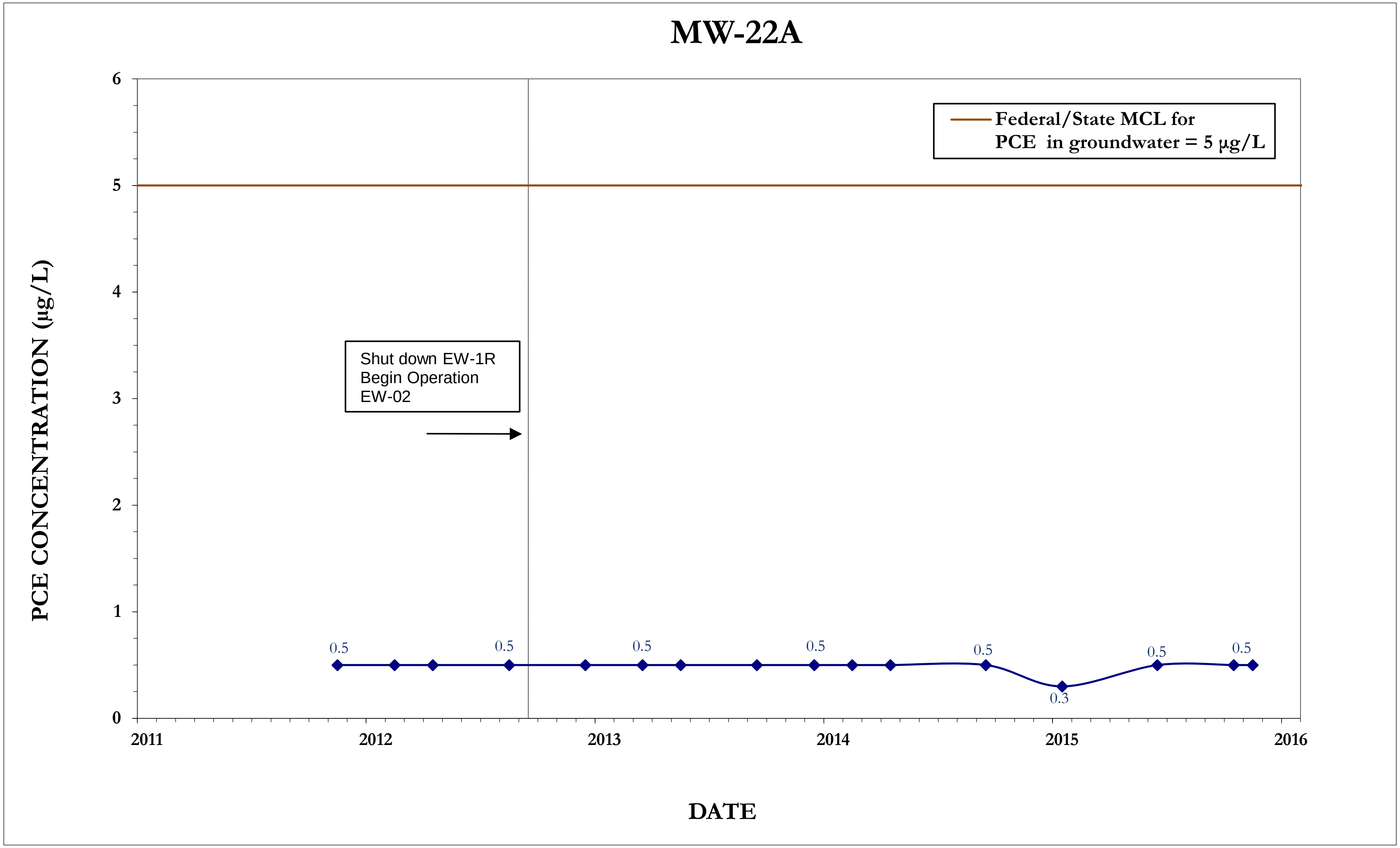


FIGURE G-4(ah)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

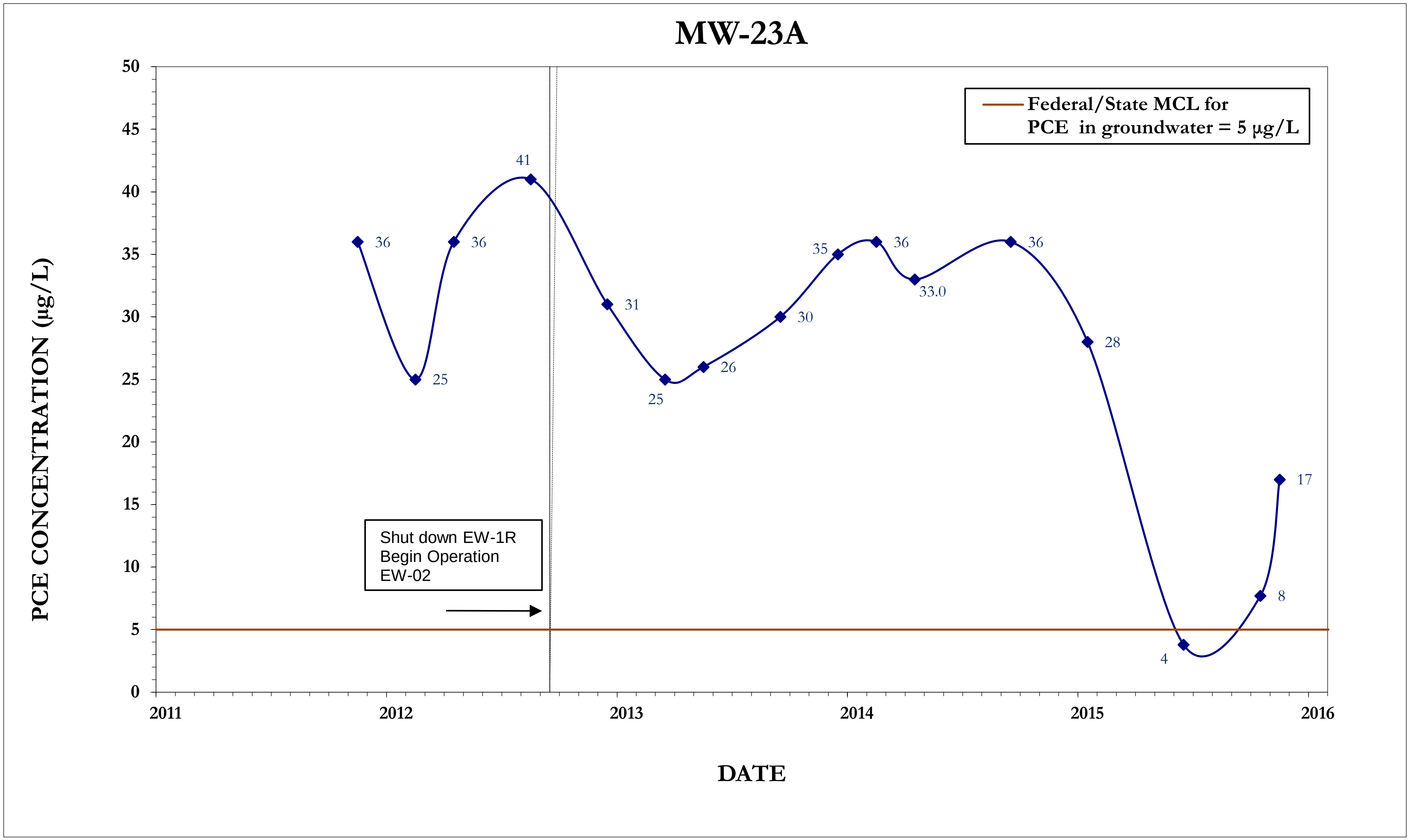


FIGURE G-4(ai)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

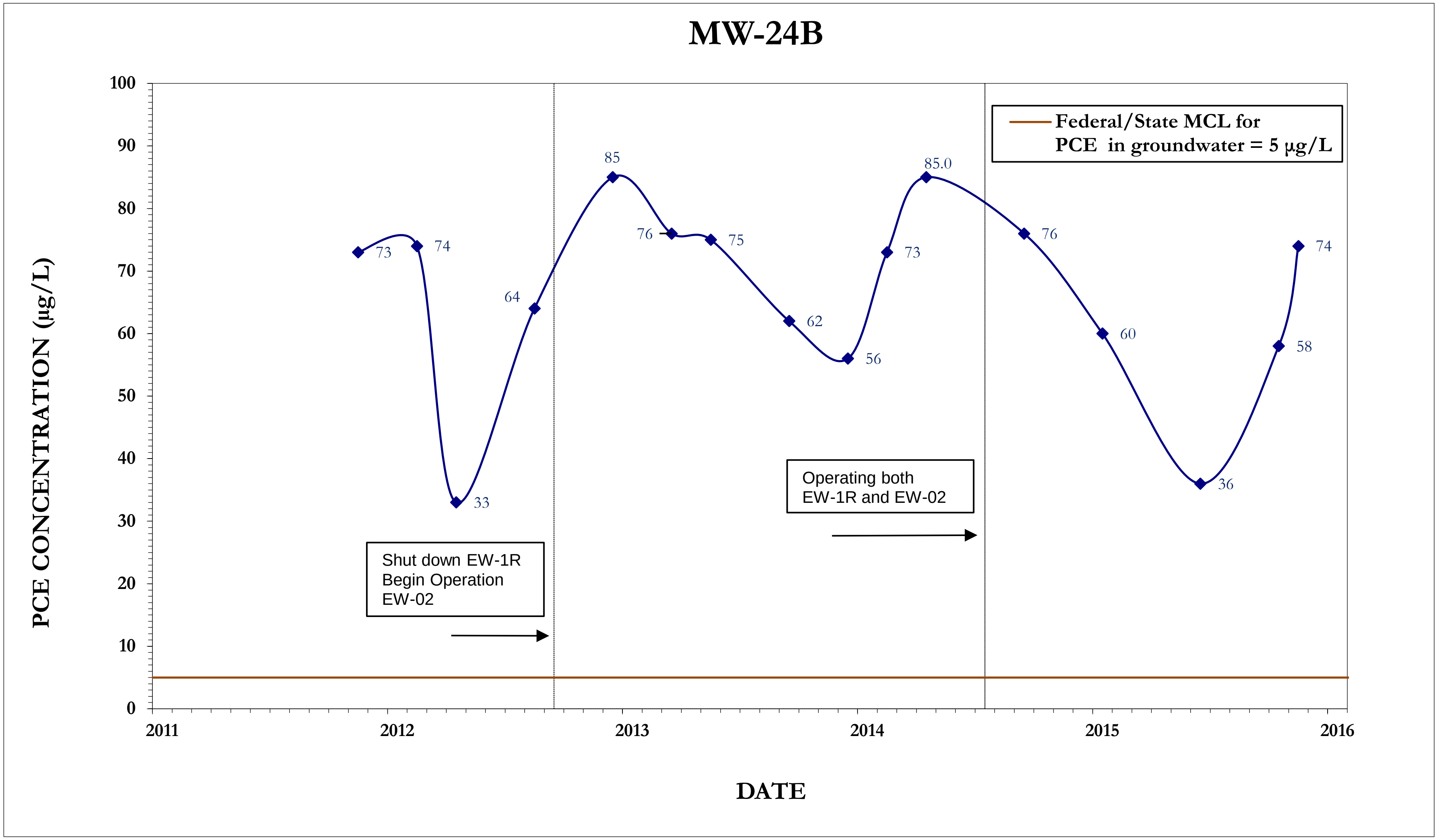


FIGURE G-4(aj)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

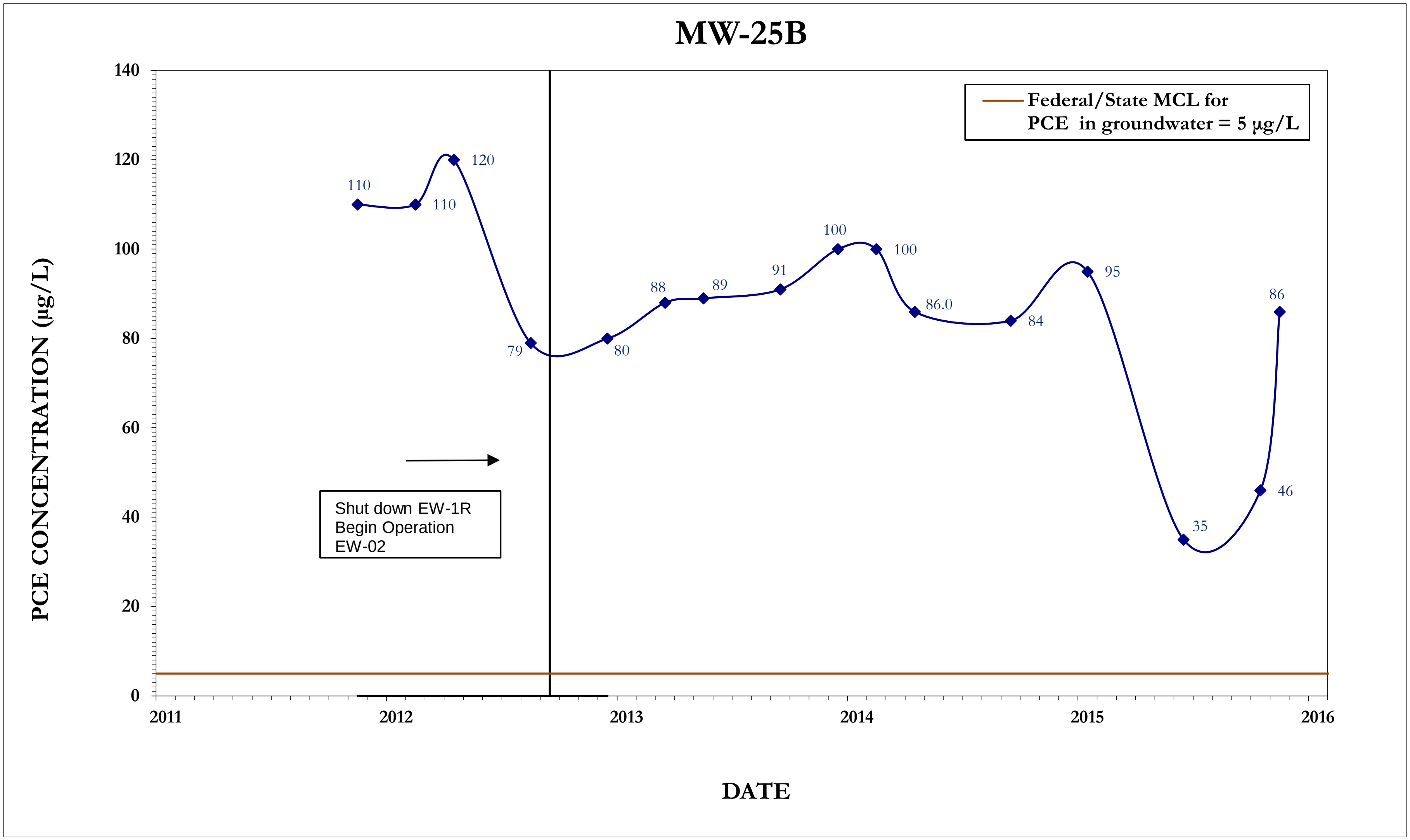


FIGURE G-4(ak)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

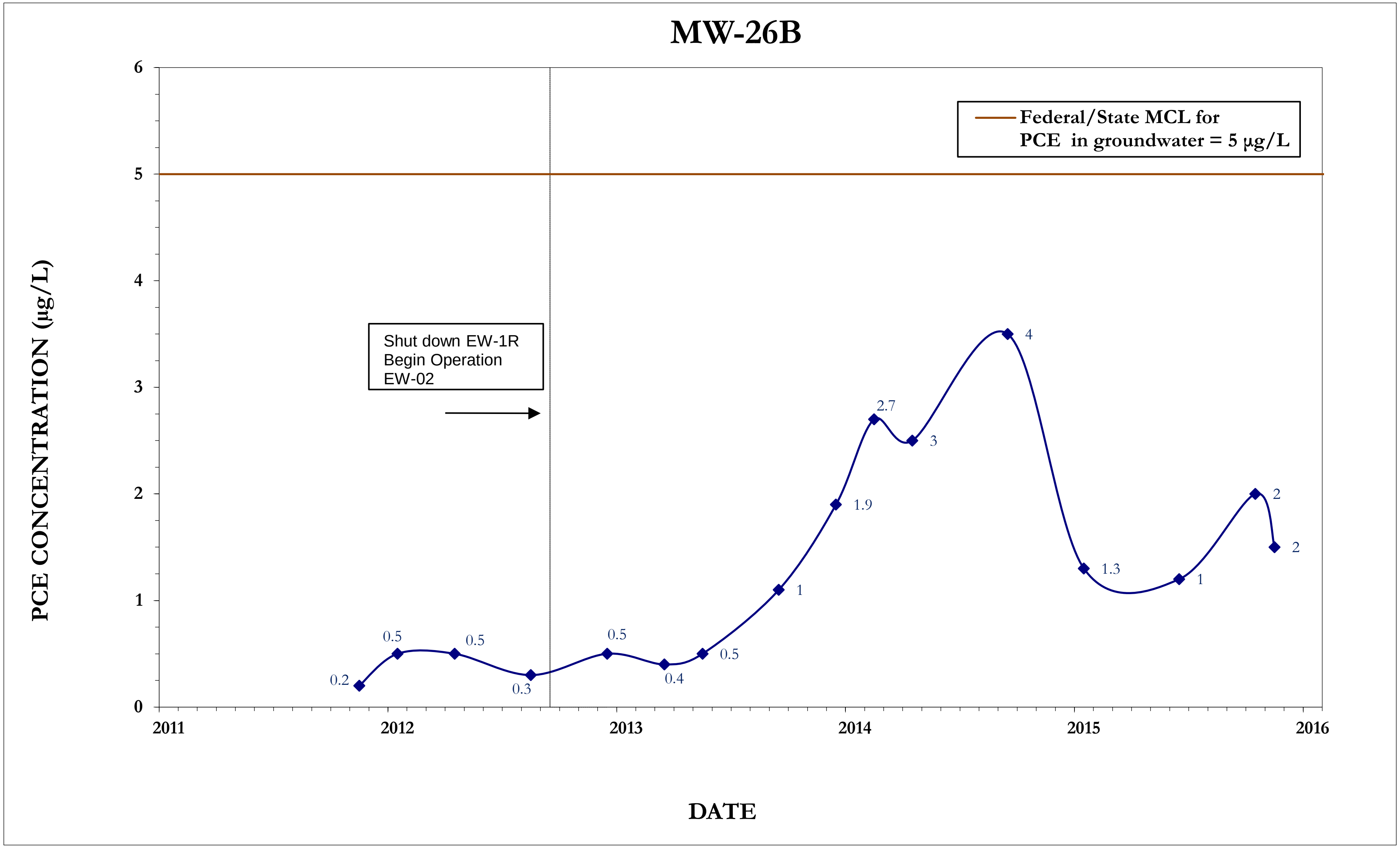


FIGURE G-4(al)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

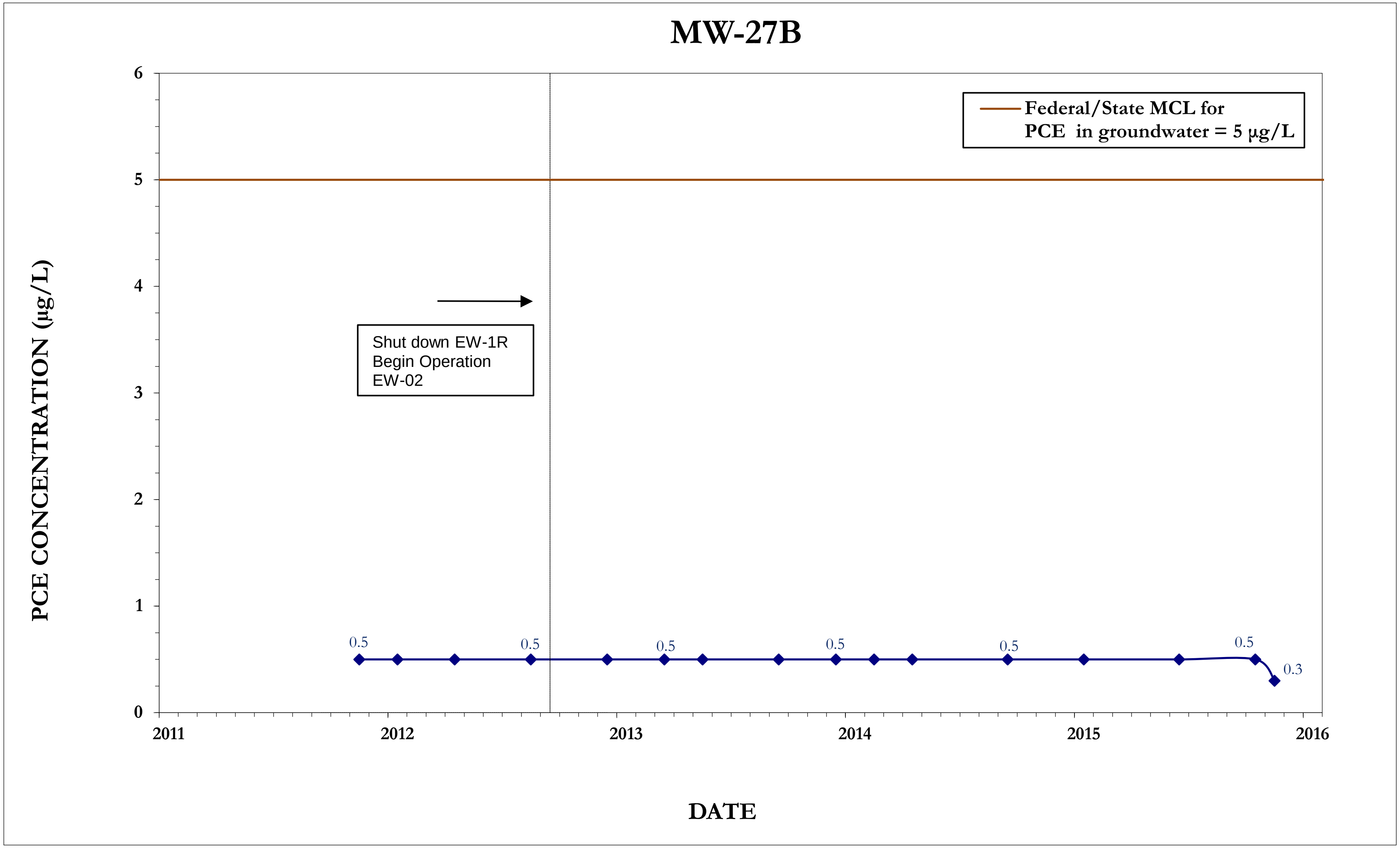


FIGURE G-4(am)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

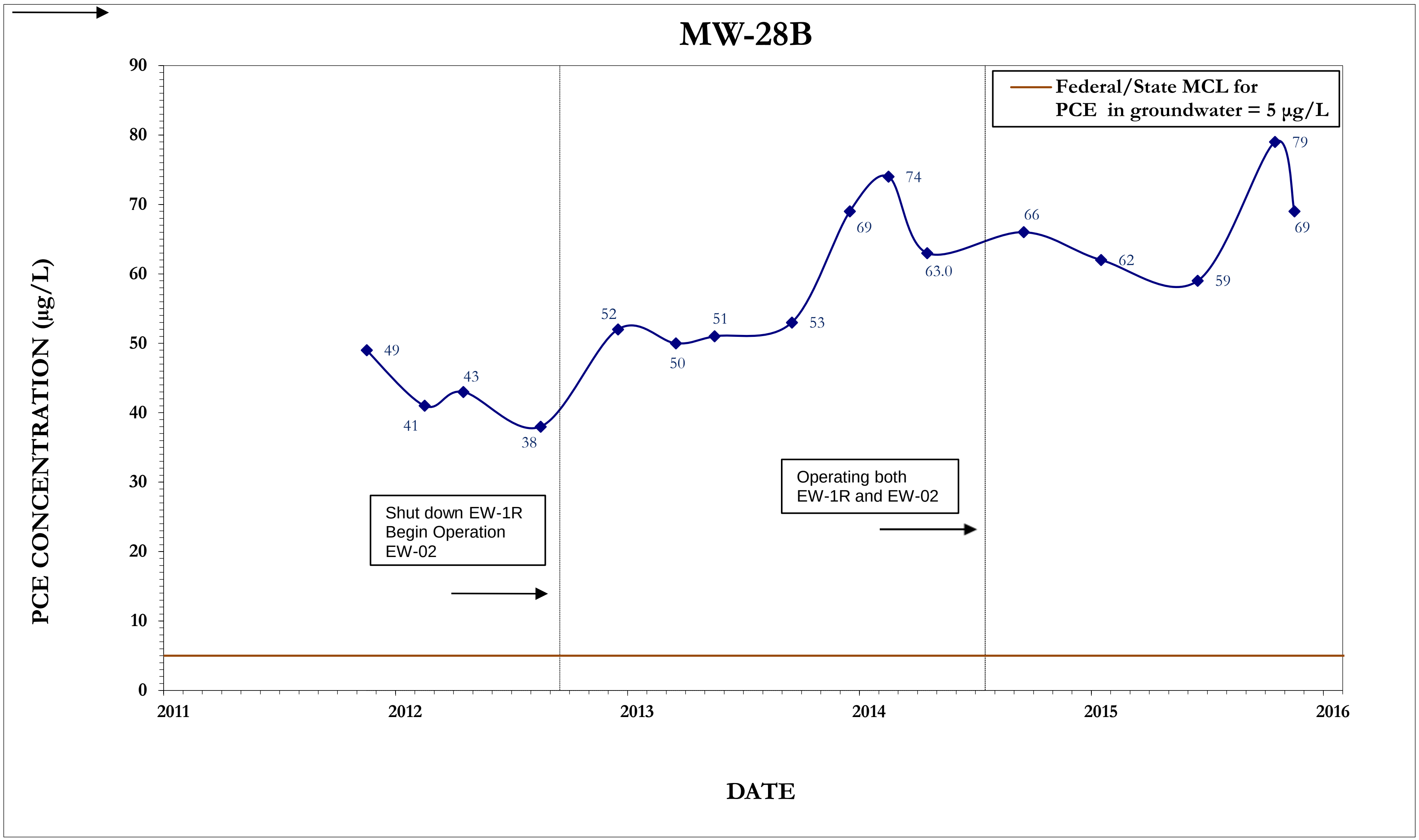


FIGURE G-4(an)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

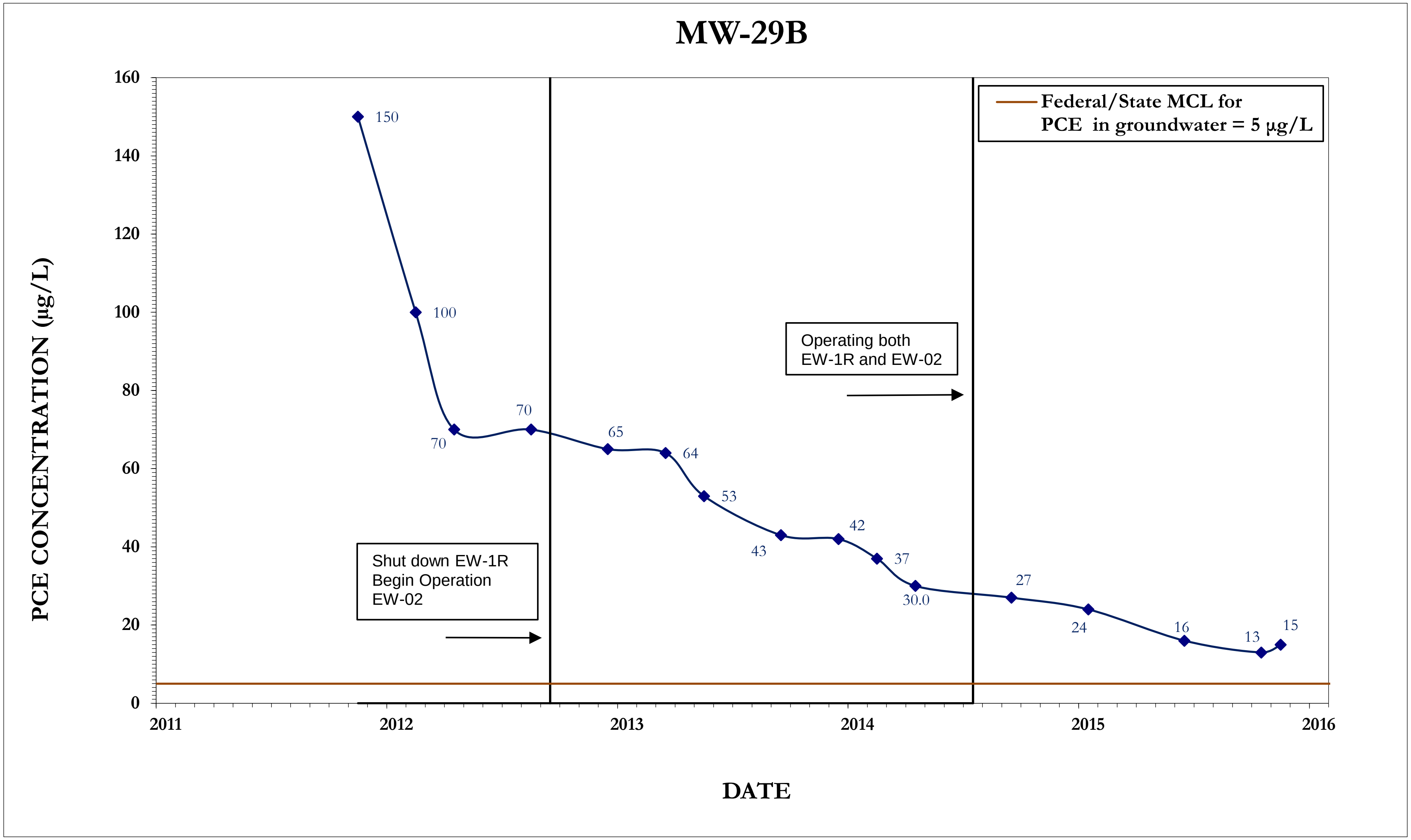


FIGURE G-4 (ao)
HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

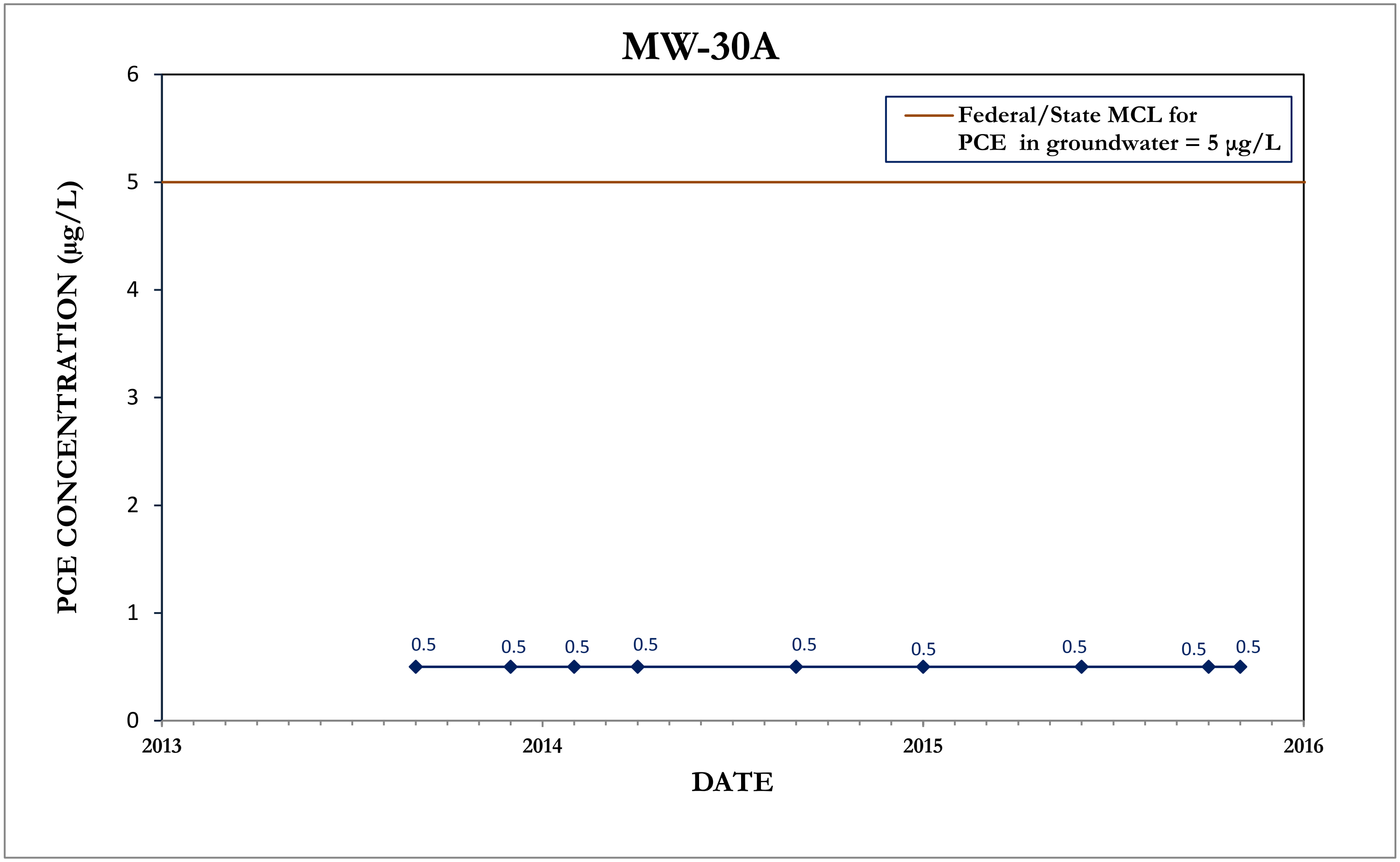


FIGURE G-4 (ap)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

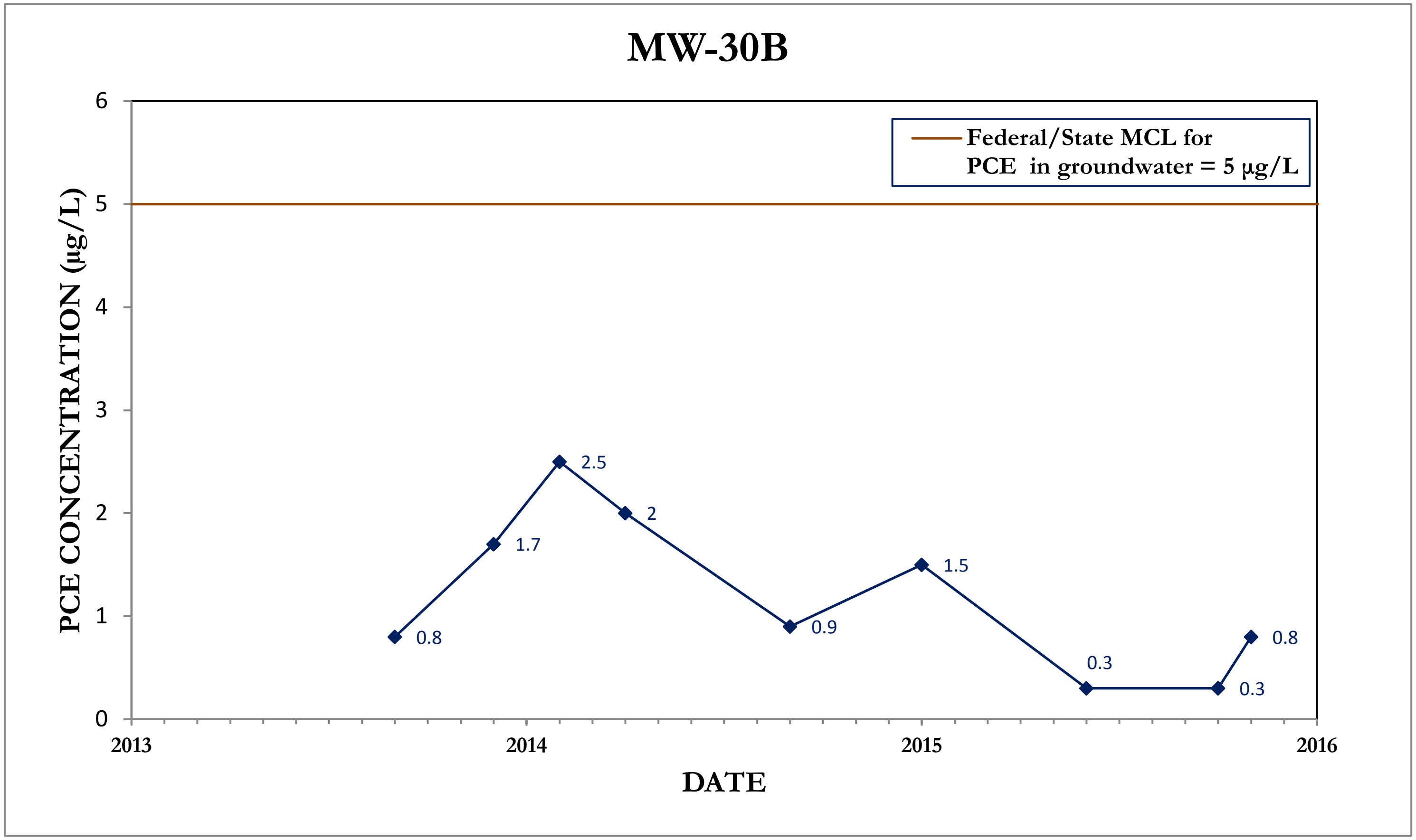


FIGURE G-4 (aq)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

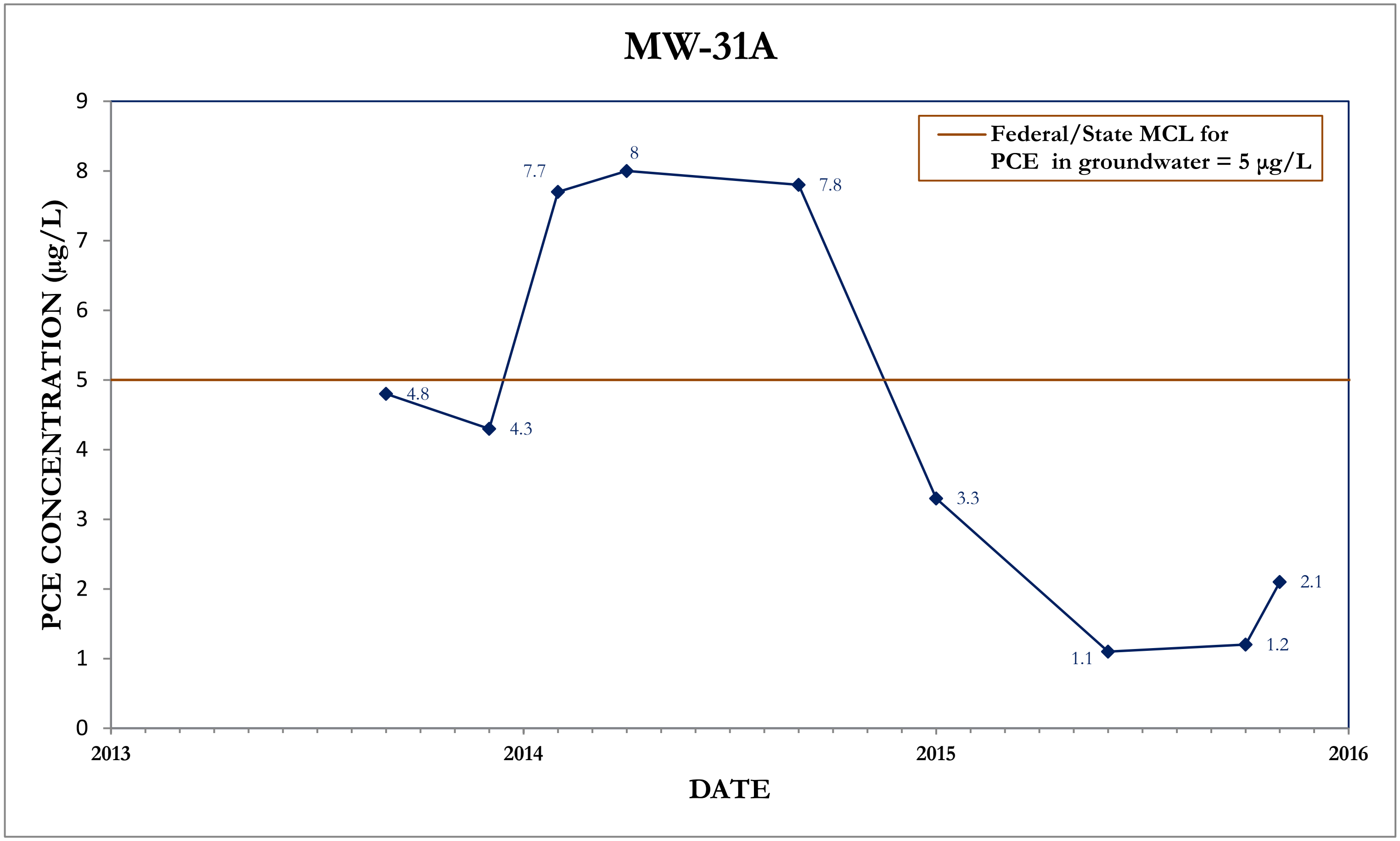


FIGURE G-4 (ar)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

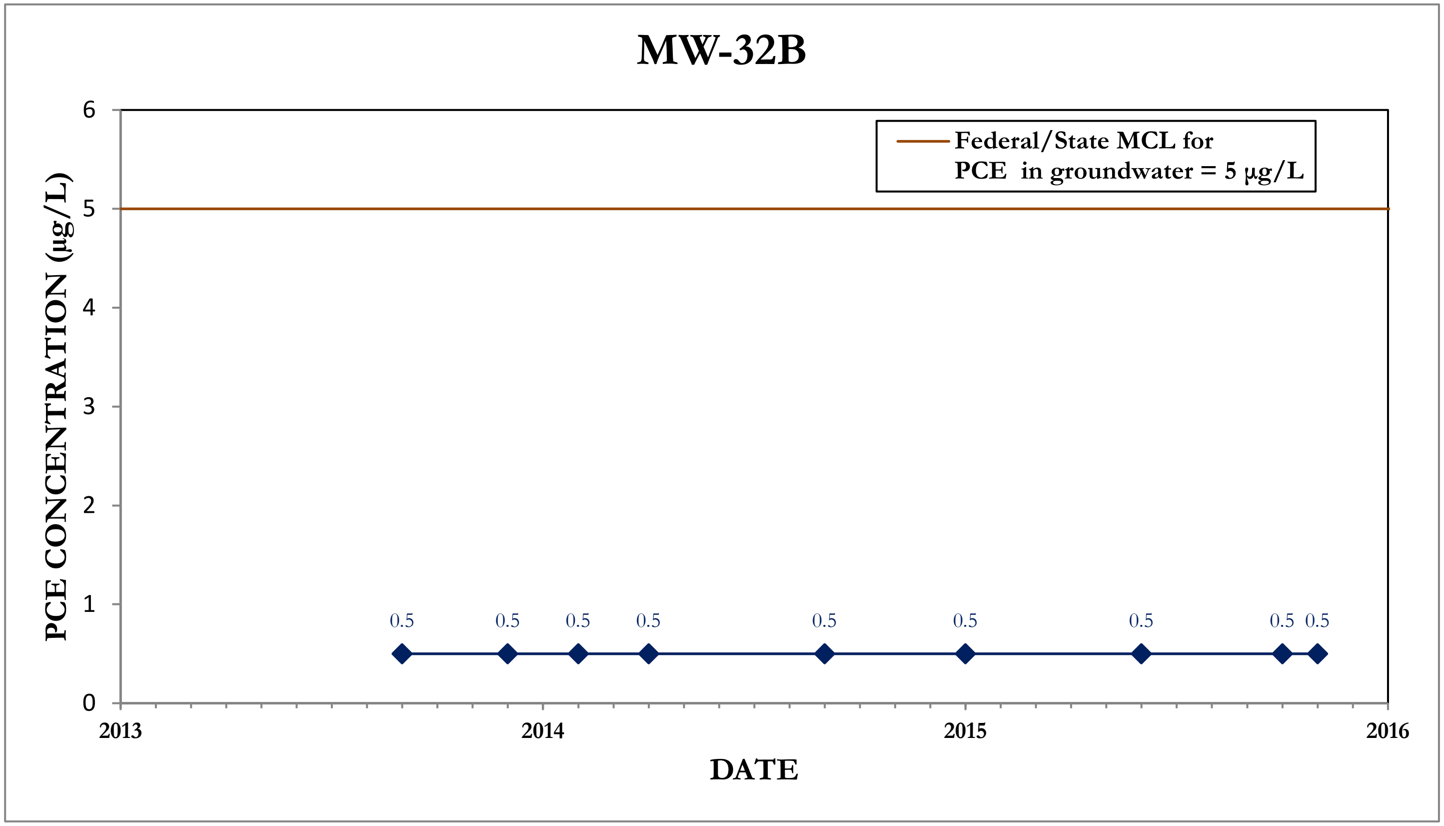


FIGURE G-4 (as)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

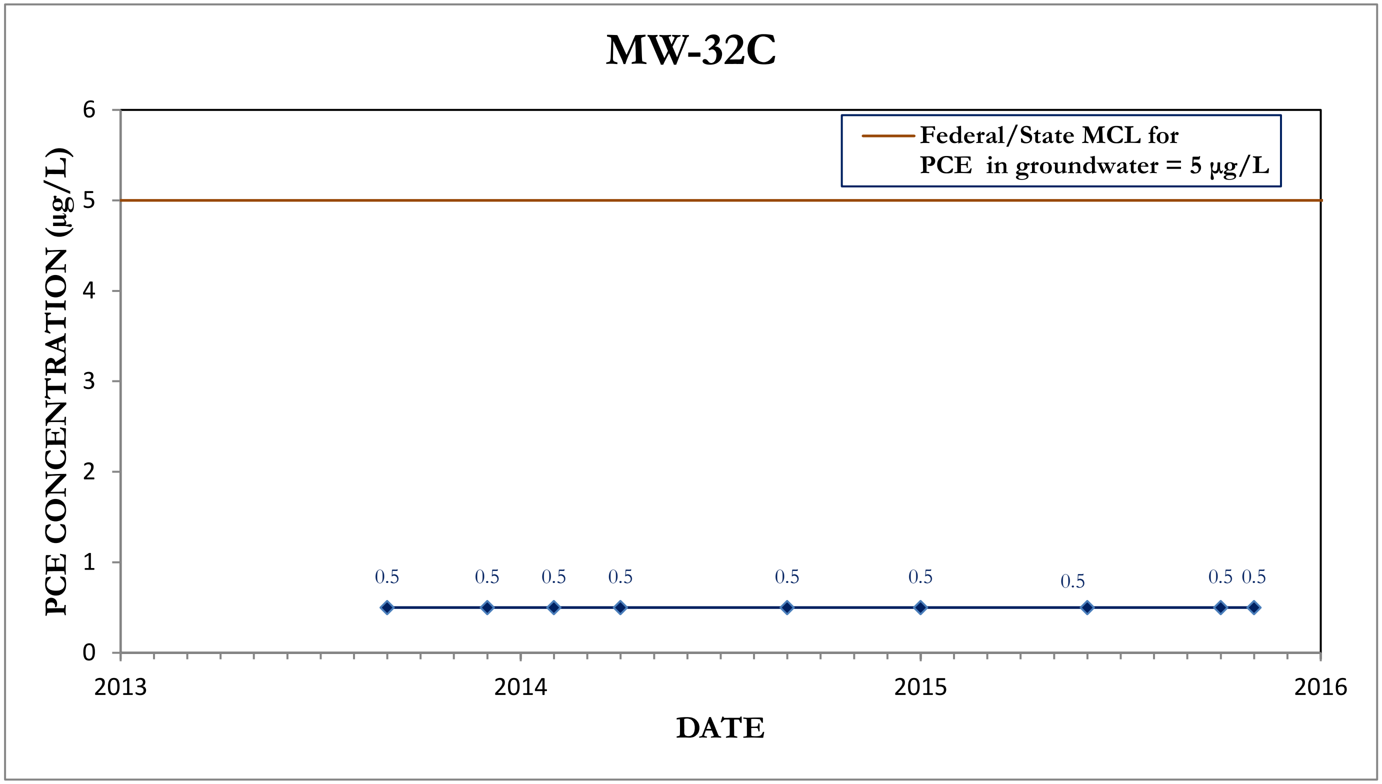


FIGURE G-4 (at)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

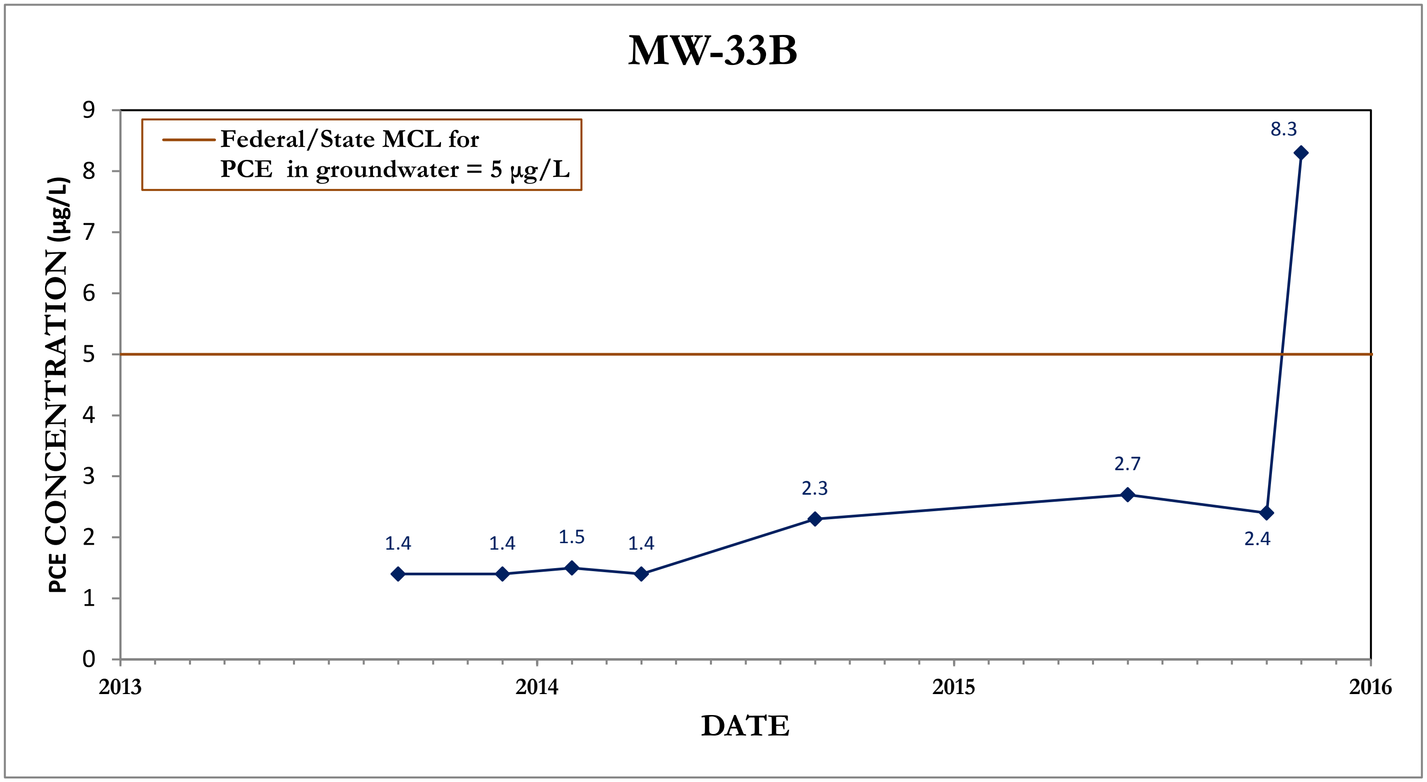


FIGURE G-4 (au)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

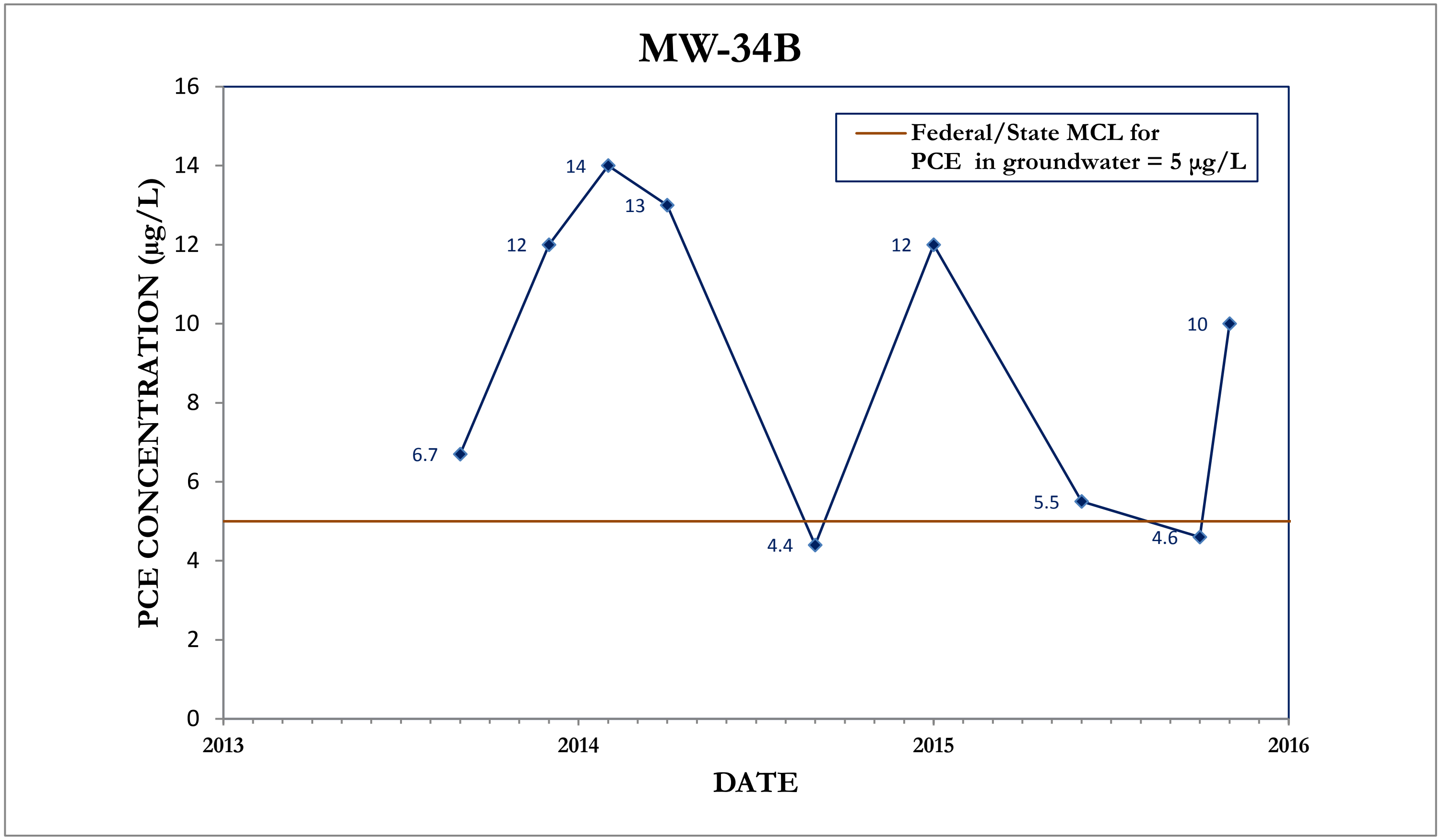


FIGURE G-4 (av)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

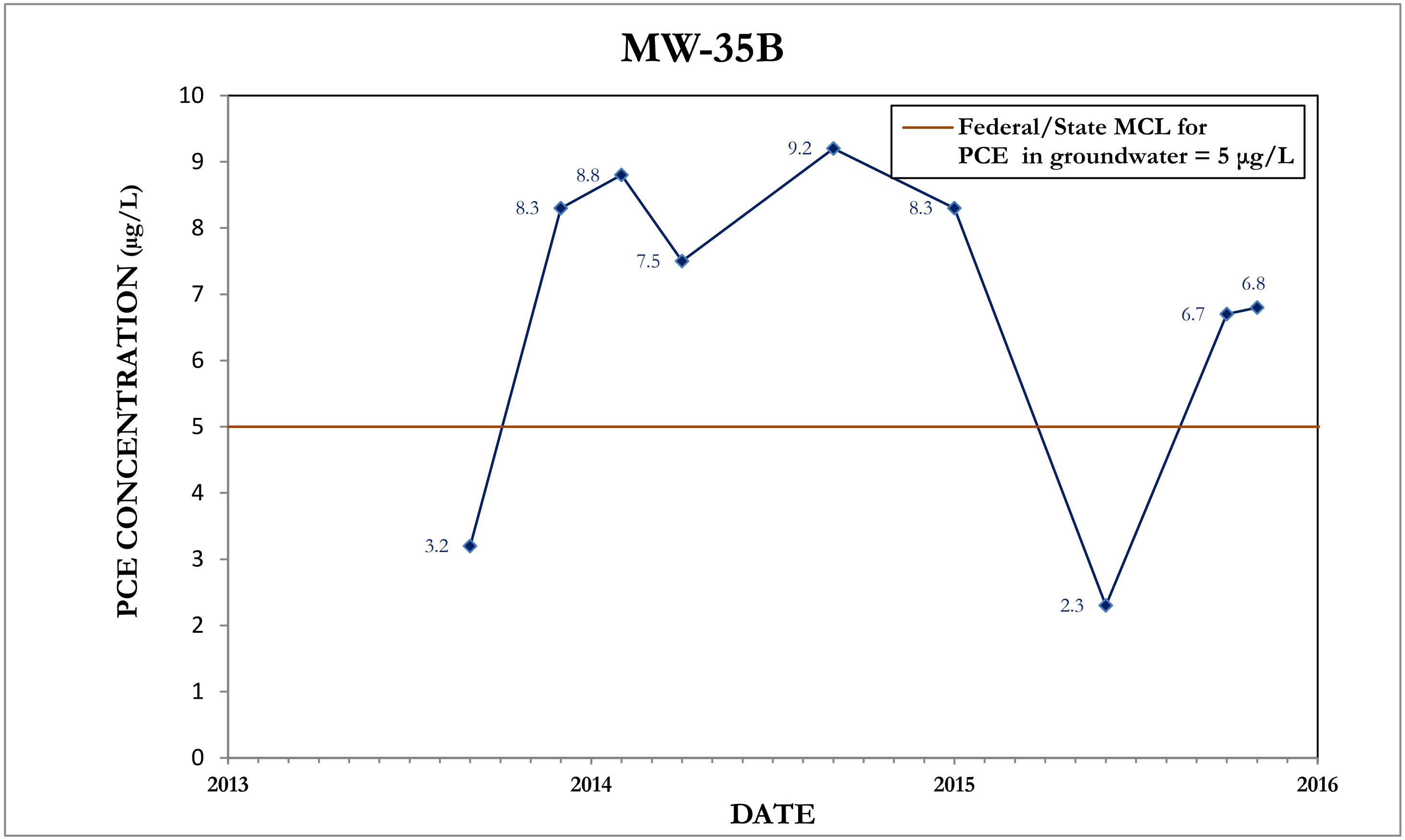


TABLE G-5 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEM MODESTO SUPERFUND SITE MODESTO, CALIFORNIA
(Page 1 of 3)

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 SYSTEM MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

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

TABLE G-5 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEM MODESTO SUPERFUND SITE MODESTO, 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)
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
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
4-Apr-13	1,855,900	210,651,633	490.0	7.59	582.82
2-May-13	1,635,500	212,287,133	440.0	6.01	588.82
6-Jun-13	2,322,000	214,609,133	370.0	7.17	595.99
11-Jul-13	2,016,500	216,625,633	350.0	5.89	601.88
8-Aug-13	1,838,400	218,464,033	340.0	5.22	607.10
12-Sep-13	2,299,000	220,763,033	280.0	5.37	612.47
3-Oct-13	1,106,400	221,869,433	260.0	2.40	614.87
7-Nov-13	2,188,300	224,057,733	260.0	4.75	619.62
5-Dec-13	1,835,700	225,893,433	270.0	4.14	623.76
9-Jan-14	2,219,400	228,112,833	260.0	4.82	628.57
6-Feb-14	1,821,900	229,934,733	240.0	3.65	632.22
13-Mar-14	2,013,600	231,948,333	210.0	3.53	635.75
2-Apr-14	1,249,600	233,197,933	210.0	2.19	637.94
1-May-14	1,909,200	235,107,133	190.0	3.03	640.97
5-Jun-14	2,223,000	237,330,133	210.0	3.90	644.87
3-Jul-14	1,817,300	239,147,433	170.0	3.27	648.14
7-Aug-14	2,304,900	241,452,333	110.0	1.71	649.84
4-Sep-14	1,859,900	243,312,233	110.0	1.82	651.66
2-Oct-14	1,978,000	245,290,233	120	2.16	653.82
6-Nov-14	2,154,800	247,445,033	89	1.42	655.24
4-Dec-14	1,918,400	249,363,433	110	1.82	656.68
8-Jan-15	1,571,000	250,934,433	180	2.16	658.69
3-Feb-15	1,338,200	252,272,633	180	1.42	661.19
5-Mar-15	1,659,100	253,931,733	87	1.82	662.58
1-Apr-15	1,911,500	255,843,233	86	2.16	664.34
6-May-15	2,459,800	258,303,033	100	1.42	666.47
11-Jun-15	2,551,400	262,777,533	100	1.44	668.08
8-Jul-15	1,923,100	264,736,533	94	2.01	669.61
6-Aug-15	1,959,000	266,466,433	77	2.49	670.72
1-Sep-15	1,729,900	269,001,233	74	1.39	672.29
8-Oct-15	2,534,800	270,789,033	76	1.77	673.42
5-Nov-15	1,787,800	273,025,233	82	2.13	674.95

Notes:
µg/L - micrograms per liter
lbs - pounds
PCE - Tetrachloroethene

TABLE G-6 PCE MASS REMOVED BY SOIL VAPOR EXTRACTION SYSTEM MODESTO SUPERFUND SITE MODESTO, 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 SYSTEM MODESTO SUPERFUND SITE MODESTO, 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 SYSTEM MODESTO SUPERFUND SITE MODESTO, 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 SYSTEM MODESTO SUPERFUND SITE MODESTO, 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
1/9/2013	91,680.7	3820.0	0.014	3,468.28
2/6/2013	92,352.7	3848.0	0.012	3,468.65
3/7/2013	93,048.7	3877.0	0.016	3,469.05
4/4/2013	93,720.7	3905.0	0.013	3,469.47
5/2/2013	94,392.7	3933.0	0.026	3,470.02
6/6/2013	95,232.7	3968.0	0.020	3,470.84

TABLE G-6 PCE MASS REMOVED BY SOIL VAPOR EXTRACTION SYSTEM MODESTO SUPERFUND SITE MODESTO, 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)
7/11/2013	96,072.7	4003.0	0.021	3,471.57
8/8/2013	96,744.7	4031.0	0.042	3,472.46
9/12/2013	97,584.7	4066.0	0.016	3,473.47
10/3/2013	98,088.7	4087.0	0.010	3,473.75
11/7/2013	98,928.7	4122.0	0.020	3,474.28
12/5/2013	99,600.7	4150.0	0.012	3,474.73
Modesto SVE Shutdown for Rebound on 13 January 2014 and Restarted on 8 April				
4/8/2015	100,536.7	4189.0	0.217	3,479.19
5/14/2015	101,400.7	4225.0	0.001	3,483.10
6/11/2015	102,072.7	4253.0	0.012	3,483.28
TOTAL	**102,072.7**	**4,253.0**		**3,483.28**

Notes:

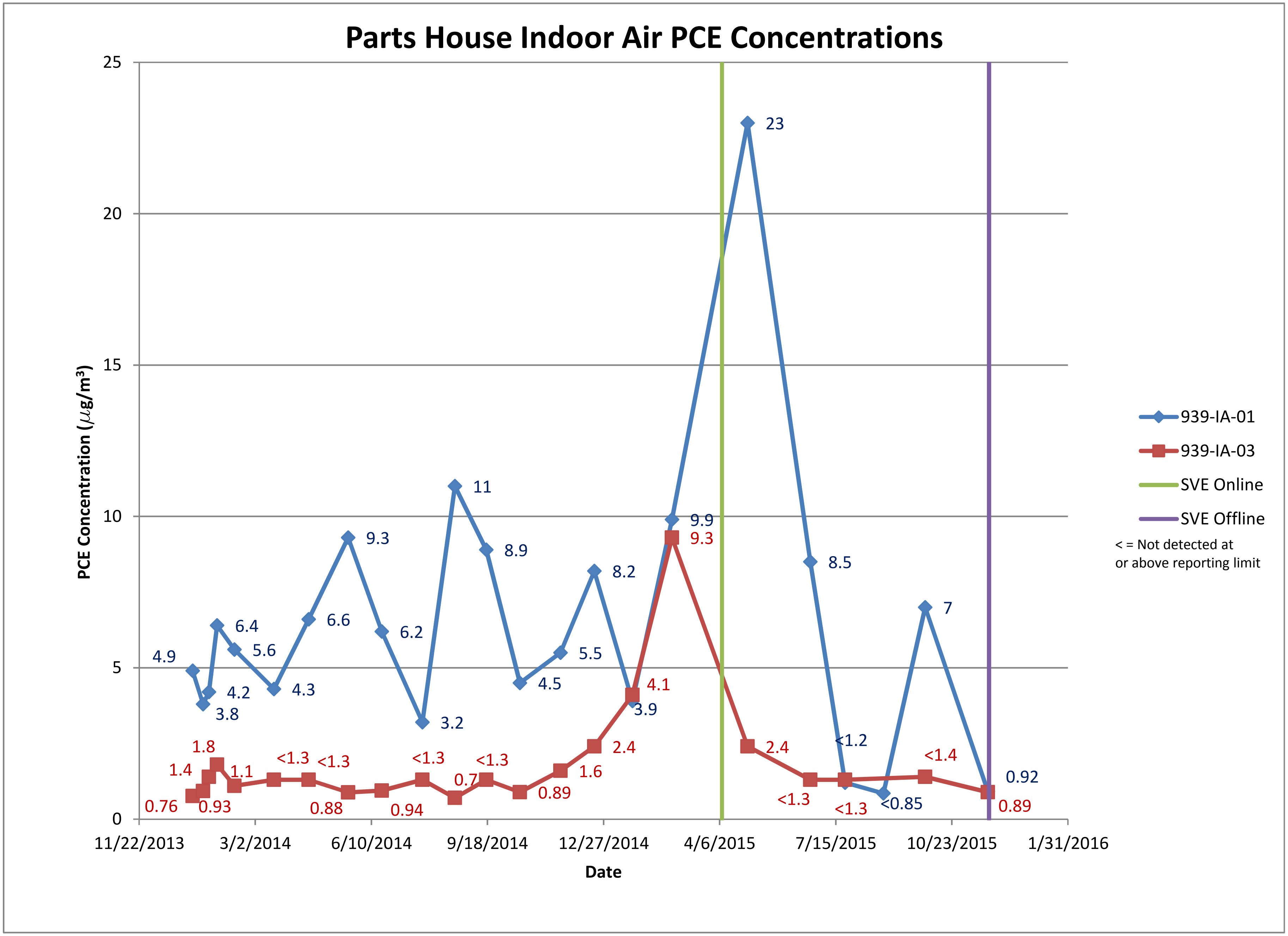
(a) Cumulative mass extracted was determined by multiplying the average mass extraction rate times the days of operation.

lbs - pounds

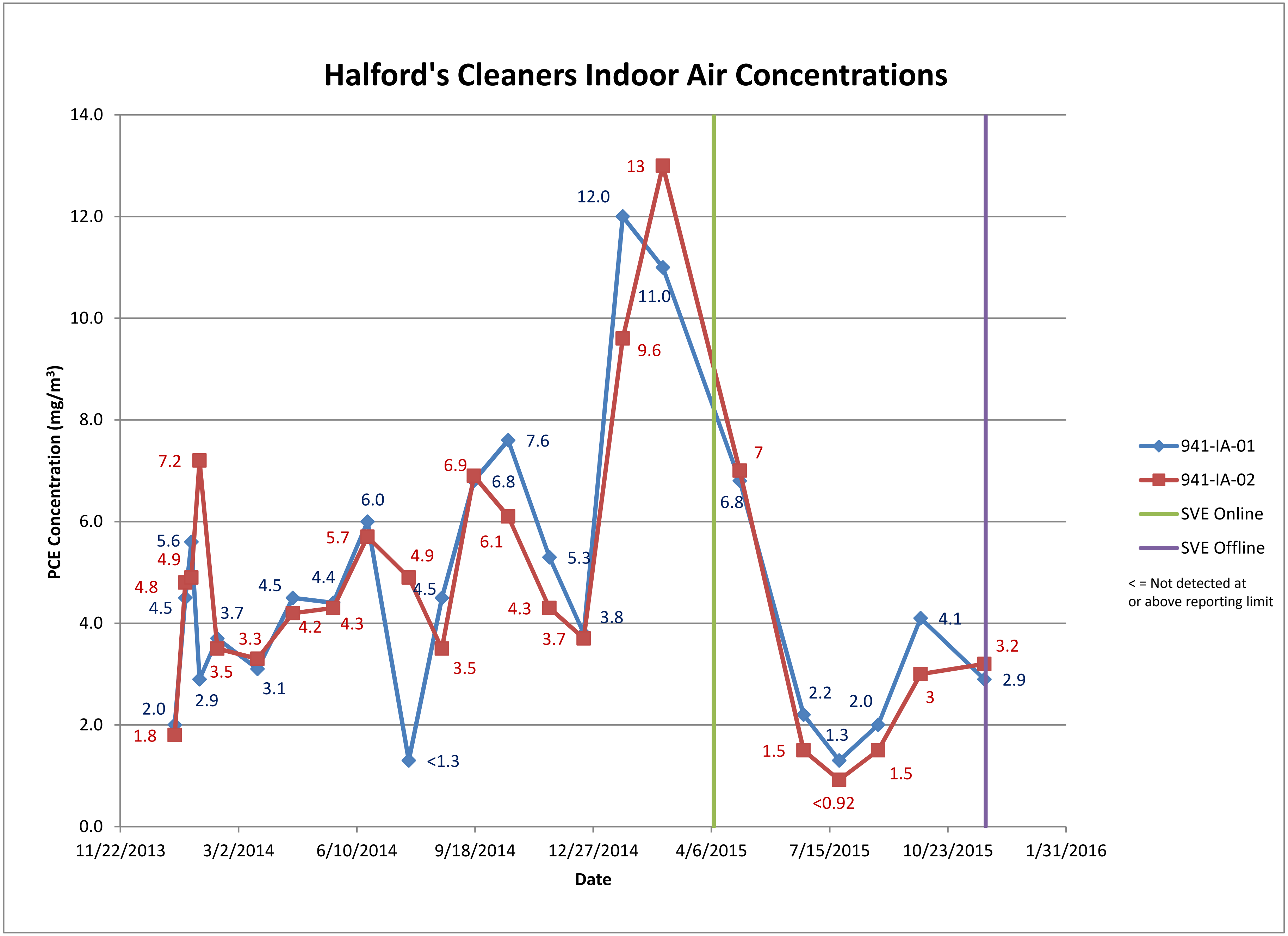
lbs/day - pounds per day

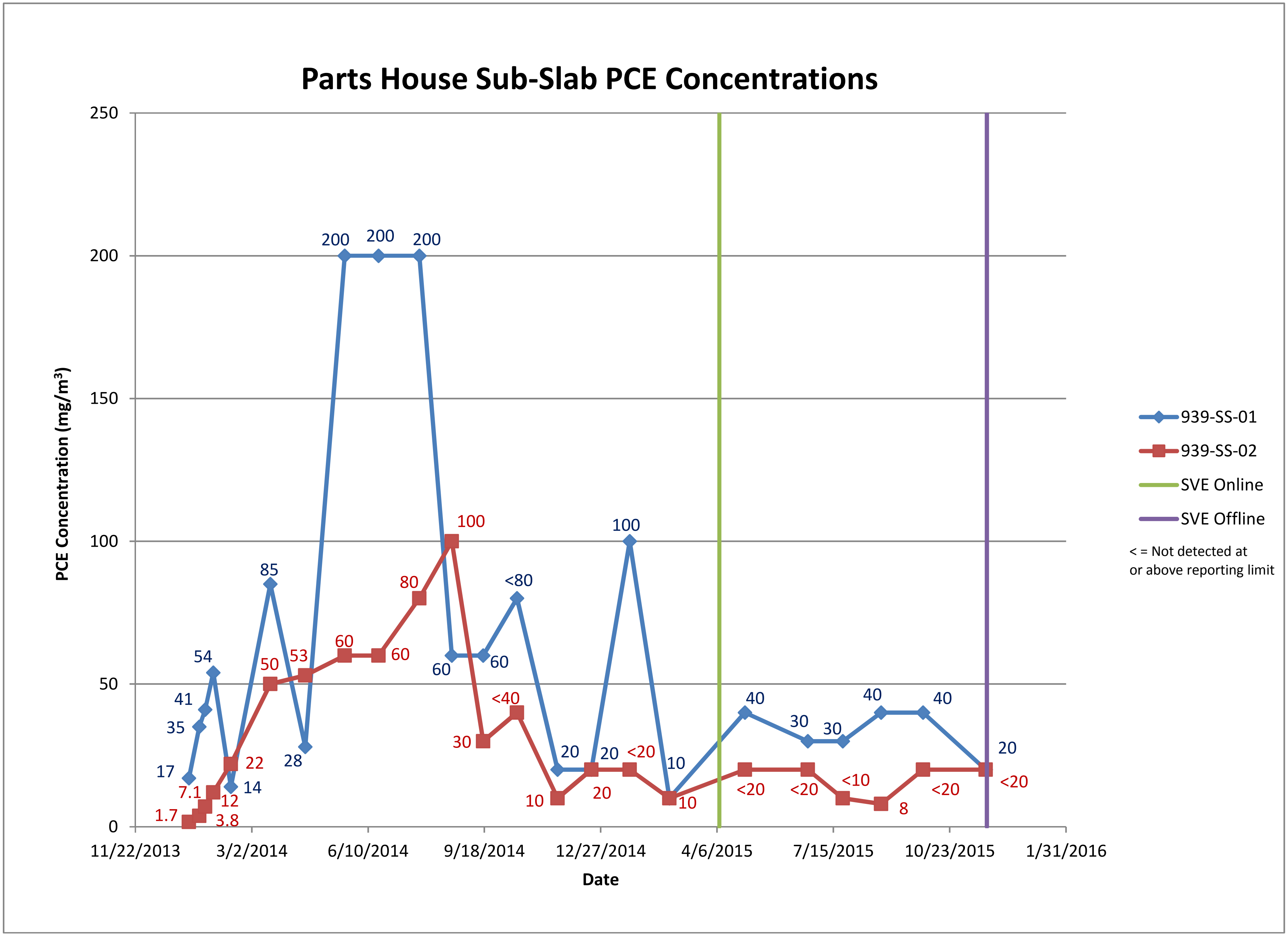
Appendix H

PCE Soil Vapor Concentration Trends in Indoor Air, Sub-slab, and Soil Vapor Monitoring Wells

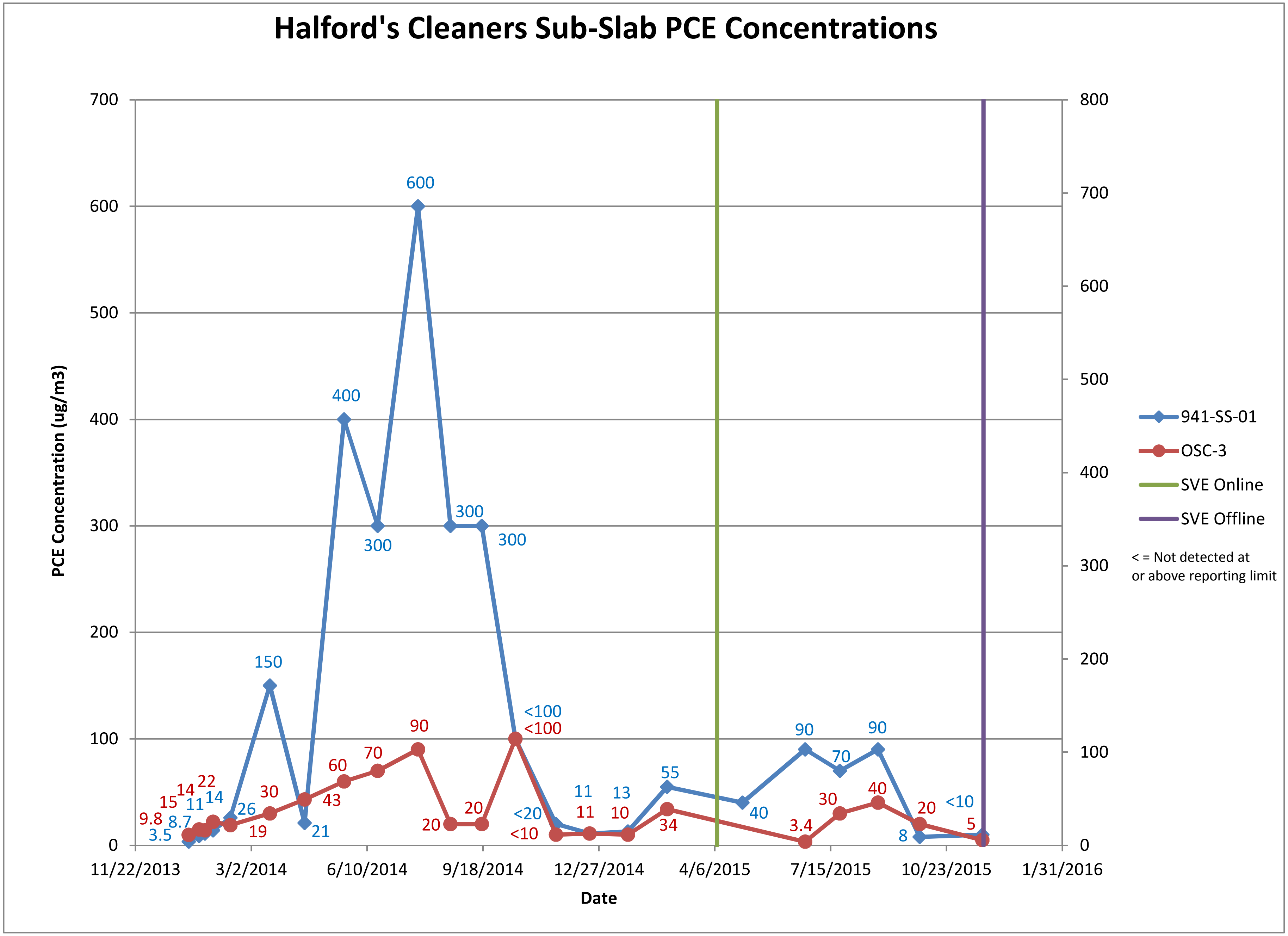


Parts House Indoor Air PCE Concentrations
PCE Concentration (µg/m³)
Date
939-IA-01
939-IA-03
SVE Online
SVE Offline
< = Not detected at or above reporting limit
0
5
10
15
20
25
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
4.9
3.8
4.2
6.4
5.6
4.3
6.6
9.3
6.2
3.2
11
8.9
4.5
5.5
8.2
3.9
9.9
23
8.5
<1.2
<0.85
7
0.92
0.76
1.4
0.93
1.8
1.1
<1.3
<1.3
0.88
0.94
<1.3
0.7
<1.3
0.89
1.6
2.4
4.1
9.3
2.4
<1.3
<1.3
<1.4
0.89

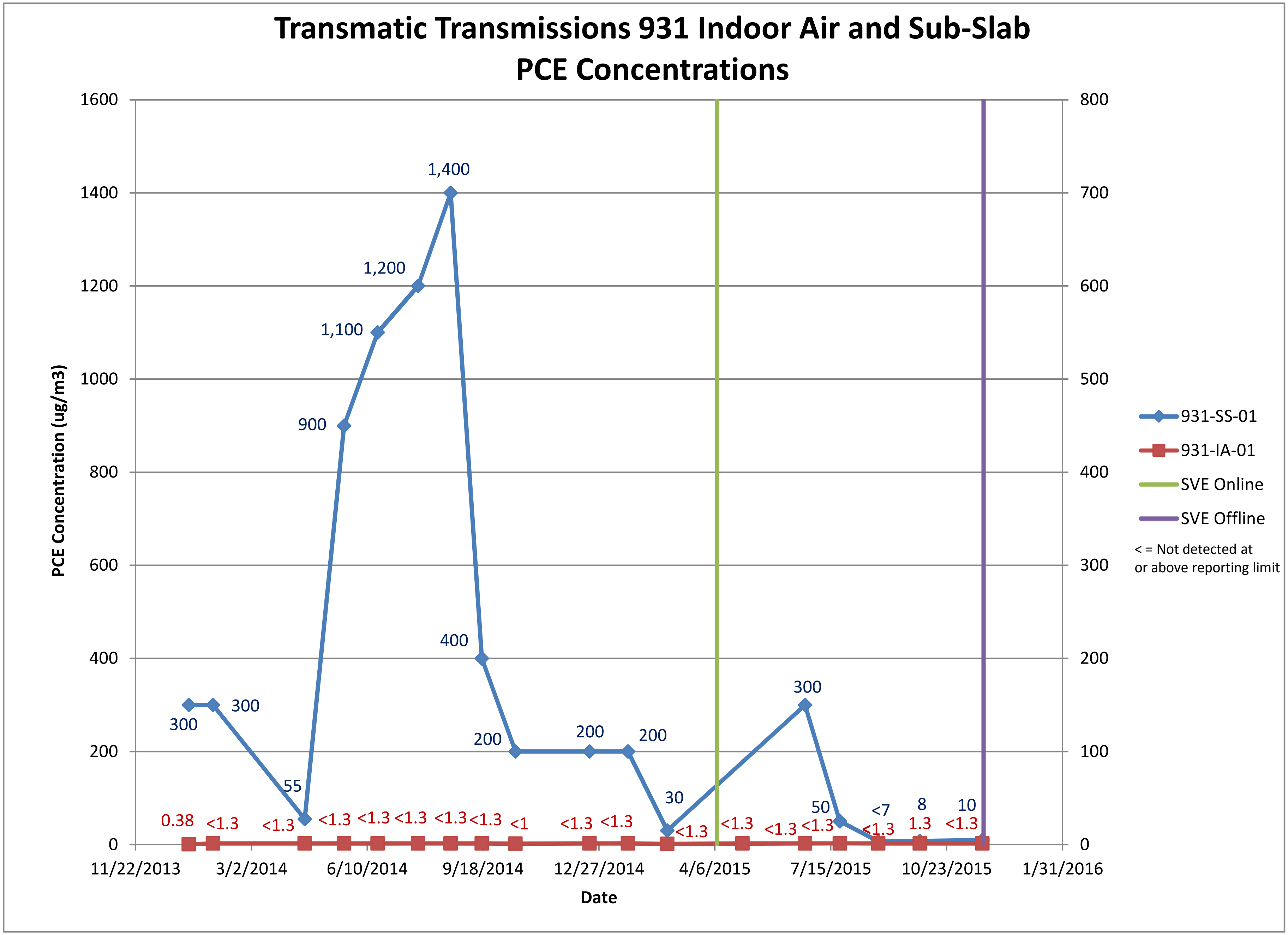

Halford's Cleaners Indoor Air Concentrations
PCE Concentration (mg/m³)
Date
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
941-IA-01
941-IA-02
SVE Online
SVE Offline
< = Not detected at
or above reporting limit
2.0
1.8
4.5
4.8
5.6
4.9
7.2
2.9
3.7
3.5
3.3
3.1
4.5
4.2
4.4
4.3
6.0
5.7
4.9
<1.3
4.5
3.5
6.9
6.8
7.6
6.1
5.3
4.3
3.7
3.8
12.0
13
11.0
9.6
7
6.8
2.2
1.5
1.3
<0.92
2.0
1.5
4.1
3
3.2
2.9



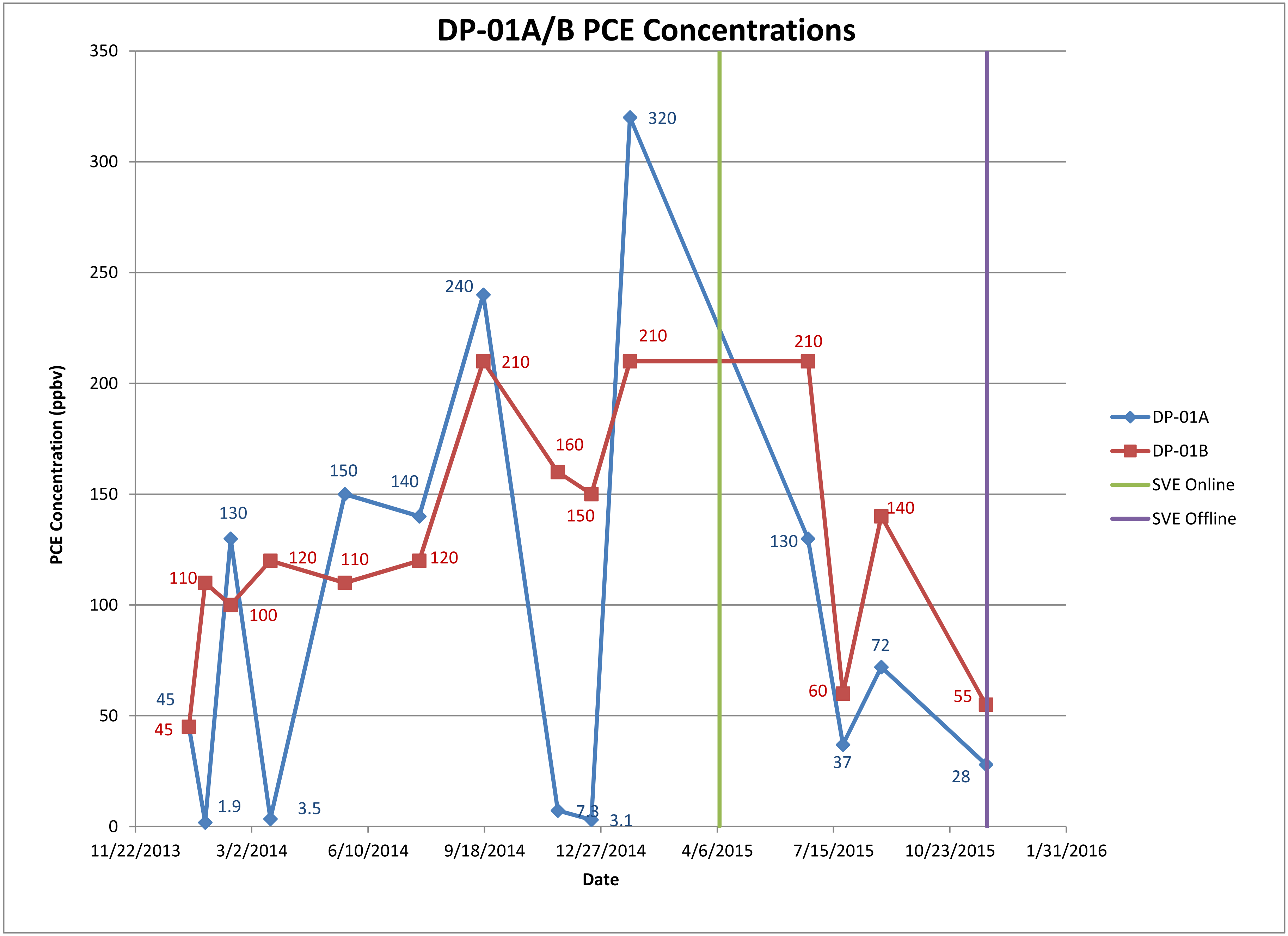
Parts House Sub-Slab PCE Concentrations
PCE Concentration (mg/m³)
Date
250
200
150
100
50
0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
939-SS-01
939-SS-02
SVE Online
SVE Offline
< = Not detected at
or above reporting limit
17
35
41
54
14
85
28
200
200
200
60
60
<80
20
20
100
10
40
30
30
40
40
20
1.7
3.8
7.1
12
22
50
53
60
60
80
100
30
<40
10
20
<20
10
<20
<20
<10
8
<20
<20

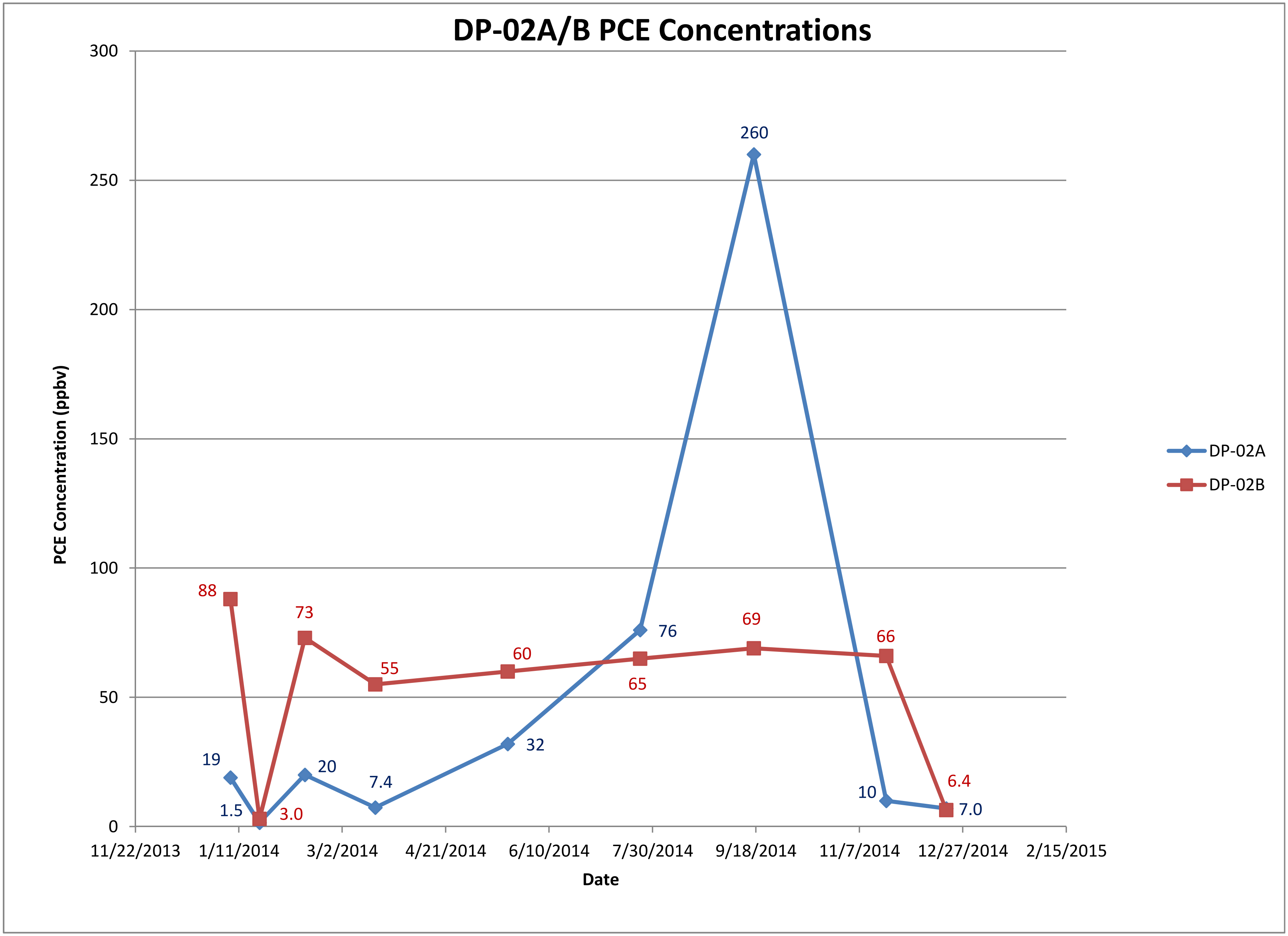


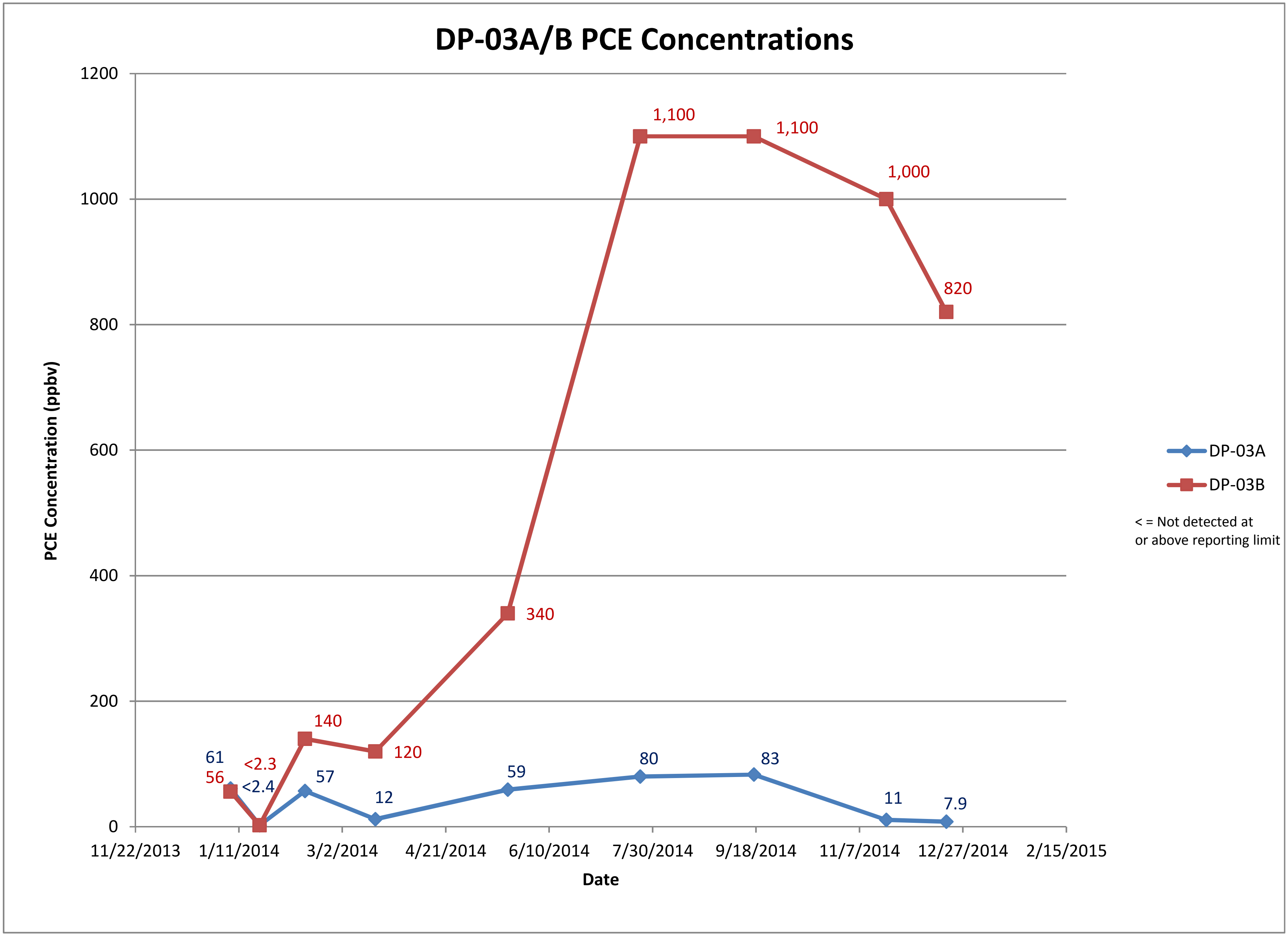
Halford's Cleaners Sub-Slab PCE Concentrations
PCE Concentration (ug/m3)
Date
0
100
200
300
400
500
600
700
800
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
941-SS-01
OSC-3
SVE Online
SVE Offline
< = Not detected at
or above reporting limit
3.5
8.7
11
14
26
150
21
400
300
600
300
300
<100
<20
11
13
55
40
90
70
90
8
<10
9.8
15
14
22
19
30
43
60
70
90
20
20
<100
<10
11
10
34
3.4
30
40
20
5

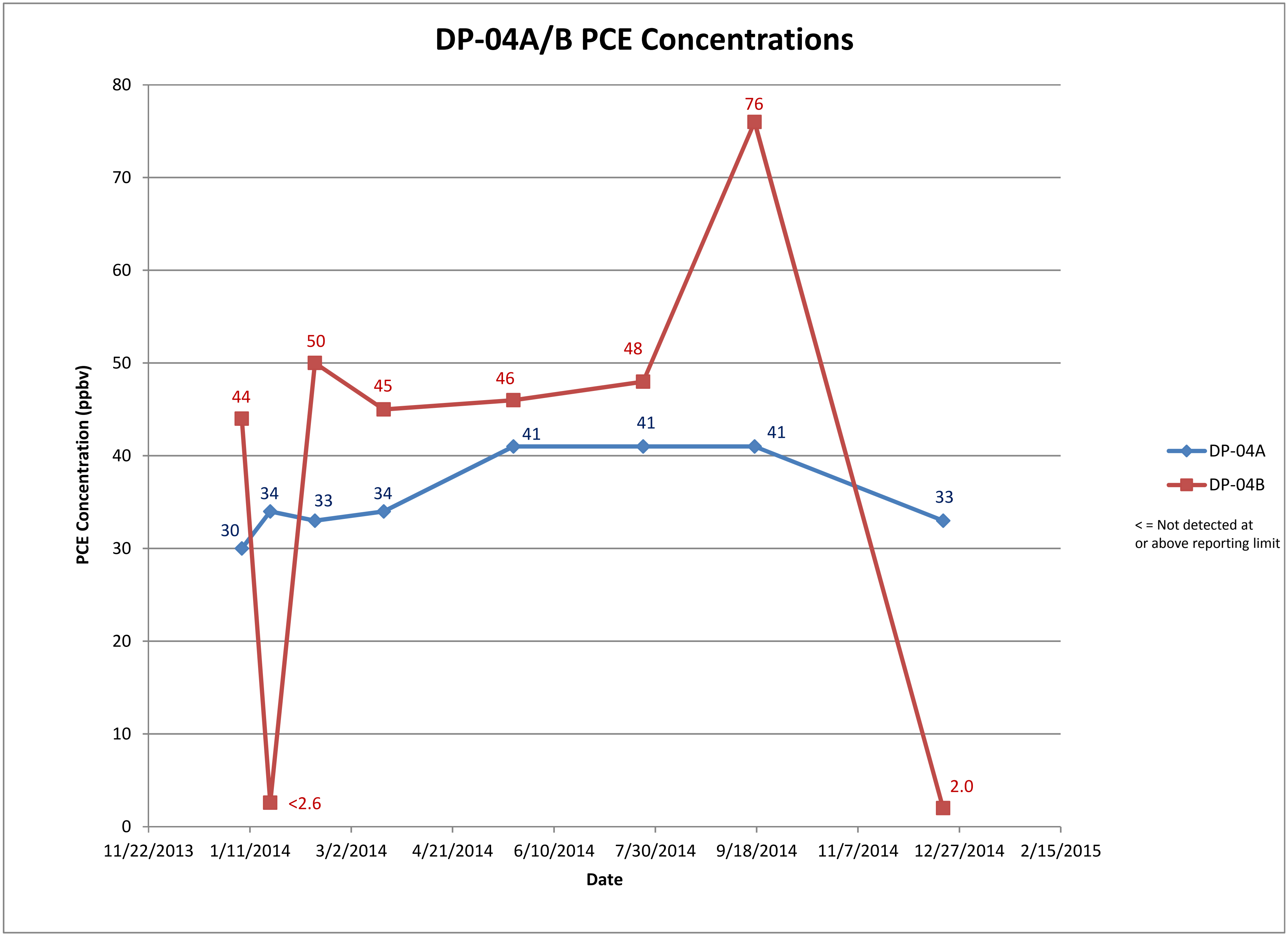


Transmatic Transmissions 931 Indoor Air and Sub-Slab
PCE Concentrations
PCE Concentration (ug/m3)
1600
1400
1200
1000
800
600
400
200
0
800
700
600
500
400
300
200
100
0
1,400
1,200
1,100
900
400
300
300
55
200
200
200
30
300
50
<7
8
10
0.38
<1.3
<1
1.3
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
Date
931-SS-01
931-IA-01
SVE Online
SVE Offline
< = Not detected at
or above reporting limit

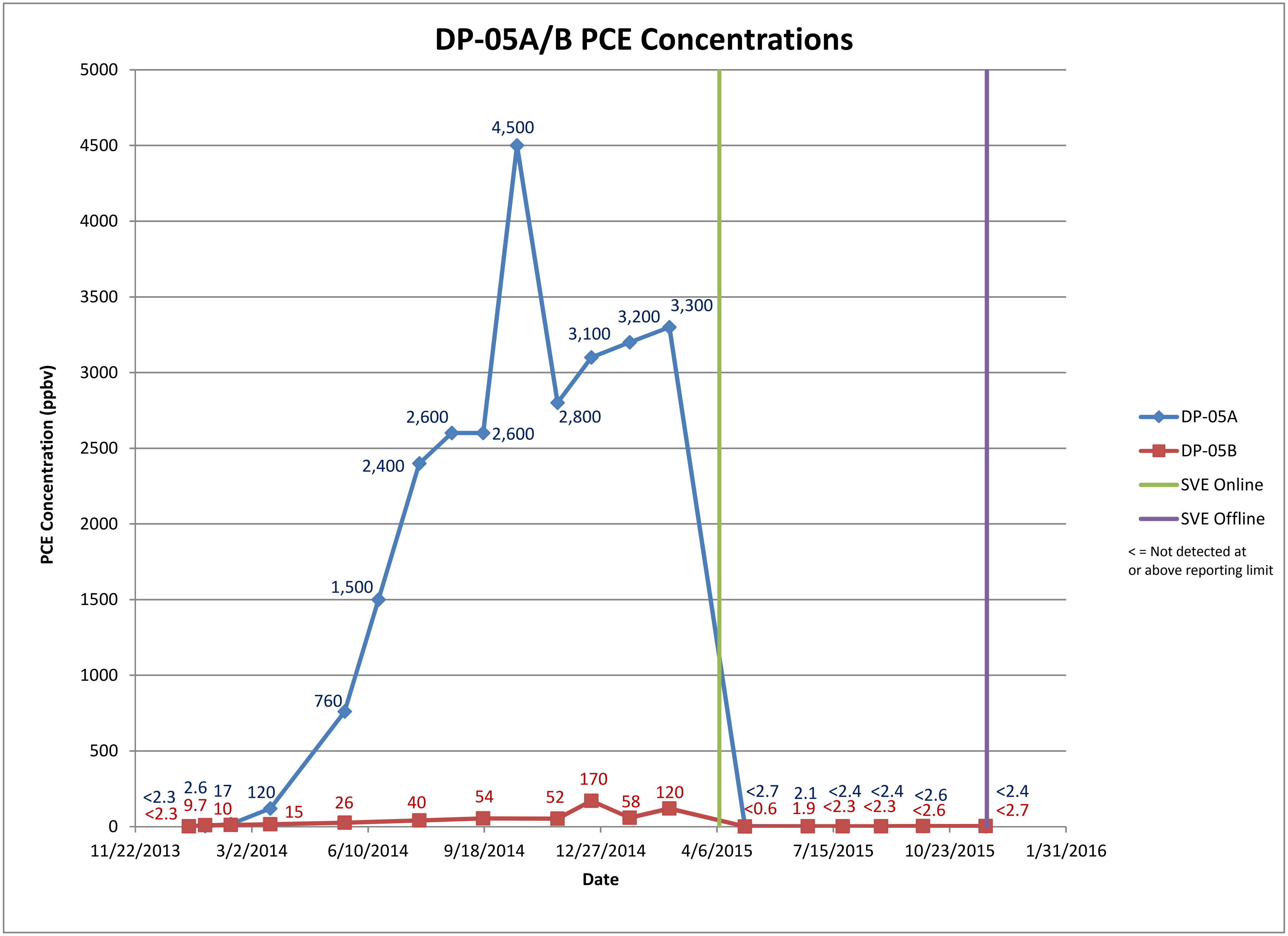

DP-01A/B PCE Concentrations
PCE Concentration (ppbv)
350
300
250
200
150
100
50
0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
Date
45
45
110
1.9
130
100
120
3.5
150
110
140
120
240
210
160
150
7.3
3.1
320
210
210
130
60
37
72
140
55
28
DP-01A
DP-01B
SVE Online
SVE Offline


DP-02A/B PCE Concentrations
PCE Concentration (ppbv)
300
250
200
150
100
50
0
11/22/2013
1/11/2014
3/2/2014
4/21/2014
6/10/2014
7/30/2014
9/18/2014
11/7/2014
12/27/2014
2/15/2015
Date
88
19
1.5
3.0
73
20
55
7.4
60
32
65
76
69
260
66
10
6.4
7.0
DP-02A
DP-02B

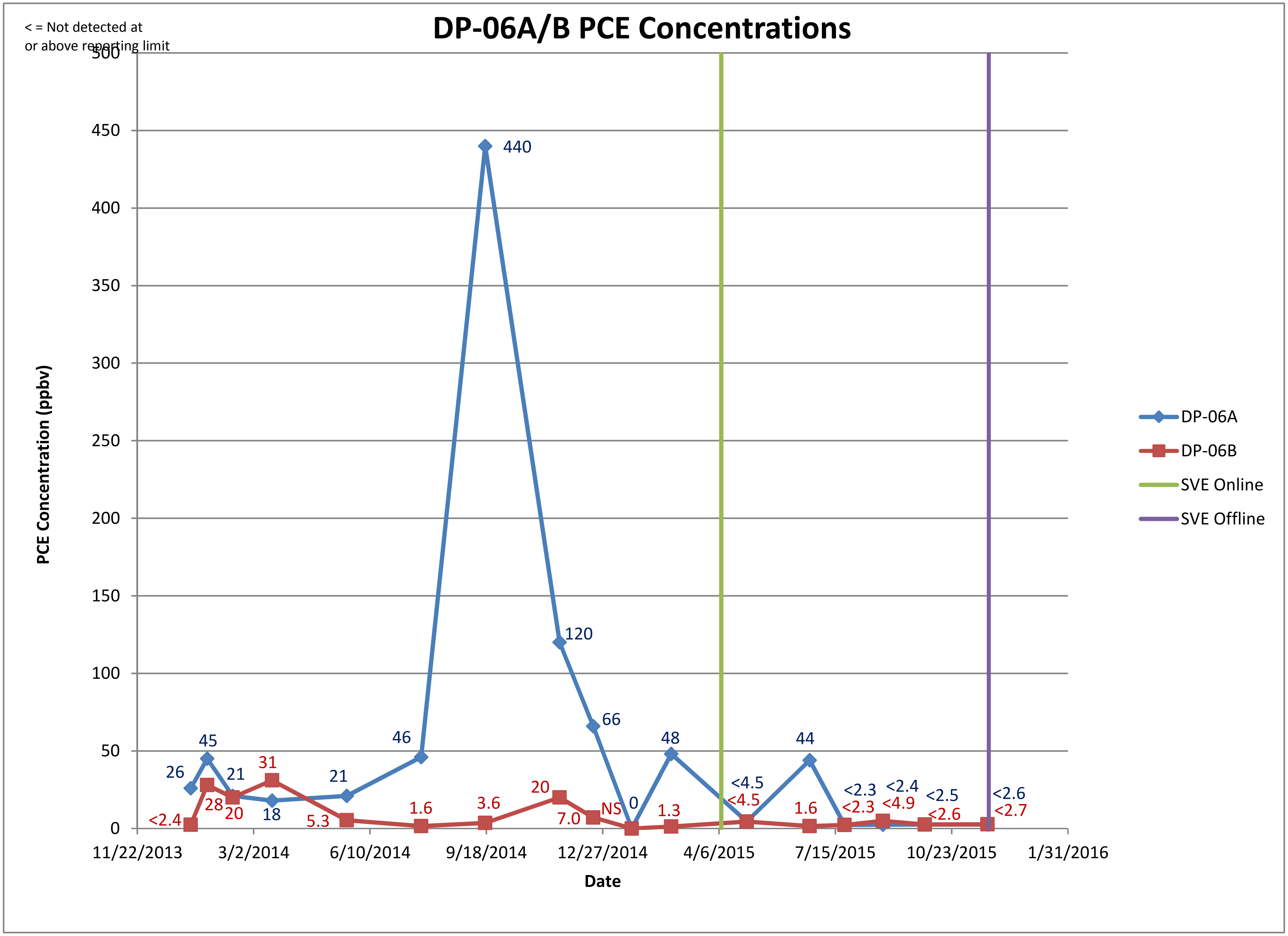

DP-03A/B PCE Concentrations
PCE Concentration (ppbv)
1200
1000
800
600
400
200
0
11/22/2013
1/11/2014
3/2/2014
4/21/2014
6/10/2014
7/30/2014
9/18/2014
11/7/2014
12/27/2014
2/15/2015
Date
61
56
<2.3
<2.4
140
57
12
120
340
59
80
83
1,100
1,100
1,000
820
11
7.9
DP-03A
DP-03B
< = Not detected at
or above reporting limit



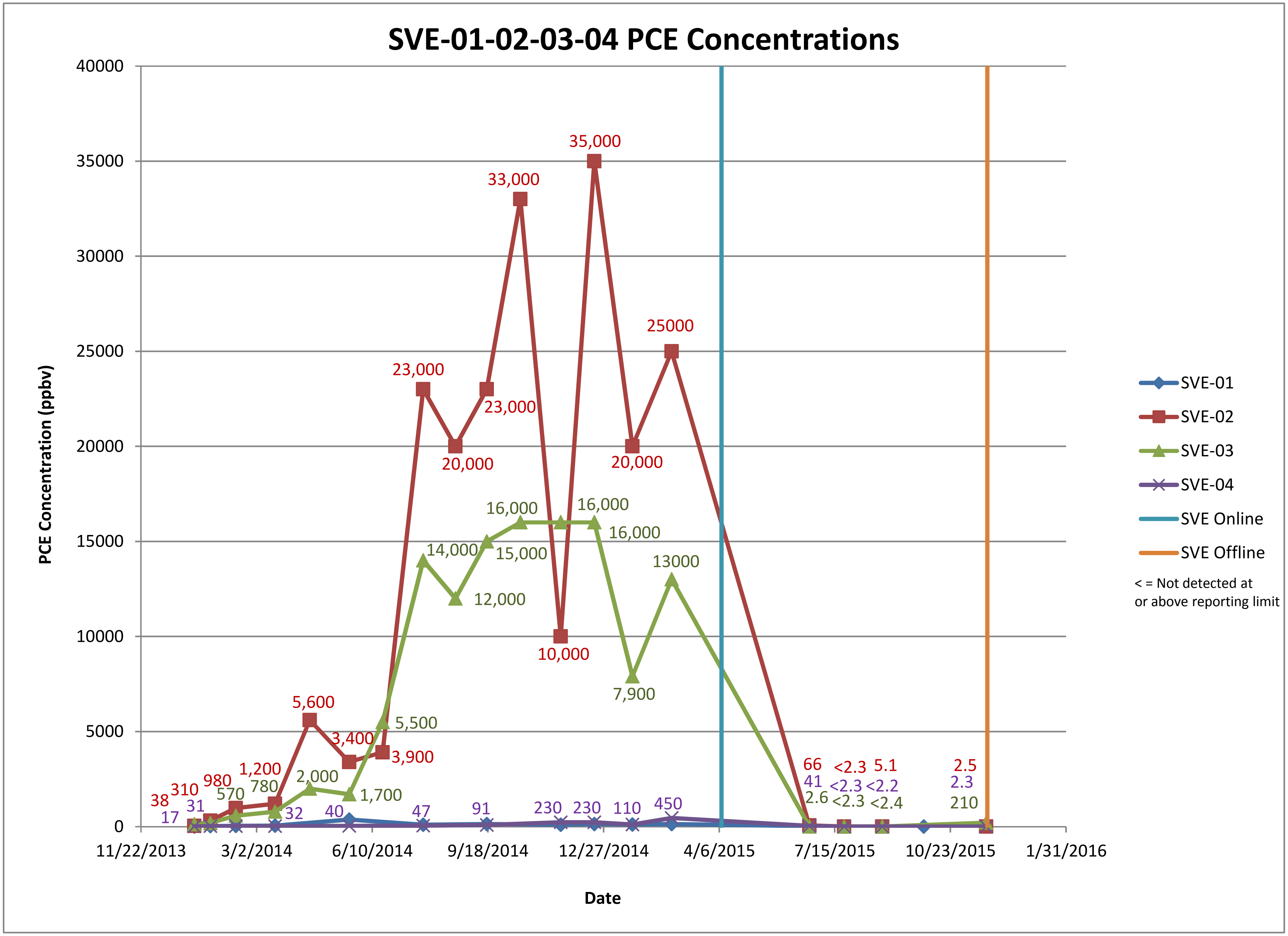
DP-04A/B PCE Concentrations
PCE Concentration (ppbv)
80
70
60
50
40
30
20
10
0
44
<2.6
50
45
46
48
76
2.0
30
34
33
34
41
41
41
33
11/22/2013
1/11/2014
3/2/2014
4/21/2014
6/10/2014
7/30/2014
9/18/2014
11/7/2014
12/27/2014
2/15/2015
Date
DP-04A
DP-04B
< = Not detected at
or above reporting limit

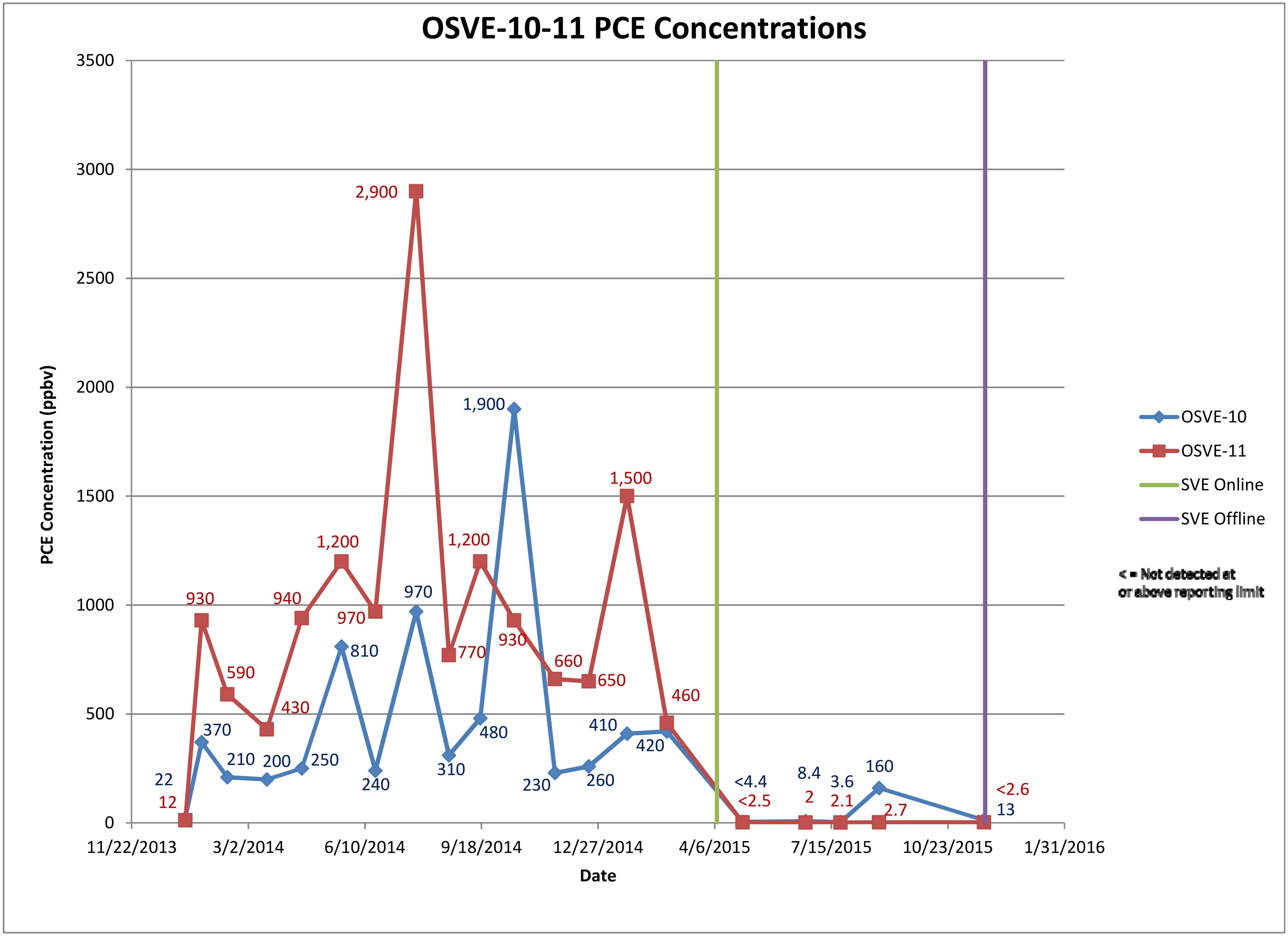


DP-05A/B PCE Concentrations
PCE Concentration (ppbv)
Date
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
4,500
3,300
3,200
3,100
2,800
2,600
2,600
2,400
1,500
760
<2.3
<2.3
2.6
9.7
17
10
120
15
26
40
54
52
170
58
120
<2.7
<0.6
2.1
1.9
<2.4
<2.3
<2.4
<2.3
<2.6
<2.6
<2.4
<2.7
DP-05A
DP-05B
SVE Online
SVE Offline
< = Not detected at
or above reporting limit



< = Not detected at
or above reporting limit
DP-06A/B PCE Concentrations
PCE Concentration (ppbv)
Date
0
50
100
150
200
250
300
350
400
450
500
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
26
45
21
18
21
46
440
120
66
0
48
<4.5
44
<2.3
<2.4
<2.5
<2.6
<2.4
28
20
31
5.3
1.6
3.6
20
7.0
NS
1.3
<4.5
1.6
<2.3
<4.9
<2.6
<2.7
DP-06A
DP-06B
SVE Online
SVE Offline


SVE-01-02-03-04 PCE Concentrations
PCE Concentration (ppbv)
Date
SVE-01
SVE-02
SVE-03
SVE-04
SVE Online
SVE Offline
< = Not detected at or above reporting limit
38
310
980
1,200
5,600
3,400
3,900
23,000
20,000
23,000
33,000
10,000
35,000
20,000
25000
66
<2.3
5.1
2.5
17
31
570
780
2,000
1,700
5,500
14,000
12,000
15,000
16,000
16,000
16,000
7,900
13000
2.6
<2.3
<2.4
210
32
40
47
91
230
230
110
450
41
<2.3
<2.2
2.3



OSVE-10-11 PCE Concentrations
PCE Concentration (ppbv)
3500
3000
2500
2000
1500
1000
500
0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
Date
2,900
1,900
1,500
1,200
1,200
930
940
970
970
810
770
930
660
650
590
430
460
370
210
200
250
240
310
480
230
260
410
420
22
12
<4.4
<2.5
8.4
2
3.6
2.1
160
2.7
<2.6
13
OSVE-10
OSVE-11
SVE Online
SVE Offline
< = Not detected at
or above reporting limit