FIRST QUARTER 2016
OPERATION AND MONITORING REPORT

MODESTO GROUNDWATER SUPERFUND SITE
MODESTO, CALIFORNIA

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July 22, 2016

John McGuire
Project Manager
RORE, Inc.

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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	City of Modesto Municipal Water Supply Well 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
TO15	toxic organic 15, analytical method
TSS	total suspended solid
URS	URS Group, Inc.
VGAC	vapor-phase granular-activated carbon
VOC	volatile organic compound
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
1Q16	first quarter 2016
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 *First Quarter 2016* (1Q16) *Quarterly Operation and Monitoring Report* for the Modesto Groundwater Superfund Site, in Modesto, California, covers the reporting period of 01 January through 31 March 2016, 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, and 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) No. 11 (Figure 1-2) at the corner of Magnolia and Mensinger Avenues. Laboratory analysis of the Municipal Supply Well No. 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 No. 11.

Municipal Supply Well No. 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 No. 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 No. 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 No. 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 provides an analytical data quality review.

Section 6.0 summarizes results and provides recommendations for the GWTS and SVE O&M programs.

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, as follows:

B-1	GWTS Discharge Limits for Site Contaminants of Concern
B-2	Results Summary for Long-Term Monitoring: First Quarter 2016
B-3	Results Summary for the GWTS: First Quarter 2016
B-4	Results Summary for Indoor Air, Sub-Slab Vapor, and Soil Vapor: First Quarter 2016

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

Appendix D provides system uptime and shutdown tables. (Runtime Summary)

Appendix E provides laboratory data validation reports.

Appendix F provides historical data, as follows:

F-1	Historical and 1Q16 Groundwater Monitoring Well Water Table Elevations
F-2	Searchable Historical and Current Analytical Data
F-3	Historical PCE Concentration Trends in Groundwater Monitoring Wells
F-4	PCE Mass Removed by Groundwater Treatment System

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

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

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 1Q16 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-foot by 8.5-foot 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 located in the vicinity of the GWTS and SVE system in residential and business communities (Figure 2-2). Table 2-1 summarizes the well diameter, screened intervals, and elevations of groundwater monitoring wells.

2.2 SVE System

The current SVE system includes three active 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 2-1 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. Table 2-1 summarizes the well diameter, screened interval, and elevation of SVE extraction and monitoring wells.

The three normally active soil vapor extraction wells SVE-02, SVE-03, and SVE-04 were not in operation during 1Q16. The three soil vapor extraction wells 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. Three of the seven soil vapor monitoring wells surrounding the SVE extraction wells are sampled quarterly. Samples were collected from three dual-point soil vapor monitoring wells (DP-01, DP-05 and DP-06) and four (one non-active and three normally active) soil vapor extraction wells (SVE-01, SVE-02, SVE-03 and SVE-04) on 23 March 2016.

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-1, B-2, B-3, and B-4 (Appendix B) summarize GWTS effluent discharge limits for chemical constituents of concern; groundwater LTM sample program results for 1Q16; GWTS influent and effluent sample program and results for 1Q16; soil vapor, indoor air, and sub-slab soil vapor sampling program and results for 1Q16.

The quarterly sampling program consists of three types of sampling: groundwater LTM, SVE vapor sampling, and soil vapor intrusion sampling (including indoor air and sub-slab sampling). GWTS influent and effluent vapor and water samples are collected monthly and results are reported quarterly.

3.1 Site Sampling and Monitoring

Site sampling to monitor groundwater includes collecting groundwater samples from the network of 48 groundwater monitoring wells and two groundwater extraction wells for analysis by EPA Method E524.2. Site sampling to monitor the vadose zone includes collecting soil vapor samples from four SVE wells and three soil vapor monitoring locations for analysis by EPA Method TO15.

3.1.1 Groundwater Sampling and Monitoring

Blaine Technical Services, Inc. personnel under the supervision of RORE's personal measured depths to groundwater on 14 March 2016, and collected groundwater samples for volatile organic compounds (VOCs) on 14, 15, and 16 March 2016 (Appendix C). Depth-to-groundwater measurements were collected from 45 of the total 48 groundwater monitoring wells (MW-30A and MW-30B were inaccessible due to road construction and the well cover to MW-29B was unable to be opened) and groundwater samples were collected from 45 groundwater monitoring wells and two 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, and to determine horizontal flow directions.

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 1Q16 were contoured using the Inverse Distance Weighted tool in ArcGIS 10.1 and adjusted, using professional hydrogeologic judgment.

Polyethylene based passive diffusion bags (PDB) were deployed in all 48 groundwater monitoring wells, but only 45 were collected for groundwater samples due to road construction at MW30A and MW30B and MW-29B well cover was unable to be opened (see Section 6 for conclusions and recommendations associated with these sample locations). The samples from the operating extraction wells (EW-01R and EW-02) were collected from 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 1Q16 sampling event.

All groundwater monitoring and sampling during 1Q16 was performed and recorded in in accordance with the procedures described in the 2013 SAP (URS, 2013d), with the following exceptions: PDBs in MW-29B, MW-30A, and MW-30B were not sampled and have been deployed for greater than two weeks.

3.1.2 Soil Vapor Sampling and Monitoring

Soil vapor samples were collected by RORE, Inc. (RORE) from four SVE wells and three soil vapor monitoring wells on 15 and 16 March 2016 using 400-millilter Summa canisters (Appendix C). SVE and soil 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 1Q16 monitoring event to screen the sampling points and ambient air quality. Table B-4 (Appendix B) presents analytical results from the 1Q16 monitoring event and results will be used for system evaluation.

Air quality samples were collected by RORE from the five indoor air and five sub-slab monitoring points on 14 and 15 March 2016 using 400-millilter or 6-liter Summa canisters (Appendix C). Indoor air and sub-slab sample analytical results collected during 1Q16 are summarized in Table B-4 (Appendix B), Table F-2 with all analytical data, and time-series plots (Appendix G). 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 exception: indoor air samples were analyzed using EPA Method TO15 SIM. Table B-4 (Appendix B) presents analytical results from the 1Q16 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 water samples were collected to satisfy City regulatory requirements, thereby meeting the City's discharge limits to the sewer. All of the treatment system water and vapor effluent samples collected during the reporting period were analyzed and demonstrate that constituents in the discharge were below maximum allowable limits. Appendix D provides the GWTS runtime summary; since the SVE system was not running during 1Q16, there is no runtime or shutdown log for the SVE system.

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 water 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 96-hour toxicity. 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 water 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), Sample Port-08 and Sample Port-09, and analyzed using Method TO15. The PCE sewer discharge limit (0.5 µg/L) was met in each month of the quarter; uranium effluent sample results were less than the compliance concentration of 20 pCi/L; and all other constituent concentrations monitored were less than discharge limits at the GWTS effluent, Sample Port-07, during each month of the quarter. 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 1Q16 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 four 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 1Q16, operation and monitoring nor performance sampling of the SVE system were performed because the SVE system was inoperative during 1Q16. Once the system is repaired and operational, quarterly operation and monitoring will be conducted; including performance sampling.

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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 5.0 provides a summary of the quality assurance (QA) and quality control (QC) results for the samples collected during 1Q16. Appendix B provides a complete set of validated analytical data for groundwater collected during the 1Q16 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 E includes the laboratory data validation reports for 1Q16 groundwater, soil vapor, indoor air, and sub-slab analytical data. Details of GWTS analytical data validation is provided in the *Quarterly Operations and Monitoring Report, Groundwater Treatment System First Quarter 2016, Groundwater Superfund Site, Modesto California* (URS, 2016).

4.1 Site Performance

Site performance is evaluated based on depth to groundwater measurements in site wells to calculate groundwater horizontal and vertical gradients in each of the hydrostratigraphic zones, PCE concentrations in groundwater, and PCE concentrations in soil vapor. Figures 4-6 and 4-7 show the geologic cross-sections from north to south (A-A') and west to east (B-B´) directions, respectively. These two figures also show the depths of the three hydrostratigraphic zones (Zone A, Zone B, and Zone C).

4.1.1 Groundwater Monitoring and Sampling Results

The majority of groundwater elevations increased between 4Q15 and 1Q16. At 22 of the 23 A Zone wells gauged, elevations increased in 15 of the 16 B Zone wells gauged; and elevations increased in all six of the C Zone wells gauged. Zone A increased an average of 0.58 feet, 0.88 feet in the B Zone, and 2.11 feet in the C Zone. Based on water levels measured on 14 March 2016, groundwater elevations ranged from 40.85 feet mean sea level (msl) at MW-21A to 44.37 feet msl at MW-11A in the A Zone, from 41.04 feet msl at MW-33B to 43.60 feet msl at MW-34B in the B Zone, and from 41.13 feet msl at MW-16C to 42.85 feet msl at MW-04C in the C Zone. Appendix F presents historical and current groundwater gauging measurements, calculated groundwater elevations, and analytical data.

Figure 4-1 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 4-1, groundwater elevations have generally decreased since 2013; but elevations increased during 1Q16 (Appendix F-1b) in A and B Zones that may be a seasonal trend. 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. The C Zone has historically had higher seasonal variations of two to five feet increase or decrease every six months (Appendix F-1b).

Figures 4-2, 4-3, and 4-4 show potentiometric surface data, groundwater flow directions, and PCE concentration data for the A, B, and C Zones, respectively. Potentiometric contours generated with the Distance Weighted tool in ArcGIS 10.1 indicate that the inferred groundwater flow in the A, B, and C Zones is southeast across the site. On Figure 4-2, a groundwater elevation low is shown at MW-04A, and a groundwater elevation high is shown at MW-19A. Extraction well elevations are not included in the potentiometric gradients because of pumping, but groundwater gradients are shown to be influenced by

the pumping based on the higher inferred groundwater gradients near MW-04A. In the vicinity of MW-17B, MW-27B, and MW-35B, B Zone groundwater elevation contours are estimated to show a higher elevation near MW-35B, but there is not enough data to provide this detail on Figure 4-3 and it is proposed that there is a groundwater depression created by the operation of Municipal Supply Well No. 7. A groundwater elevation high at MW-32B is provided with inferred groundwater flow directions proposed towards the northwest and south. On Figure 4-4, a groundwater elevation low is shown at MW-16C where proposed groundwater flow directions are southeast and northwest towards MW-16C. Based on data presented on Figures 4-2, and 4-3, it is proposed that a groundwater elevation low runs in the northeast/southwest direction between MW-19A/MW-19B and MW-16A/MW-16B/MW-16C. Additional factors for this determination are municipal well pumping, extraction well pumping, and the canal that runs perpendicular to McHenry Ave. and doglegs towards the northeast at Lucern Ave.

The calculated horizontal hydraulic gradient parallel to the direction of regional groundwater flow in the A Zone ranged from 0.0016 to 0.0031 foot per foot (ft/ft) to the southeast in 1Q16 (Figure 4-2). The calculated horizontal hydraulic gradient parallel to the direction of regional groundwater flow in the B Zone ranged from 0.00009 to 0.00269 foot per foot (ft/ft) to the southeast in 1Q16 (Figure 4-3). The calculated horizontal hydraulic gradient parallel to the direction of regional groundwater flow in the B Zone ranged from 0.0007 to 0.001 foot per foot (ft/ft) to the southeast in 1Q16 (Figure 4-4). In all calculated hydraulic gradients in each zone, the steeper gradients were located closer to the extraction wells. It is RORE's understanding that Municipal Supply Wells No. 6 and No. 7 were in operation during 1Q16.

As discussed in previous groundwater reports for the site, the gradients in the C 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, but will be requested for inclusion to subsequent reports.

To evaluate the potential hydraulic influence on the extents of PCE plumes from the operation of Municipal Supply Wells No. 6 and No. 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 could result in downward migration of PCE beneath portions of the site.

The southern portion of the PCE plume is likely to be influenced by municipal supply well pumping because Municipal Supply Wells No. 6 and No. 7 are southeast and southwest, respectively, of the southern boundary of the plume (Figures 4-3 and 4-4). 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 1Q16 after having results less than the MCL from 4Q08 to 4Q12. In 4Q15, the PCE concentration at MW-16C is 16 µg/L, and 1.8 µg/L in 1Q16. 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 1Q16, PCE was detected at concentrations exceeding the 5 µg/L MCL at EW-01R, EW-02, and 23 monitoring wells. PCE concentrations are shown on Figures 4-2, 4-3, and 4-4 for the A, B, and C Zones, respectively. PCE concentrations of the influent associated with EW-01R and EW-02 are also shown on Figure 4-10. The distribution of PCE concentrations greater than 5 µg/L in groundwater is illustrated with isoconcentration contour lines (lines of equal concentration). A comparison of the 4Q15 and 1Q16 composite A, B, and C Zones are shown on Figure 4-5a and Figure 4-5b; with the original source area plume from 1996 shown on Figure 4-5a. The distribution of PCE concentrations are also illustrated on generalized geologic cross-sections that dissect the site along southeast to northwest (A-A', Figure 4-6) and west to east (B-B', Figure 4-7) lines. Table B-2 (Appendix B) includes current quarterly groundwater monitoring well analytical results. Figures F-3(a) through F-3(av) (Appendix F) show PCE time series plots for monitoring wells MW-01A through MW-35B.

A Zone

As depicted on Figure 4-2, the 1Q16 PCE MCL plume with concentrations of 5 µg/L to 49 µg/L has been delineated to approximately 1,800 feet long, parallel to the inferred hydraulic gradient direction to the southeast; and approximately 1,900 feet wide in the east-west, cross-gradient direction.

From 4Q15 to 1Q16, PCE concentrations increased at 18 wells screened in the A Zone, with 11 of the well locations with concentrations of PCE that exceed the MCL. MW-12A and MW-20A had PCE concentrations that decreased since 4Q15, with MW-20A decreasing from 120 µg/L to 32 µg/L as the greatest difference reported. MW-13A saw the greatest increase in PCE from 1.9 µg/L during 4Q15 to 13 µg/L during 1Q16; therefore, the southern and southwestern portion of the plume in the area of MW-20A and MW-13A now have concentrations greater than the MCL. In contrast, the PCE plume with concentrations greater than 50 µg/L has decreased in size from 4Q15 to 1Q16 by approximately 60 percent. In summary, the dimensions of the PCE plume greater than the MCL have doubled in the cross-gradient directions between 4Q15 and 1Q16 (Figure 4-5a and Figure 4-5b).

PCE was detected historically in Municipal Supply Wells No. 14 and No. 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 No. 8 and No. 14 have been offline since 2007 and 2006, respectively (MWH, 2010b); however, the plume may have been drawn toward Municipal Supply Wells No. 8 or No. 14 before they were shut down. Municipal Supply Well No. 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. There are no wells positioned to provide data that would indicate whether the hydraulic influence of pumping at Municipal Supply Well No. 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 No. 6 and No. 7 are closer to the plume than Municipal Supply Wells No. 14 and No. 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 No. 6 and No. 7 were operating. Municipal Supply Well No. 6 is screened in the A and B Zones and, though Municipal Supply Well No. 7 is screened below the A Zone (in the B Zone), pumping at Municipal Supply Wells No. 6 and No. 7 may be affecting the migration of the A Zone plume. There are no LTM wells screened in the A Zone further downgradient, southwest of MW-16A, or to the southeast

of MW-17A or MW-31A to evaluate groundwater elevations or PCE concentrations. However, there are B Zone wells located further downgradient and cross-gradient.

The sewer line running beneath Griswold Avenue adjacent to MW-23A could contribute to the PCE detections at MW-23A (Figure 4-2). 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 in 2011 along the east-west sewer line with an axis that is nearly perpendicular to the southeast hydraulic gradient of the A Zone. Cross-gradient groundwater flow and releases along the Griswold Avenue sewer line may account for the PCE concentrations of between 3.8 and 41 µg/L reported at MW-23A (Appendix F, Figure F-3[ah]). The sewer line extends to Enslen Avenue, south on Enslen Avenue, then west on Coldwell Avenue (Figure 4-2).

B Zone

As depicted on Figure 4-3, the PCE Zone B MCL plume has been delineated to approximately 1,970 feet long, parallel to the inferred hydraulic gradient direction to the southeast; and approximately 2,500 feet wide in the east-west, cross-gradient direction. The plume is relatively the same size as 4Q15 except for the concentration at MW-25B decreased from 86 µg/L to 1.8 µg/L (Figure 4-5a and Figure 4-5b), which is the greatest difference in PCE concentrations in the B Zone.

In 1Q16, PCE was detected above the MCL at eight of the 16 B Zone wells (MW-29B and MW-30B were not sampled). PCE concentrations increased between 4Q15 and 1Q16 at nine wells screened in the B Zone. The concentrations at three of the wells screened in the B Zone MW-17B, MW-24B and MW-28B increased to 76 µg/L, 86 µg/L, and 83, respectively; therefore, the portion of the plume with concentrations above 50 µg/L decreased in size by 67 percent, but PCE concentrations increased in the B Zone to the southeast excluding MW-25B (Figure 4-5b). However, the southern edge of the plume is moving far away from the source (Figure 4-5a) towards City pumping wells No. 6 and No. 7. Cumulative evidence may be drawn, once the additional five monitoring wells (MW-36A through MW-40B) lithologic and groundwater data are obtained. General observations of the area are that the plume is shrinking and perhaps even diluting in concentration (Figure 4-5b).

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. MW-35B was installed as a sentinel well for Municipal Well No. 7. PCE concentrations at MW-19B, MW-26B, MW-27B, and MW-32B, in 4Q15 and 1Q16 were less than the MCL (of 5 µg/L) or not detected; therefore, the plume appears to be delineated in the northwestern, southern, and southwest directions (Figure 4-3). MW-29B and MW-30B were not sampled during 1Q16, so delineation to the northeast is unknown, but concentrations are assumed to be below the MCL based on historical concentrations. Historically, the PCE plume was not fully delineated west of MW-34B because PCE concentrations exceeded the MCL when MW-34B was constructed, and have fluctuated above and below the MCL since 2013. Similar fluctuations have occurred at MW-35B. PCE concentrations in MW-33B were below the MCL until 4Q15 at 8.3 µg/L, and increased to 11 µg/L during 1Q16.

PCE isoconcentration contour results from the B Zone wells (Figure 4-3) indicate that there may be two hydraulic axis's trending northwest to southeast and north to south. The B Zone plume shape likely has

been hydraulically influenced by pumping at municipal supply wells, and fluctuations in concentrations may be explained by increased pumping rates during drier months. *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 No. 6 and No. 7 were operating. The maximum observed historical water level changes were -0.24 and -0.19 foot at MW-09B and MW-17B, respectively, when pumping at Municipal Supply Well No. 6 was evaluated and -0.19 and -0.32 foot at MW-16B and MW-19B, respectively, when pumping at Municipal Supply Well No. 7 was evaluated (URS, 2012c). Municipal Supply Well No. 6 is screened in the A and B Zones and Municipal Supply Well No. 7 is screened in B Zone; therefore, pumping at Municipal Supply Wells No. 6 and No. 7 may be hydraulically influencing the B Zone plume.

C Zone

Figure 4-4 shows groundwater elevation contours and PCE concentration data for the C Zone. The PCE concentration decreased from 16 µg/L to 1.8 µg/L at MW-16C between 4Q15 and 1Q16. A small plume exists in the C-Zone centered on MW-16C and its concentration reported in 1Q16 is less than MCL. 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 F-3[v]). In MW-16A, there have not been any PCE concentrations above the MCL, and have been non-detect since 2010; but concentrations in the B Zone at MW-16B and MW-16C were detected above the MCL starting in 2010 and 2012, respectively; however, a concentration of 4.9 µg/L was reported in 2009 at MW-16C (Figure F-3[v]). This data shows that PCE contamination at MW-16C potentially came from groundwater flow originating from the source area in the A Zone, into the B Zone, and eventually to the C Zone at MW-16. The time-series plots from MW-16 (Appendix F, Figure F-3[t], [u], and [v]) show that concentrations increased from the B Zone first, and then to the C Zone. There are various factors at the site including City of Modesto Pumping at wells No. 6 and No. 7, EW-01R and EW-02 pumping, vertical gradients, horizontal gradients, lithology, transmissivity, and capture zones that may also have impact on the increasing PCE concentrations in the C Zone, which will be addressed as that specific data becomes available.

4.1.1.2 Other VOCs

No additional VOCs were detected above their respective MCLs in 1Q16.

4.1.2 Soil Vapor Sampling Results

Samples were collected from four SVE wells (SVE system not operable during 1Q16) and three additional dual-point soil vapor monitoring wells on 15 and 16 March 2016. Analytical results are provided in Table B-4 (Appendix B), Table F-2 (Appendix F), summarized below, and presented on Figure 4-8:

- SVE-01 (screened interval 18 to 38 feet bgs): PCE concentration at 26 parts per billion by volume (ppbv) in 1Q16 (16 March 2016). The concentration was 1.3 U ppbv during 4Q15.

- SVE-02 (screened interval 7 to 12 feet bgs): PCE concentration at 210 ppbv in 1Q16 (16 March 2016). The concentration was 2.5 ppbv during 4Q15.

- SVE-03 (screened interval 13 to 23 feet bgs): PCE concentration at 210 parts ppbv in 1Q16 (16 March 2016). The concentration was 210 ppbv during 4Q15.

- SVE-04 (screened interval 28 to 38 feet bgs): PCE concentration at 57 parts ppbv in 1Q16 (16 March 2016). The concentration was 2.3 ppbv during 4Q15.

Samples were collected from the five indoor air and five sub-slab monitoring locations on 14 March 2016. Analytical results are provided in Table B-4 (Appendix B), and Table F-2 (Appendix F). Indoor air sample results indicate that PCE concentrations decreased from 4Q15 to 1Q16 (Appendix G), despite increases of soil vapor in sub-slab and soil vapor extraction well locations. The sub-slab ventilation system, located at the Parts House, 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 overall 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 $\mu g/m^3$); but increases in PCE concentrations during 4Q15 and 1Q16 may be due to the SVE system not in operation since 24 November 2015.

Boring and well installation logs indicate that fine-grained silts make up much of the subsurface deposits near the SVE wells and DP-05 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 1Q16 are summarized in Table B-4 (Appendix B) and Table F-2, which also includes historical data. Appendix G presents time series plots of soil gas, indoor air, and sub-slab data.

4.1.3 Analysis of Vertical Groundwater Gradients

Vertical hydraulic gradients were calculated using 1Q16 data at seven well pairs with screens in the A and B Zones, and six well pairs with screens in the B and C Zones. Wells are chosen to be paired for vertical hydraulic gradient calculation because they are within the same well cluster (e.g., MW-16A/MW-16B and MW-16B/MW-16C) (Figure 2-2). Table 4-1 summarizes vertical hydraulic gradients for well pairs during 1Q16 and compares vertical gradients for quarters 1Q15 to 1Q16.

Although, the vertical gradients are considered very low, -0.0143 to 0.0133 feet per foot, there are positive and negative gradient variations between well locations and LTM quarters. There is also a negative and a positive gradient at the MW-16A/B/C location during 1Q16.

Overall, there is an increase in a positive, or upward, gradient from 1Q15 to 1Q16; which may correlate to increased pumping at Municipal Wells No. 6 and No. 7, increase of PCE concentrations in the B Zone and C Zone, or PCE plume migration further southeast and southwest.

4.1.4 Extraction Well Capture Zone Analyses

The combined pumping rates from extraction wells EW-01R and EW-02 during 1Q16 was approximately 44.1 gpm, which did not exceed the maximum discharge flow rate (50 gpm) allowed in the City of Modesto 2013 Groundwater Discharge Permit GW0098 (City of Modesto, 2013).

Figure 4-9 shows the 2Q15 capture zone as a curved line consisting of the estimated stagnation points near EW-02 overlaid on the 1Q16 PCE and groundwater elevation results. The extent of the 2Q15 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 was interpreted to extend to approximately 50 feet upgradient of MW-10A (RORE, 2015). As more detailed pumping rates for the extraction wells and Municipal Wells

No. 6 and No. 7 become available, an updated capture zone analysis will be provided in subsequent reports.

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 January, February, and March 2016.

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 (Table B-3, Appendix B).

4.2.1 GWTS Results

During 1Q16, the GWTS operated for approximately 2,051 hours (out of 2,184 hours possible during the quarter), an uptime of approximately 93.9 percent (Appendix D). Tables D-1, D-2, and D-3 (Appendix D) present GWTS shutdown summaries for January, February, and March, respectively. Appendix C provides the O&M process logs, and Appendix H provides history of the O&M performed on the GWTS

The GWTS treated a total 5,865,200 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 61,326 gallons per day (gpd), less than the 72,000 gpd (average) discharge limit. From August 2001 through 1Q16, the system has treated approximately 279 million gallons of water and has removed approximately 679 pounds of PCE. Figure 4-10 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). Water sample results from 1Q16 (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 during 1Q16.

Performance water samples were also collected and analyzed for uranium (Method D5174) at the IX influent, mid-bed, and IX effluent (Table 4-3). During 1Q16, no breakthrough (uranium concentrations in the mid-bed sample) was reported, so no resin change-outs were performed; but a resin-change-out will be performed during 2Q16.

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. There were no carbon or resin change-outs performed during 1Q16. Appendix H provides an operational history of the GWTS that includes the dates of media exchanges.

Samples of process vapor are collected at the VGAC inlet and outlet locations to evaluate VGAC performance and contaminant loading. Table 4-4 summarizes vapor PCE results for this reporting period. The influent vapor PCE (GWTS Pre-GAC) concentrations were 210, 180, and 200 ppbv during January, February, and March, respectively. The effluent vapor PCE (GWTS Stack) concentrations were 26, 43, and 53 ppbv during January, February, and March, respectively. Vapor samples are collected monthly at the VGAC inlet and outlet and analyzed for VOCs (EPA Method TO15). Change-outs are evaluated on a monthly basis, and there were no change-outs during 1Q16 (Appendix H).

During the 1Q16 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 1Q16 was 44.1 gpm. The influent PCE concentrations were 92, 80, and 76 µg/L during January, February, and March, 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 GWTS PCE results for the system during 1Q16. In addition to VOCs, samples were also analyzed for uranium. The 1Q16 influent uranium concentration was 54.2 pCi/L.; Table 4-3 presents GWTS uranium sample results for 1Q16. The associated effluent uranium concentration was 13.9 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 all treatment system analytical results for 1Q16.

4.2.2 SVE System Results

The SVE system was brought online on 8 April 2015 and operated continuously up to 24 November 2015 when a malfunction with the SVE system blower occurred. During 1Q16 operation and maintenance of the SVE system was not performed and performance sampling was not conducted.

5.0 QUALITY CONTROL SUMMARY REPORT

5.1 Introduction

This section summarizes QA/QC results for samples collected and data generated during the period of January through March 2016 (1Q16) 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 14 March 2016 to 16 March 2016, field samples, field duplicates (FDs), and field QC samples were collected for groundwater, soil vapor and indoor air samples and data validation results are presented in this report. Data validation results for samples associated with the GWTS are provided in the *Quarterly Operations and Monitoring Report, Groundwater Treatment System First Quarter 2016, Groundwater Superfund Site, Modesto California* (URS, 2016). Table B-1 (Appendix B) lists the discharge limits for the GWTS 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 Toxic Organics (TO)15: 5 FN and 1 FD
- VOCs in air by EPA Method TO15 SIM: 15 FN and 2 FD

EPA Region 9 Laboratory

- VOCs in water by EPA Method E524.2: 47 FN, 4 FD, 1 TB, and 3 MS/MSDs
- VOCs in air by EPA Method TO15: 5 FN and 1 FD
- VOCs in air by EPA Method TO15 SIM: 15 FN and 2 FD

GEL Laboratories, LLC (GEL)

- Total uranium by Method ASTM D5174: 10 FN, 1 FD and 3 MS/laboratory duplicates

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 E includes the laboratory data validation reports for 1Q16 groundwater, soil vapor, indoor air, and sub-slab analytical data. Details of GWTS analytical data validation is provided in the *Quarterly Operations and Monitoring Report, Groundwater Treatment System First Quarter 2016, Groundwater Superfund Site, Modesto California* (URS, 2016). Several data validation flags were used in the validation process and reported in the data validation reports. 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.

5.2 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 developed with the EPA seven-step process. 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.

5.3 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 E provides qualified data based on this review process.

5.3.1 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 relative percent differences (RPD) for matrix spike/matrix spike duplicates (MS/MSDs) and field duplicate (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 laboratory control sample (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).

Specific VOCs for groundwater samples were qualified based on low or high recoveries for three samples at MW-05A, MW-20A, and MW-25B. There were no MS/MSDs for soil vapor, indoor air, or sub-slab soil vapor samples. There were four duplicate pairs groundwater samples collected, one duplicate pair for indoor air, one duplicate pair for sub-slab soil gas, and one duplicate pair for soil vapor. Indoor air, sub-slab soil gas, soil vapor, and three out of the four groundwater RPDs were below 100 percent for PCE, and results are not qualified based on RPDs.

Continuing calibration relative response factors were within validation criteria for groundwater and all criteria were met for air and soil vapor samples. LCS percent recoveries were within QC limits for air and soil vapor, but five samples for Level IV data validation and 14 samples for the Level III validation.

5.3.2 Representativeness

Representativeness was evaluated through the analysis of FB, TB, and method blank (MB) (laboratory blank) 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. There were no VOCs detected in the TB for groundwater and there were no VOCs detected greater than five times the detected concentrations in the GWTS water samples.

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. There were no contaminants detected in groundwater or blank canisters for indoor air, sub-slab soil vapor, or soil vapor samples.

5.3.3 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 (97.5 percent) exceeded the project goal of 90 percent. Details are provided in the data validation reports in Appendix E.

5.3.4 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. There are no specific data quality concerns indicated by QC sample results.

5.4 Summary of Data Reliability

Based on this evaluation, there were no groundwater, soil vapor, sub-slab soil vapor, or indoor air samples were rejected and 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.

6.0 RECOMMENDATIONS

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

6.1 GWTS – Summary Observations and Recommendations

Based on 1Q16 data, the extent of the A Zone PCE MCL plume is approximately 1,800 feet long, parallel to the inferred hydraulic gradient direction to the southeast, and approximately 1,900 feet wide in the east-west, cross-gradient direction (Figure 4-2). In the B Zone, the plume extends further south and southeast. PCE was reported at two C Zone wells in 1Q16, but both detections were below the MCL.

Both EW-01R and EW-02 operated during 1Q16. From 4Q15 to 1Q16, PCE concentrations in influent have decreased, and concentrations of PCE have remained below 100 µg/L since July 2015 (Figure 4-10). The location of EW-01R is adjacent to the monitoring well MW-03A that has the highest PCE concentration during 1Q16 of 180 µg/L. EW-02 is located downgradient of MW-03A and had a concentration of 89 µg/L during 1Q16. PCE concentrations in Zone A below 99 µg/L were delineated at EW-02 during 1Q16, so it is recommended that the two extraction wells remain in operation and more precise pumping rates be provided in subsequent O&M.

PCE concentrations in 1Q16 groundwater samples generally increased in the A Zone wells, increased in B Zone wells, and decreased in C Zone wells. Decreases in PCE concentrations in A Zone and B Zone were located in the eastern and southern boundaries of those plumes. The B Zone plume with PCE concentrations above the MCL now extend to MW-33B. The increases in A Zone and B Zone wells are in line with seasonal trends of less pumping of Municipal wells during the winter months and potential dilution of the plume. C Zone decreases could also be explained by less draw down of contaminants from less pumping. It is recommended that Municipal Wells No. 6 and No. 7 pumping data be provided to evaluate potential capture zones for those wells within Halford's plume.

During 1Q16 groundwater sampling, MW-29B, MW-30A, and MW-30B were not sampled because the PDBs were not retrievable at that time. When retrieved and sampled during 2Q16, the deployment time will be greater than two weeks (two weeks are recommended in the SAP). It is recommended that the PDBs are sampled and analyzed in 2Q16, PDBs be observed for abnormalities, and results be evaluated and qualified accordingly. In the 2Q16 report, the deployment times for those samples will be noted.

Additional monitoring wells 36A, 37B, 38B, 39B, and 40B were 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. The next quarters report (2Q16) along with newly installed five monitoring well data will provide a better understanding of PCE movement both horizontally and vertically through A to B to C Zones. RORE will then make a recommendation to expedite remediation system in order to obtain a case closure of the site. 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 No. 7. Increased extraction and other remediation alternatives (i.e., in situ treatment) should be evaluated.

During 1Q16, the GWTS operated approximately 93.9 percent of the time, treated 5,865,200 gallons of water and removed approximately 4.1 pounds of PCE. The GWTS was compliant with permit requirements. During 1Q16, the GWTS treated groundwater pumped from both EW-01R and EW-02 with an average total combined flow rate of 44.1 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). Continued evaluation of PCE concentrations in extraction wells EW-01R and EW-02 is recommended to establish the best extraction rate for each, and it is recommended that the extraction well pumping rates be reported for each well for subsequent quarterly performance monitoring periods to evaluate specific capture zones. It is also recommended that pumping data for Municipal Wells No. 6 and No. 7 be provided to correlate the PCE plume migrations towards those wells.

6.2 SVE – Summary Observations and Recommendations

The SVE system was not in operation during 1Q16, but soil vapor was sampled and analyzed from SVE locations at the site. PCE concentrations in soil vapor at SVE-01, SVE-02, SVE-03, and SVE-04 increased from 4Q15 to 1Q16; but concentrations still remain at least 10 orders of magnitude below PCE concentrations prior to when the system went online. During SVE system operation, PCE concentrations continued to decline, but the increase of PCE concentrations during 1Q16 provide data to prove that soil vapor contamination in the subsurface from 7 feet to 38 feet bgs remains. It is recommended that sampling continue at SVE sample locations to observe soil vapor concentrations during the inoperable period of the SVE system to provide data for future operations and monitoring at the site, including a pulse operation alternative that will decrease costs and mitigate sub-slab and indoor air PCE concentrations.

7.0 REFERENCES

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TABLES

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Table 2-1. 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 2-1. (Continued)				
Well No.	Casing Diameter (inches)	Boring Depth (feet bgs)	Screen Interval (feet bgs)	Top of Casing Elevation (feet msl)[a]
Soil Vapor Extraction 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
Soil Vapor Monitoring Wells				
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 4-1
Vertical Hydraulic Gradients: First Quarter 2015 to First Quarter 2016

Monitoring Well Number	Groundwater Monitoring Zone	Groundwater Elevation (feet msl)	1Q16 Vertical Hydraulic Gradient	4Q15 Vertical Hydraulic Gradient	3Q15 Vertical Hydraulic Gradient	2Q15 Vertical Hydraulic Gradient	1Q15 Vertical Hydraulic Gradient
MW-04A	A	41.42	0.0133	0.0039	-0.0015	0.0023	0.0068
MW-04B	B	42.30					
MW-10A	A	41.80	0.0046	0.0000	-0.0056	0.0005	0.0004
MW-10B	B	42.17					
MW-16A	A	41.14	0.0009	-0.0122	-0.0011	-0.0011	-0.0006
MW-16B	B	41.19					
MW-17A	A	41.54	0.0021	-0.0015	-0.0092	-0.0052	-0.0008
MW-17B	B	41.65					
MW-19A	A	41.69	-0.0113	-0.0126	-0.0180	-0.0184	-0.0091
MW-19B	B	41.17					
MW-20A	A	41.39	-0.0004	-0.0028	-0.0059	-0.005	-0.0009
MW-20B	B	41.36					
MW-30A	A	44.79	-0.0143	-0.0050	-0.0143	-0.0134	-0.0011
MW-30B	B	43.99					
MW-04B	B	42.30	0.0066	-0.0100	-0.0428	-0.0447	0.0068
MW-04C	C	42.85					
MW-10B	B	42.17	0.0042	-0.0128	-0.0494	-0.0626	-0.0049
MW-10C	C	42.45					
MW-16B	B	41.19	-0.0006	-0.0122	-0.0397	-0.0296	-0.006
MW-16C	C	41.13					
MW-17B	B	41.65	0.0012	-0.0134	-0.0434	-0.0421	-0.0102
MW-17C	C	41.76					
MW-20B	B	41.36	0.0059	-0.0103	-0.0414	-0.0421	-0.0047
MW-20C	C	41.79					
MW-32B	B	41.59	-0.0010	-0.0072	-0.0091	-0.0298	-0.0068
MW-32C	C	41.51					

msl = mean sea level
MW = monitoring well
positive gradient = upward
negative gradient = downward

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Table 4-2: GWTS PCE Water Sample Results: First Quarter 2016

Sample Port	Location	Sample Date	pH	PCE (µg/L)
SP-01	GWTS Influent	1/7/2016	7.70	92
		2/11/2016	7.40	80
		3/3/2016	7.75	76
SP-03	LGAC Influent	1/7/2016	7.86	1.2
		2/11/2016	8.08	0.38 J
		3/3/2016	8.20	0.43 J (0.38 J)
SP-04	LGAC Mid Bed	1/7/2016	7.60	0.13 J
		2/11/2016	7.97	0.26 J
		3/3/2016	7.98	0.28 J
SP-05	LGAC Effluent[a]	1/7/2016	7.61	<0.50
SP-07	GWTS Effluent	1/7/2016	7.40	<0.50
		2/11/2016	7.96	<0.50
		3/3/2016	7.85	<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
< = less than
( ) = field duplicate result

Table 4-3: GWTS Uranium Sample Results: First Quarter 2016

Sample Port	Location	Sample Date	Uranium (pCi/L)
SP-01	GWTS Influent	1/7/2016	54.2
SP-05	Ion Exchange Influent	2/11/2016	56.8
		3/3/2016	57.7
SP-06	Ion Exchange Mid Bed	1/7/2016	<1.0
		2/11/2016	0.396
		3/3/2016	0.526 (0.466)
SP-07	GWTS Effluent	1/7/2016	13.9
SP-10	Ion Exchange Effluent	1/7/2016	<1.0
		2/11/2016	<1.0
		3/3/2016	<1.0

GWTS = groundwater treatment system
Mid = middle
pCi/L = picoCuries per liter
SP = sample port
< = less than
( ) = field duplicate result

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Table 4-4: GWTS PCE Vapor Sample Results: First Quarter 2016

Sample Port	Location	Sample Date	PCE (ppbv)
SP-08	GWTS Pre-GAC	1/7/2016	210
		2/11/2016	180
		3/3/2016	200
SP-09	GWTS Stack	1/7/2016	26
		2/11/2016	43
		3/3/2016	53

GAC = granular-activated carbon
GWTS = groundwater treatment system
PCE = tetrachloroethene
ppbv = parts per billion by volume
SP = sample port

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FIGURES

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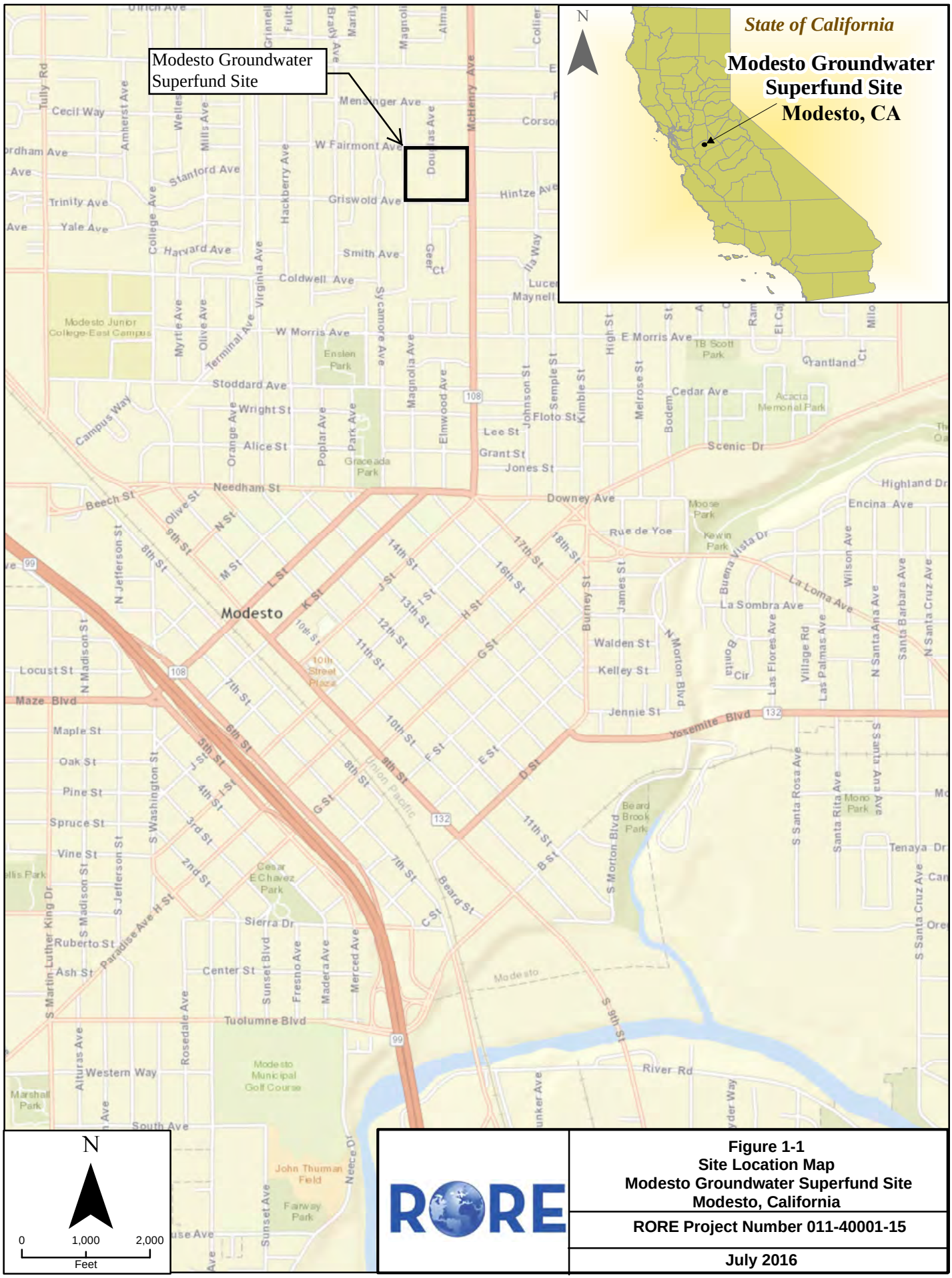

Figure 1-1
Site Location Map
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

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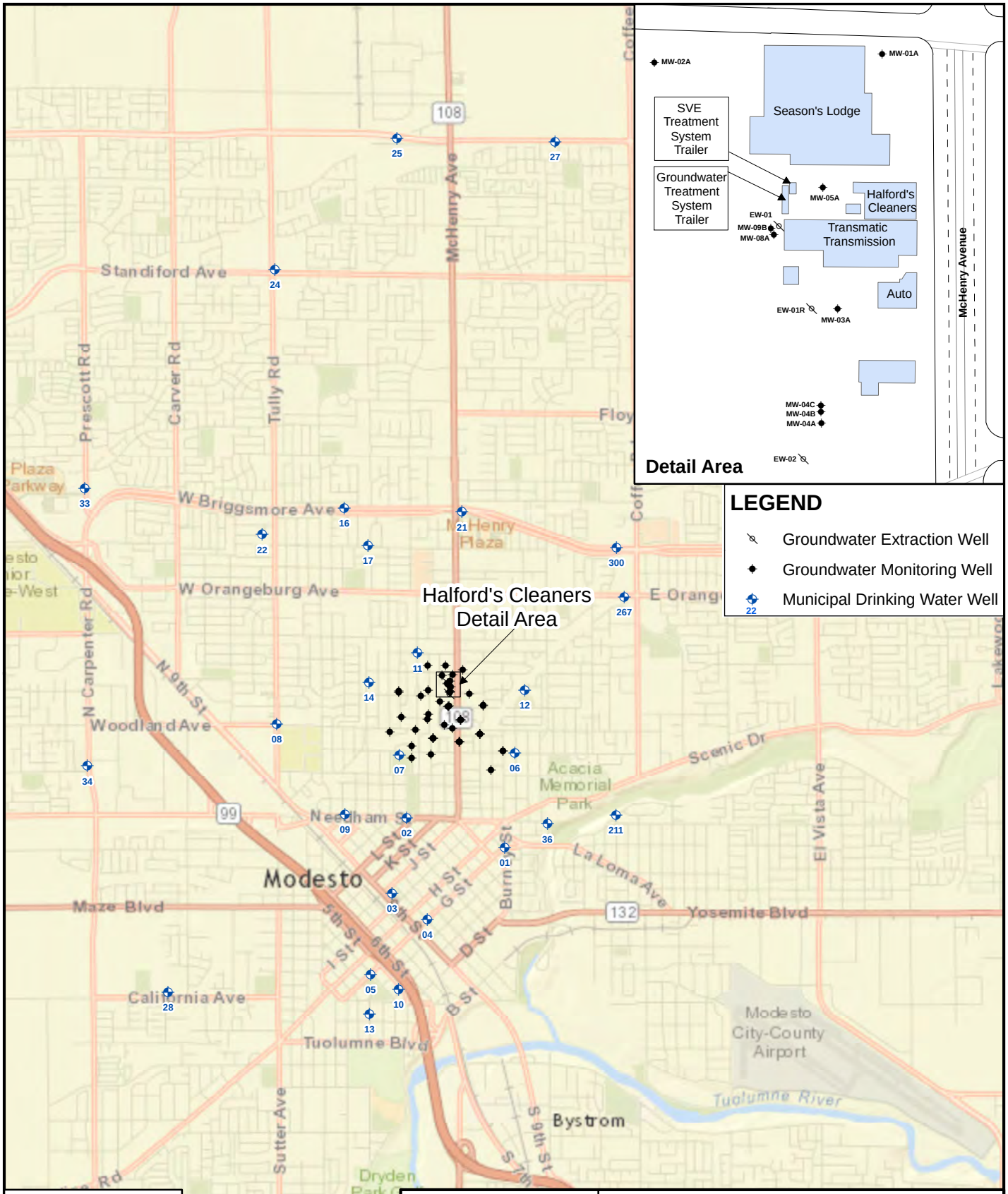

Figure 1-2
Municipal Well Locations Map
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

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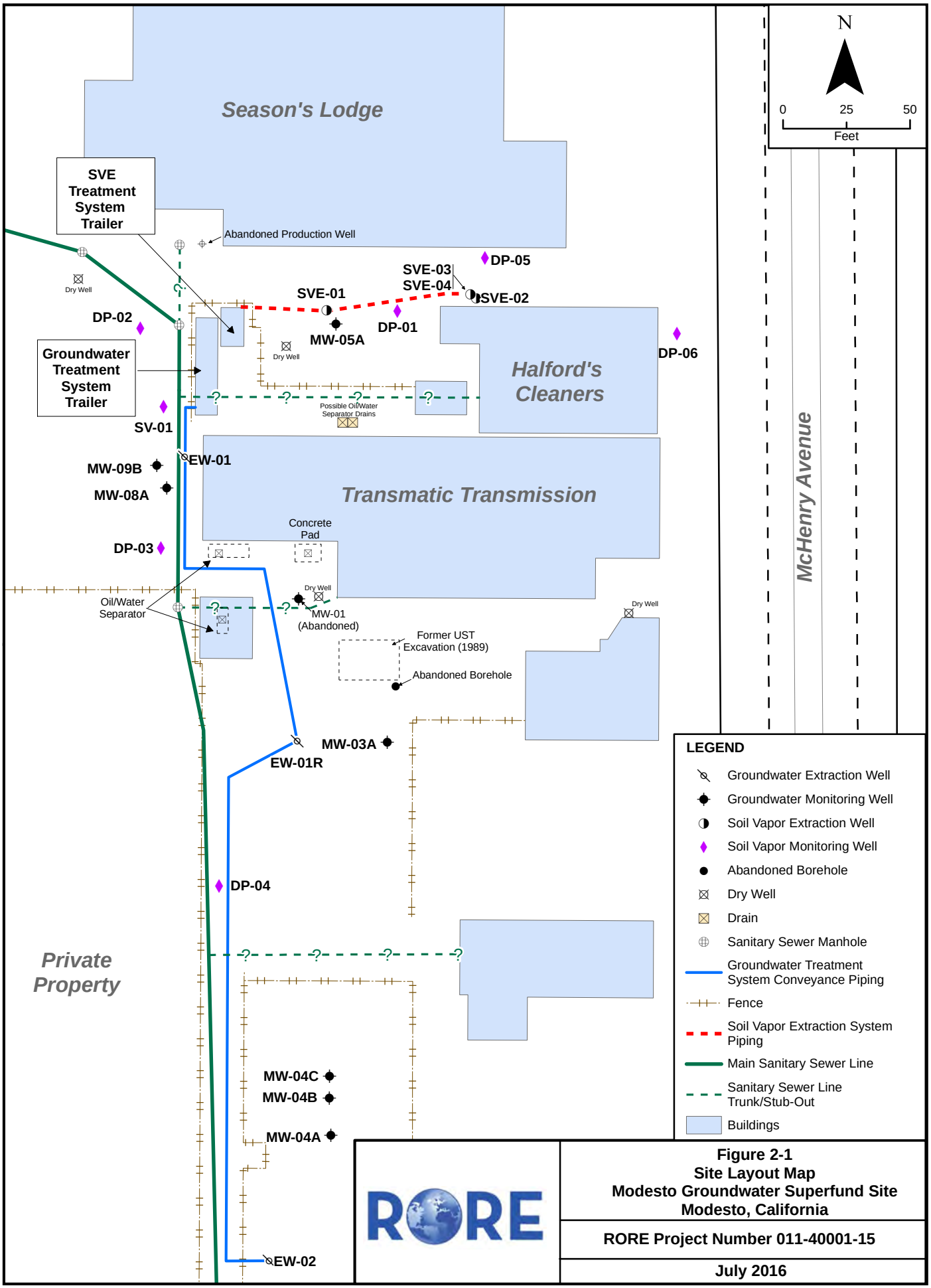

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Figure 2-1
Site Layout Map
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

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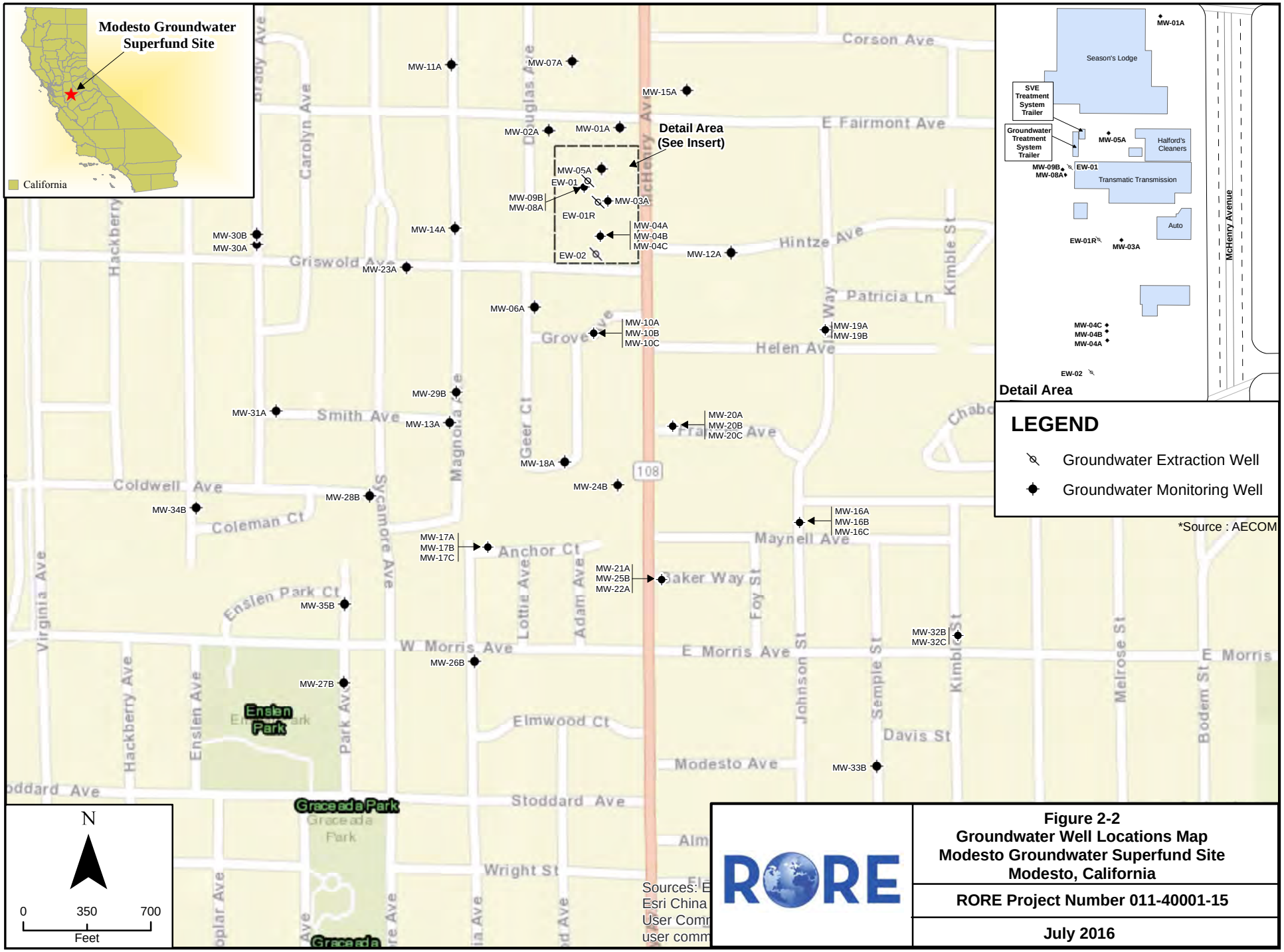

Figure 2-2
Groundwater Well Locations Map
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

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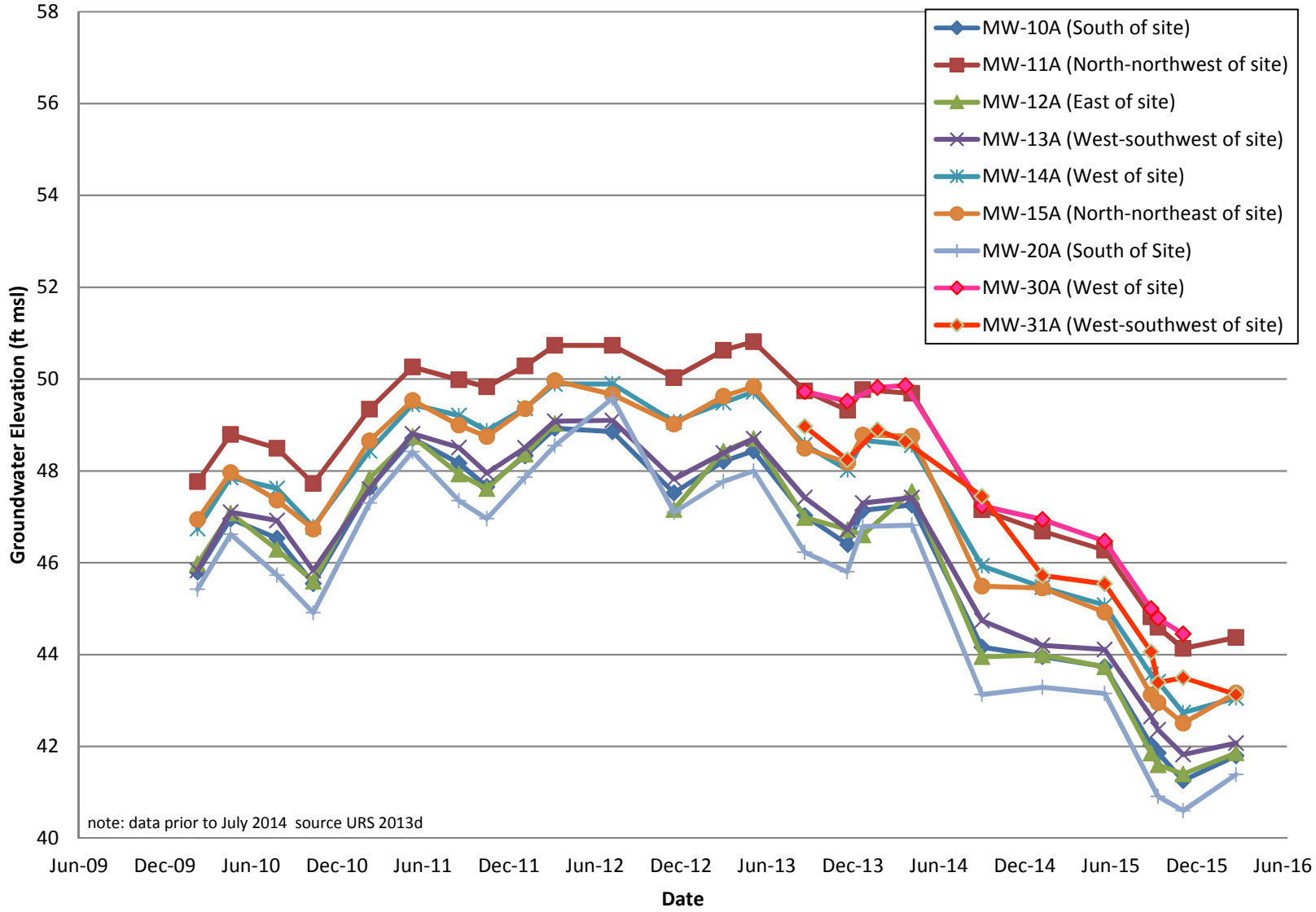
Figure 4-1
A-Zone Groundwater Elevation Trends
Modesto Groundwater Superfund Site
Modesto, California



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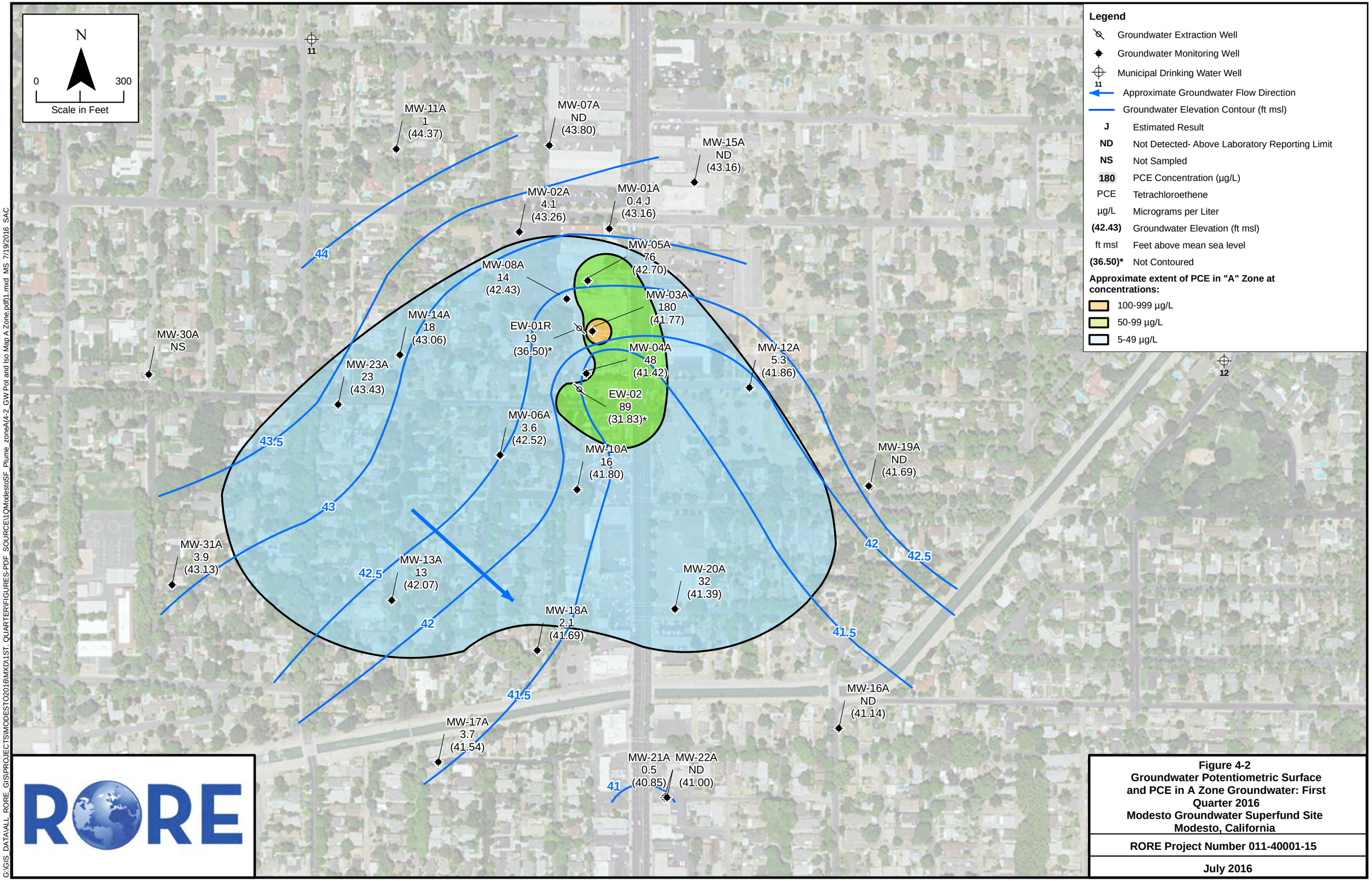

Figure 4-2
Groundwater Potentiometric Surface and PCE in A Zone Groundwater: First Quarter 2016
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

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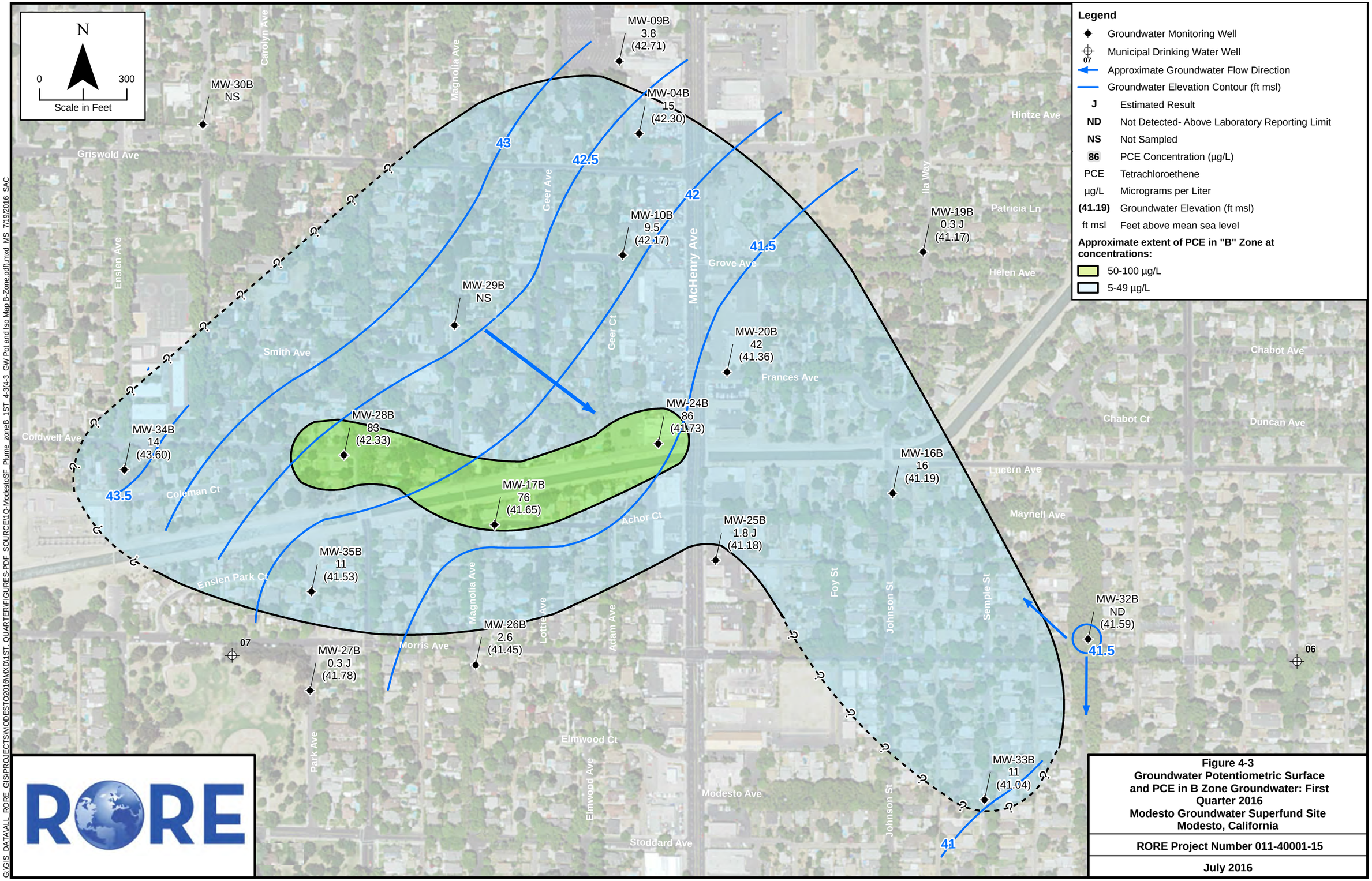

Figure 4-3
Groundwater Potentiometric Surface and PCE in B Zone Groundwater: First Quarter 2016
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

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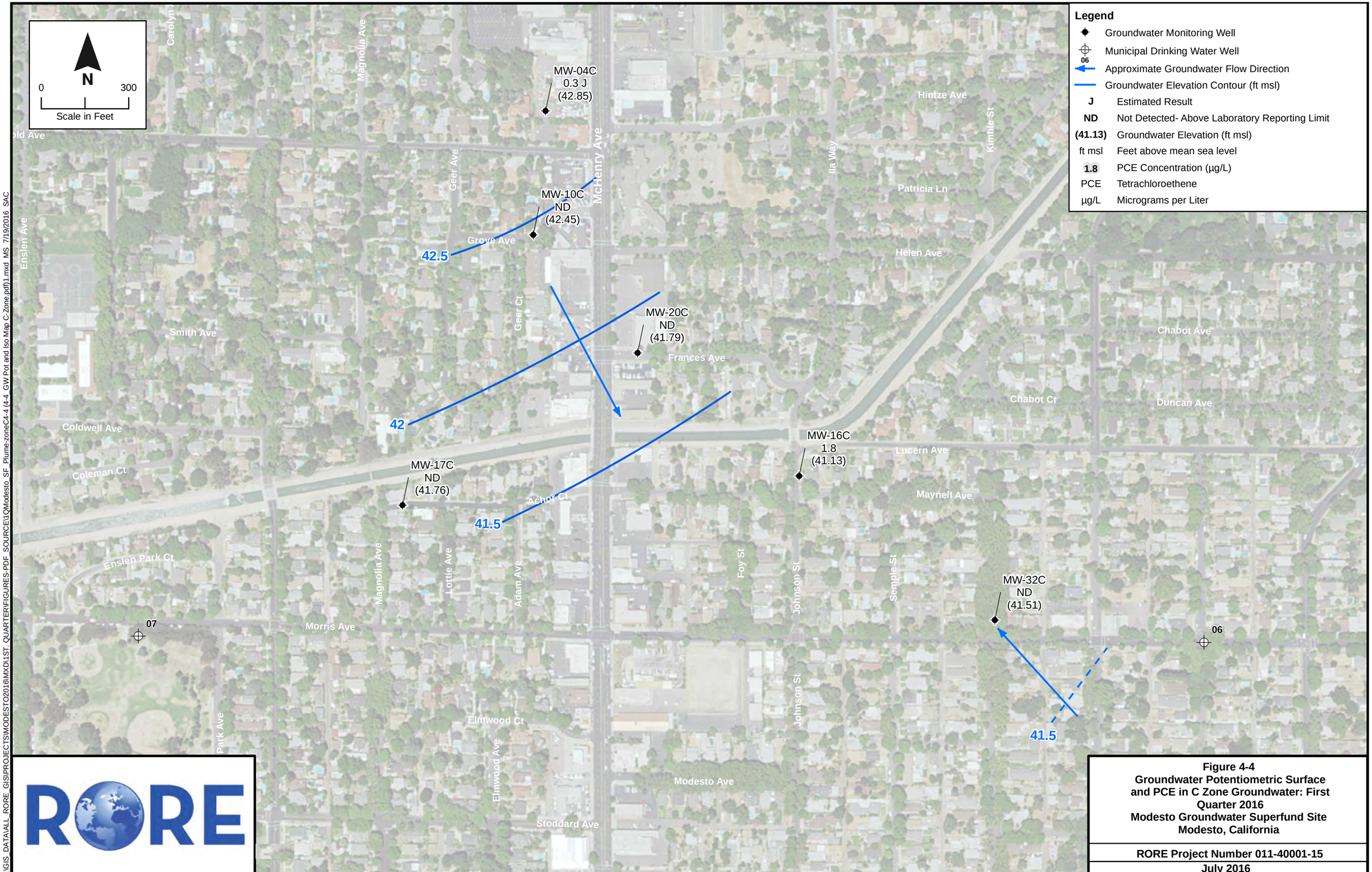

Figure 4-4
Groundwater Potentiometric Surface and PCE in C Zone Groundwater: First Quarter 2016
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15
July 2016

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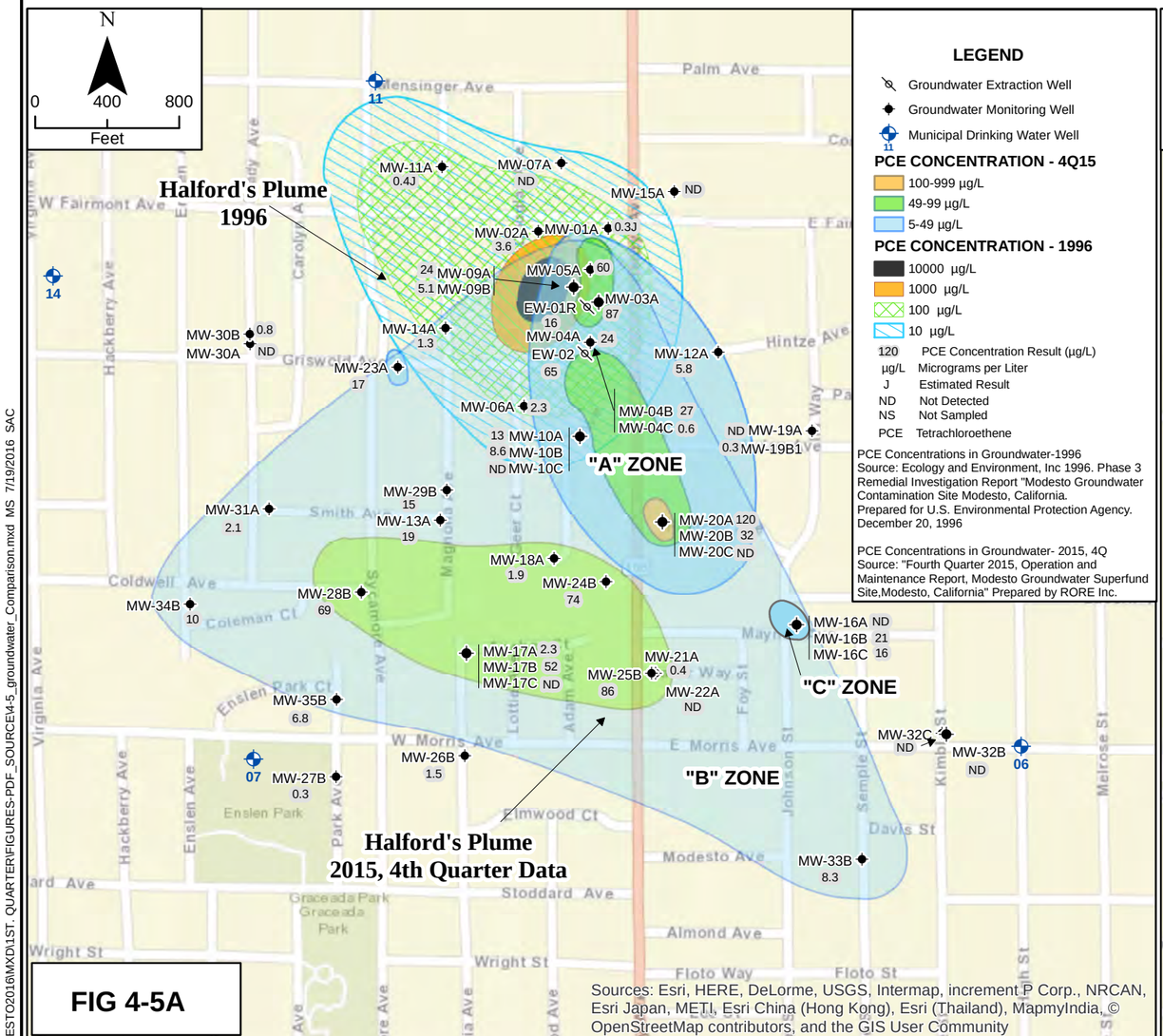


LEGEND

- Groundwater Extraction Well
- Groundwater Monitoring Well
- Municipal Drinking Water Well

PCE CONCENTRATION - 4Q15

- 100-999 µg/L
- 49-99 µg/L
- 5-49 µg/L

PCE CONCENTRATION - 1996

- 10000 µg/L
- 1000 µg/L
- 100 µg/L
- 10 µg/L

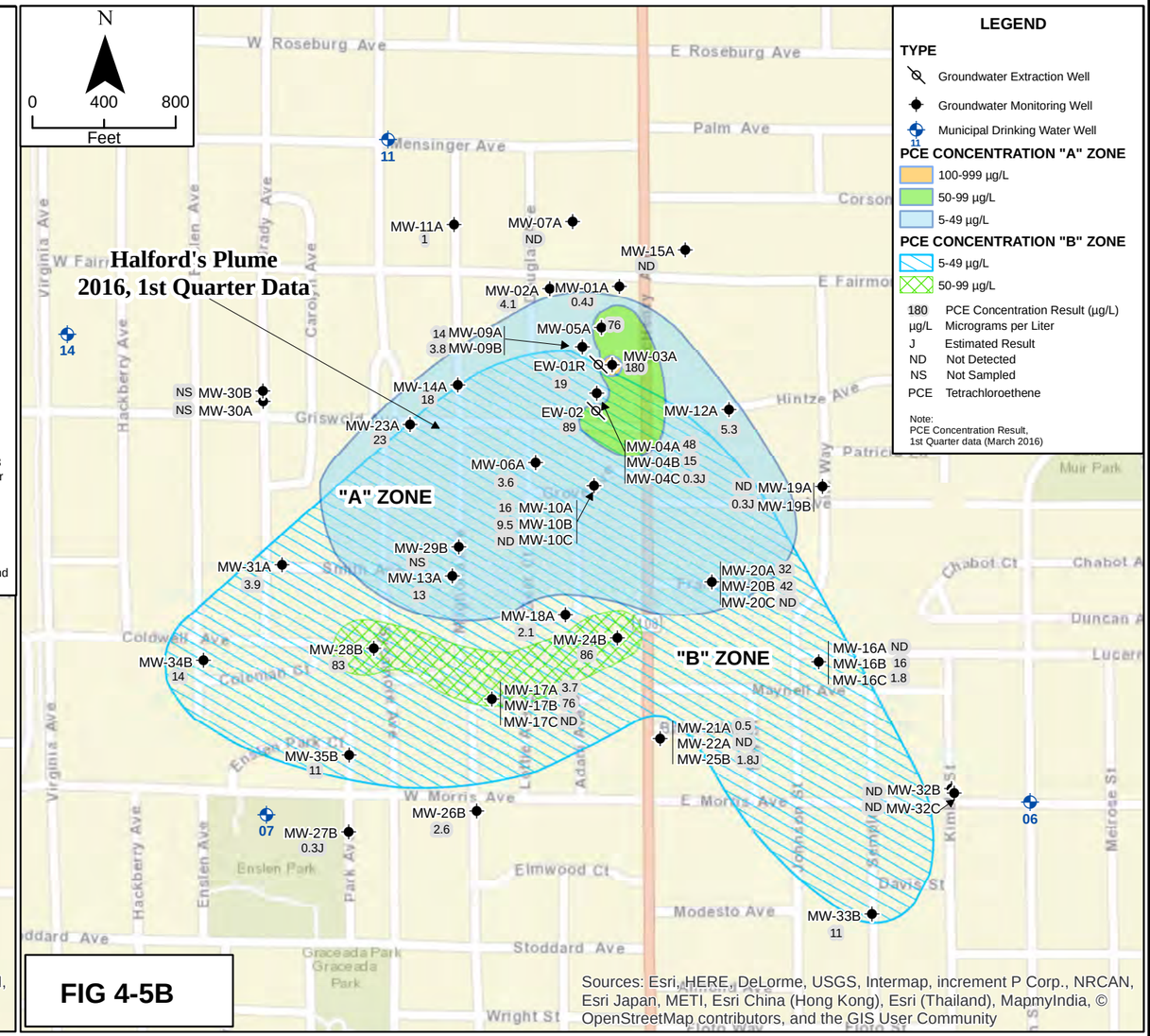
120	PCE Concentration Result (µg/L)
µg/L	Micrograms per Liter
J	Estimated Result
ND	Not Detected
NS	Not Sampled
PCE	Tetrachloroethene

PCE Concentrations in Groundwater-1996
Source: Ecology and Environment, Inc 1996. Phase 3 Remedial Investigation Report "Modesto Groundwater Contamination Site Modesto, California. Prepared for U.S. Environmental Protection Agency. December 20, 1996

PCE Concentrations in Groundwater- 2015, 4Q
Source: "Fourth Quarter 2015, Operation and Maintenance Report, Modesto Groundwater Superfund Site,Modesto, California" Prepared by RORE Inc.

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

FIG 4-5A



LEGEND

TYPE

- Groundwater Extraction Well
- Groundwater Monitoring Well
- Municipal Drinking Water Well

PCE CONCENTRATION "A" ZONE

- 100-999 µg/L
- 50-99 µg/L
- 5-49 µg/L

PCE CONCENTRATION "B" ZONE

- 5-49 µg/L
- 50-99 µg/L

180	PCE Concentration Result (µg/L)
µg/L	Micrograms per Liter
J	Estimated Result
ND	Not Detected
NS	Not Sampled
PCE	Tetrachloroethene

Note:
PCE Concentration Result,
1st Quarter data (March 2016)

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

FIG 4-5B

RORE

Figure 4-5
Groundwater and PCE comparison:
Fourth Quarter 2015 and First Quarter 2016
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

G:\GIS_DATA\ALL_RORE_GIS\PROJECTS\MODESTO2016\MXD\1ST_QUARTER\FIGURES-PDF_SOURCE\4-5_groundwater_Comparison.mxd MS 7/19/2016 SAC

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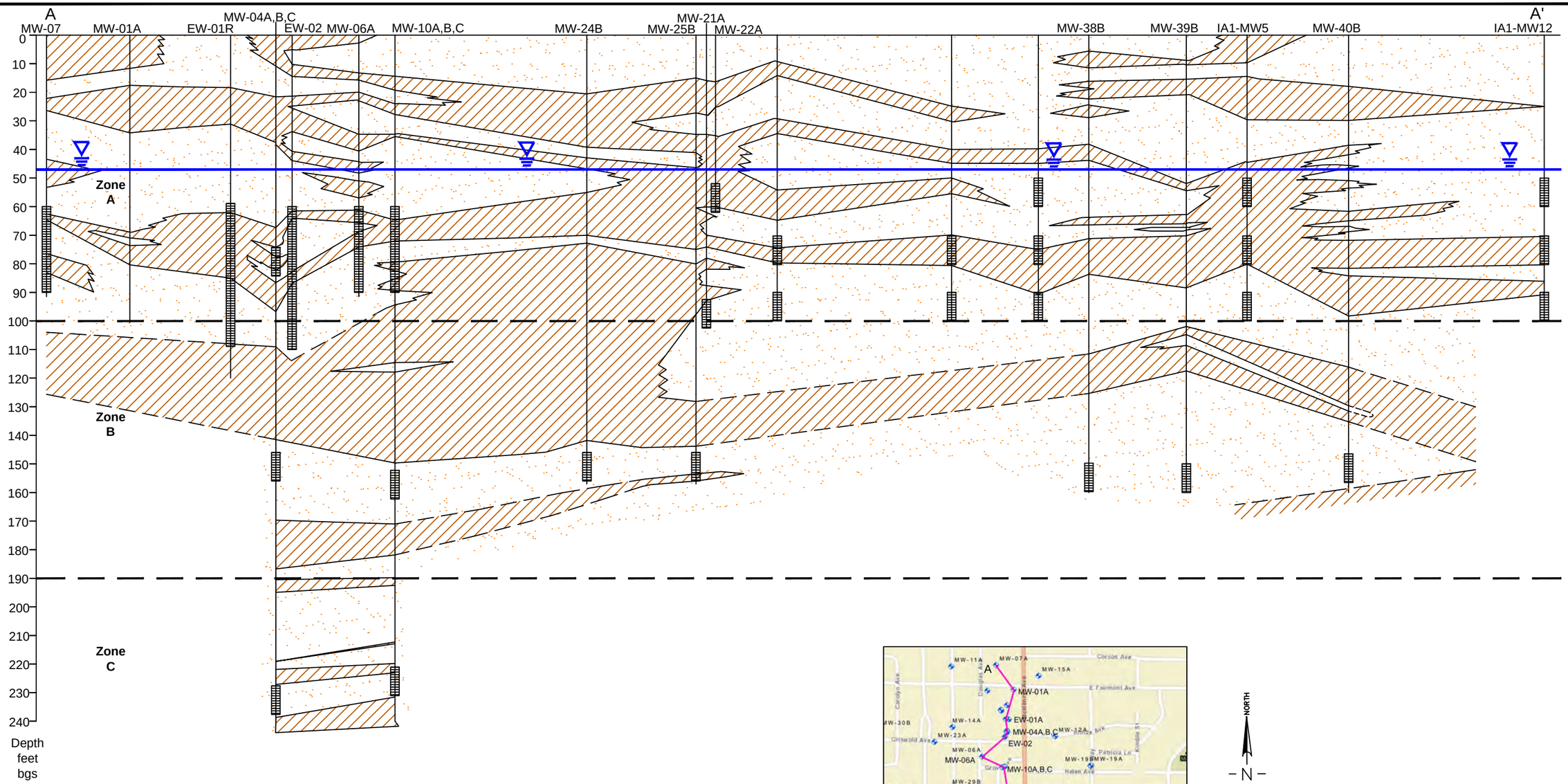

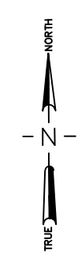

0 350 700

FEET

SYMBOL	LEGEND
Sand/Gravel	Sand, gravel, well graded sand, poorly graded sand, well graded sand with silt, well graded sand with clay, poorly graded sand with silt poorly graded sand with clay, silty sand, clayey sand
Silt/Clay	Sandy silt, sandy clay, silt, lean clay, silt with sand, clay with sand, sand, clay with silt, sand, silt with clay, silt with clay
	Well casing screen
	Groundwater

GEOLOGIC CROSS SECTION
A-A'

MODESTO GROUNDWATER
SUPERFUND SITE
MODESTO, CALIFORNIA

RORE

FIGURE 4-6

RORE PROJECT NO.
011-40001-15

JULY 2016

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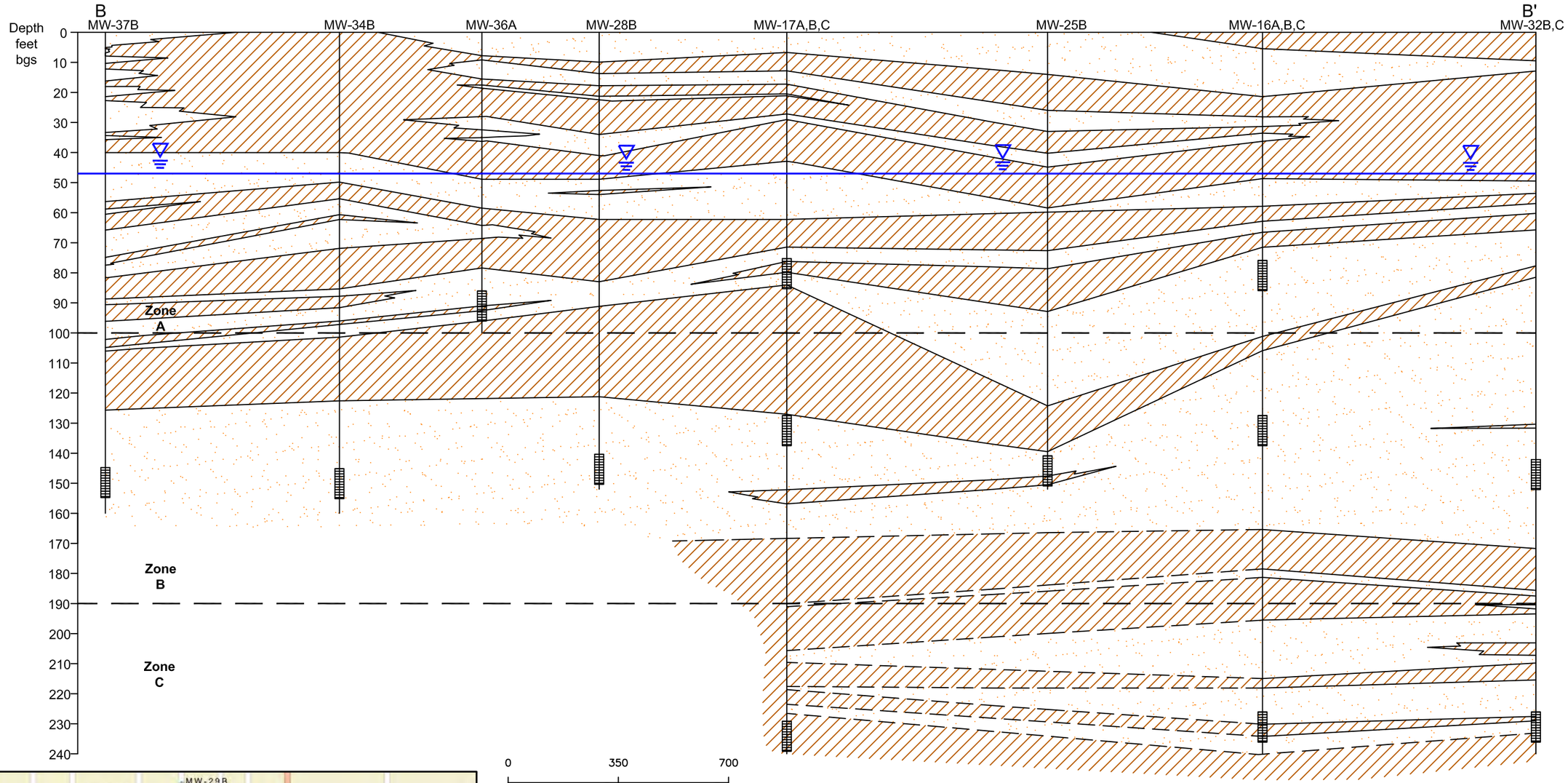

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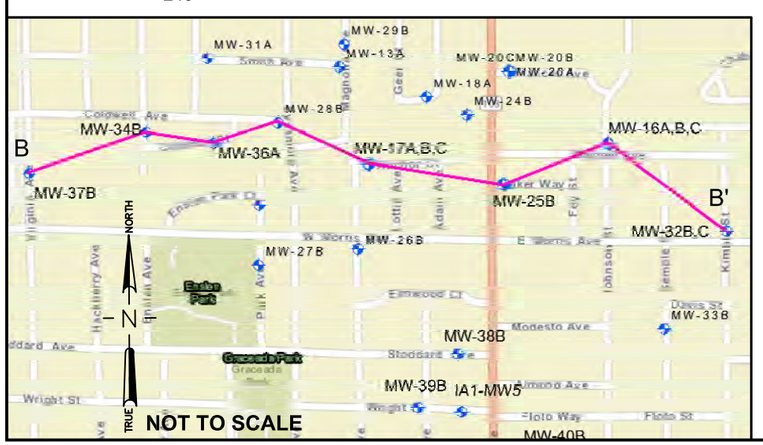

SYMBOL	LEGEND
Sand/Gravel	Sand, gravel, well graded sand, poorly graded sand, well graded sand with silt, well graded sand with clay, poorly graded sand with silt poorly graded sand with clay, silty sand, clayey sand
Silt/Clay	Sandy silt, sandy clay, silt, lean clay, silt with sand, clay with sand, sand, clay with silt, sand, silt with clay, silt with clay
	Well casing screen
	Groundwater

GEOLOGIC CROSS SECTION
B-B'

MODESTO GROUNDWATER
SUPERFUND SITE
MODESTO, CALIFORNIA

RORE

FIGURE 4-7

RORE PROJECT NO.
011-40001-15

JULY 2016

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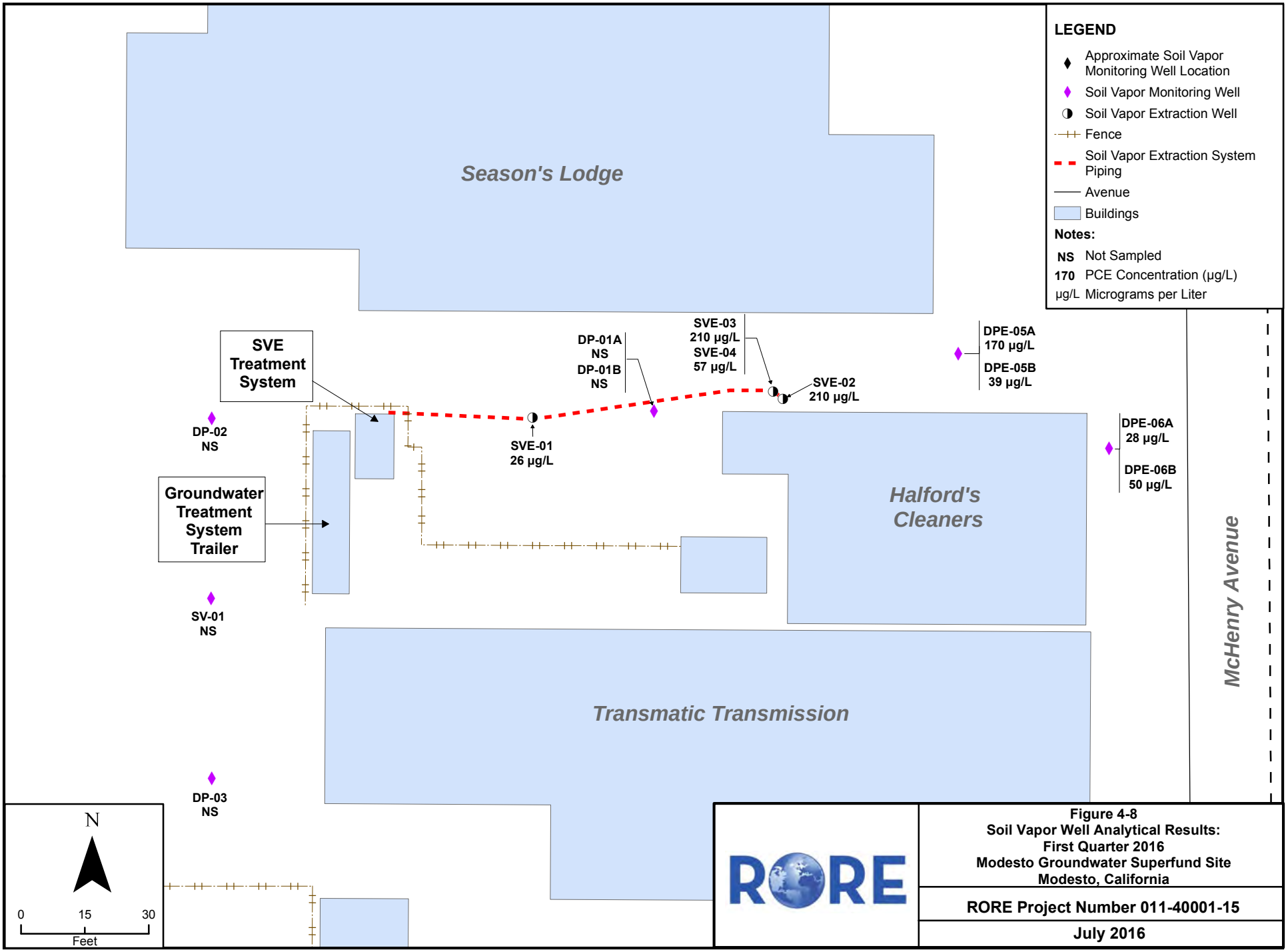

RORE

Figure 4-8
Soil Vapor Well Analytical Results:
First Quarter 2016
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

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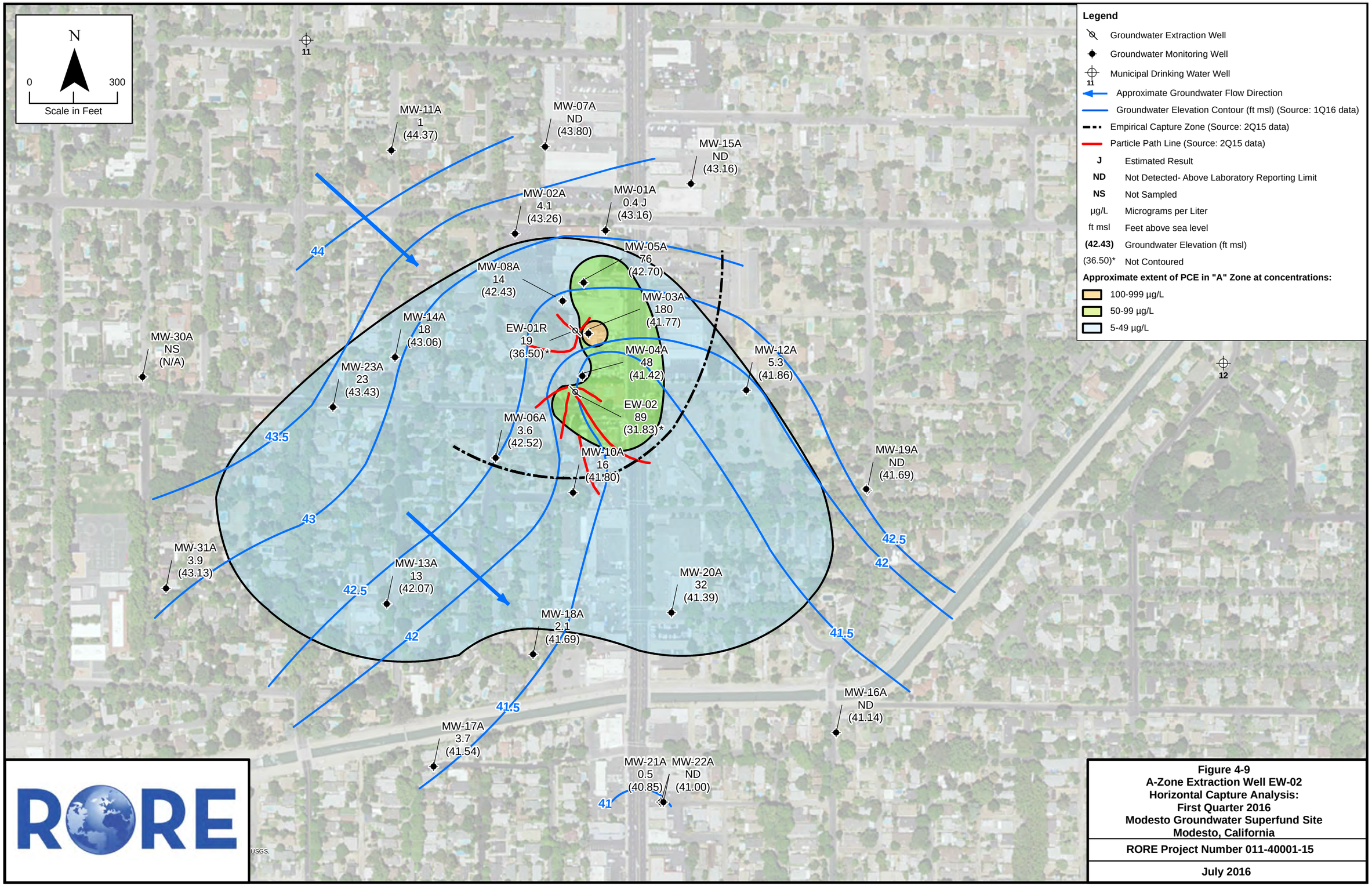

RORE

Figure 4-9
A-Zone Extraction Well EW-02
Horizontal Capture Analysis:
First Quarter 2016
Modesto Groundwater Superfund Site
Modesto, California

RORE Project Number 011-40001-15

July 2016

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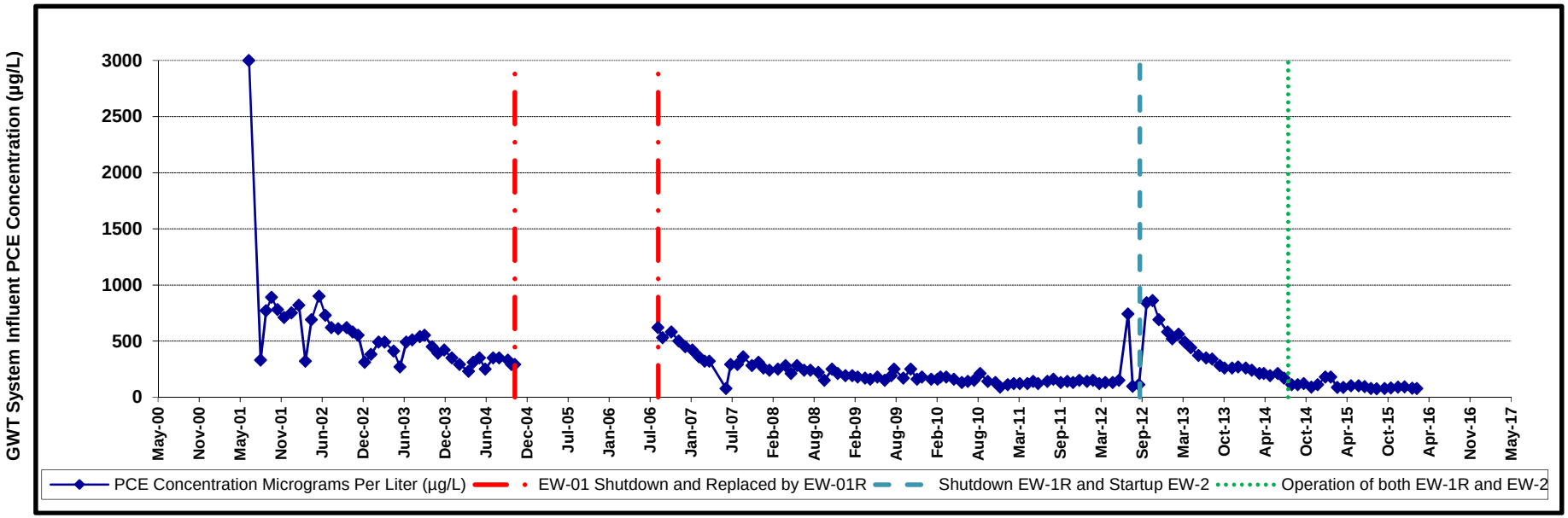
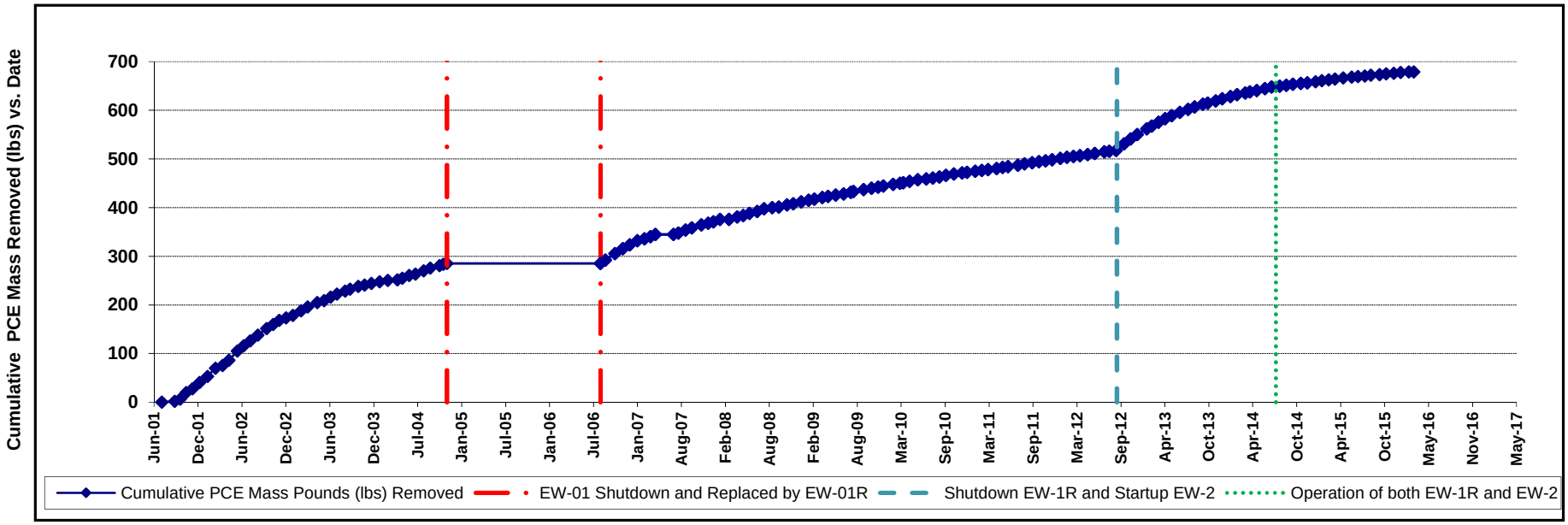
Figure 4-10
Cumulative PCE Mass Removed by the Groundwater Treatment System





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Appendix A

Treatment System Process and Instrumentation Diagrams

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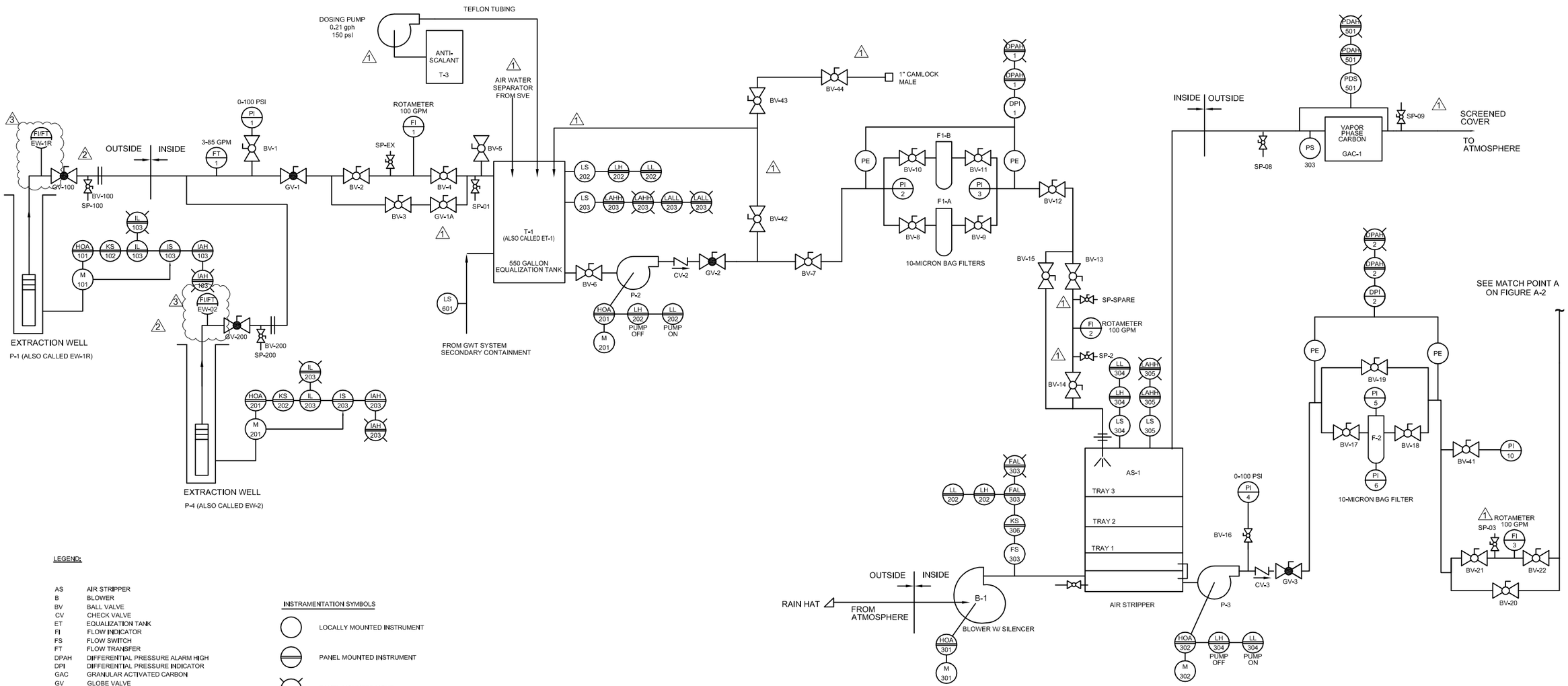

LEGEND:

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

INSTRAMENTATION SYMBOLS

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

REFERENCES
TITLE

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AS-BUILTS

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URS
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TEL: (916) 679-2000
FAX: (916) 679-2900

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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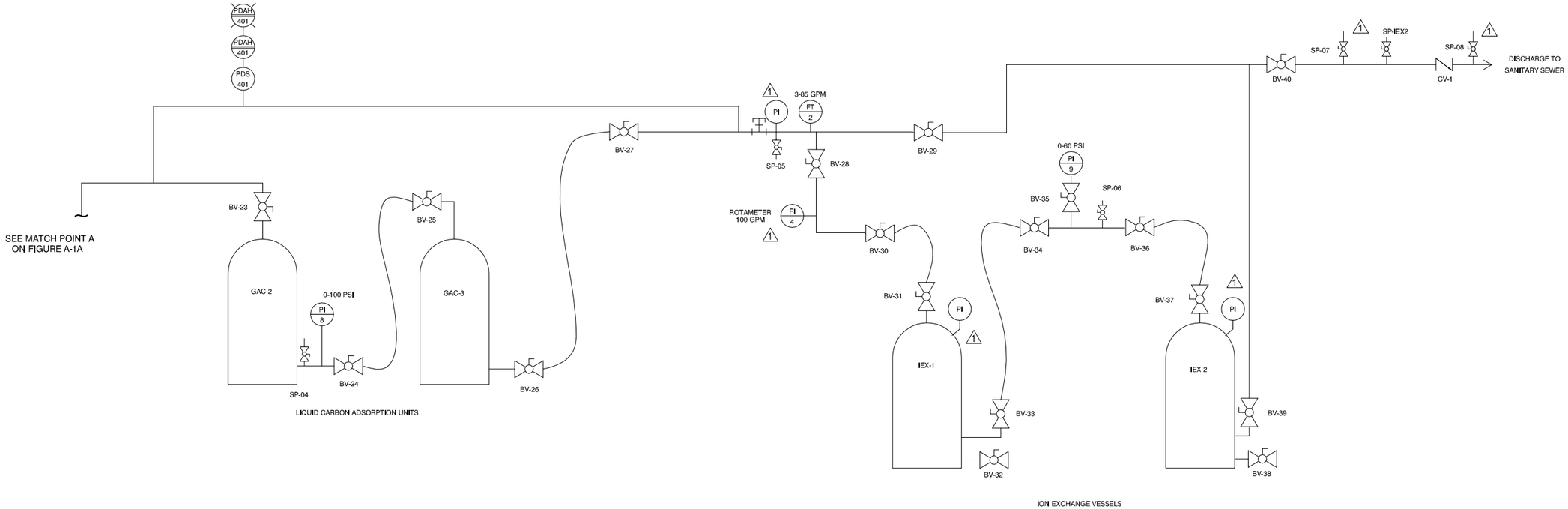

LEGEND:

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
DESIGN BY
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ORIGINAL DRAWING REFERENCED FROM
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APPROVED BY:		

URS
2870 Gateway Oaks Drive, Ste. 150
Sacramento, CA 95833-3200
TEL: (916) 679-2000
FAX: (916) 679-2900

MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

GROUNDWATER TREATMENT P&ID

JOB NO.
PROJECT
SHEET NO. **1-2**

PLOT BY: ROBERT_P_TAYLOR – Mar 19, 2010 – 11:38:02am
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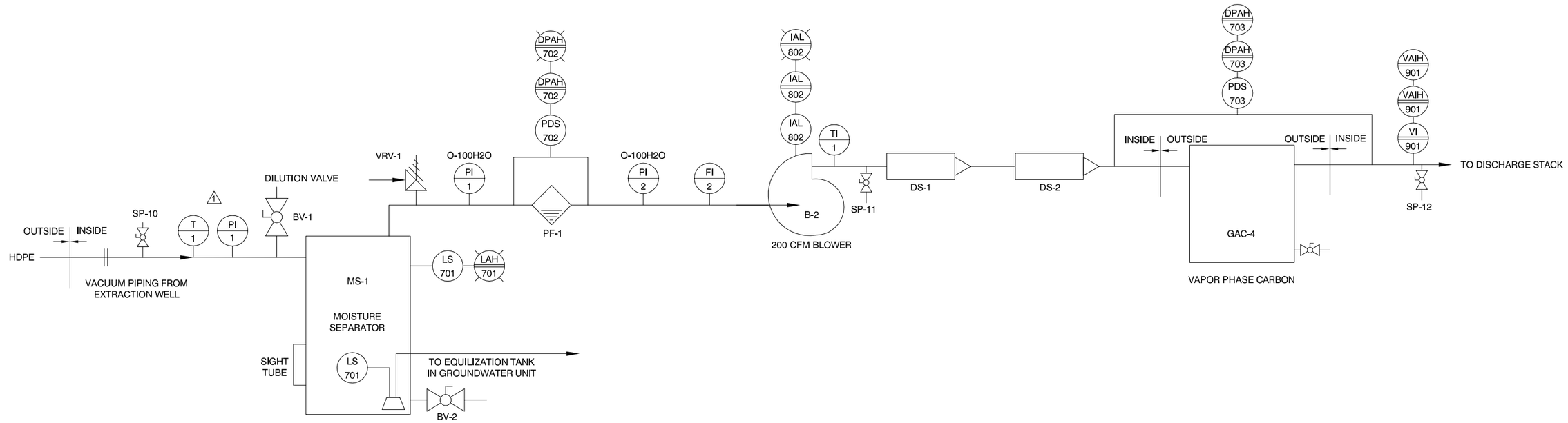

KEY

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
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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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URS
2870 Gateway Oaks Drive, Ste. 150
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
SHEET NO. **1-3**

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Appendix B

GWTS Discharge Limits and Laboratory Analytical Data Tables

Table B-1 GWTS Discharge Limits for Site Contaminants of Concern

Table B-2 Results Summary for Long-Term Monitoring: First Quarter 2016

Table B-3 Results Summary for the Groundwater Treatment System: First Quarter 2016

Table B-4 Results Summary for Indoor Air, Sub-Slab, and Soil Vapor: First Quarter 2016

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TABLE B-1

GWTS DISCHARGE LIMITS FOR 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: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Well ID	MW-01A	MW-02A	MW-03A	MW-04A	MW-04B	MW-04C	MW-05A	MW-06A	MW-07A	MW-08A	MW-09B	MW-10A	MW-10B	MW-10C	MW-11A	MW-12A	MW-13A	MW-14A	MW-15A	MW-16A
Sample Date	3/16/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/16/2016	3/15/2016	3/15/2016	3/16/2016	3/15/2016
Sample ID	MW-01A-1Q16	MW-02A-1Q16	MW-03A-1Q16	MW-04A-1Q16	MW-04B-1Q16	MW-04C-1Q16	MW-05A-1Q16	MW-06A-1Q16	MW-07A-1Q16	MW-08A-1Q16	MW-09B-1Q16	MW-10A-1Q16	MW-10B-1Q16	MW-10C-1Q16	MW-11A-1Q16	MW-12A-1Q16	MW-13A-1Q16	MW-14A-1Q16	MW-15A-1Q16	MW-16A-1Q16
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN
Volatile Organic Compounds (µg/L) - EPA 524.2																				
Dichlorodifluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.3 C1, J**	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	4.0 U	**6.7 J, Q3**	**5.7 J, Q3**	**7.8 J, Q3**	**9.2 J, Q3**	**6.6 J, Q3**	**28 J, Q3, Q4**	**4.6 J, Q3**	4.0 U	4.0 U	**7.1 J, Q3**	4.0 U	4.0 U	4.0 U	4.0 U	**3.0 C1, J, Q3**	4.0 U	4.0 U	4.0 U	**2.8 C1, J, Q3**
Dichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
tert-Butyl methyl ether (MTBE)	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone (MEK)	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Bromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	**0.3 C1, J**	**2.4**	**0.6**	**4.0**	0.5 U	0.5 U	**0.5**	**7.8**	**2.8**	**4.8**	0.5 U	**7.7**	**0.5**	0.5 U	**3.6**	**20**	**2.6**	**0.4 C1, J**	**0.2 C1, J**	**2.2**
1,1,1-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.3 C1, J**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.8**	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	**0.4 C1, J**	**4.1**	**180**	**48**	**15**	**0.3 C1, J**	**76**	**3.6**	0.5 U	**14**	**3.8**	**16**	**9.5**	0.5 U	**1.0**	**5.3**	**13**	**18**	0.5 U	0.5 U
1,3-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorodibromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dibromoethane (EDB)	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1,2-Tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m&p-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Propylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3,5-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
tert-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
sec-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
p-Isopropyltoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dibromo-3-chloropropane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2,4-Trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexachlorobutadiene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

TABLE B-2
RESULTS SUMMARY FOR LONG-TERM MONITORING: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Well ID	MW-16B	MW-16C	MW-17A	MW-17B	MW-17C	MW-18A	MW-19A	MW-19B1	MW-20A	MW-20B	MW-20C	MW-21A	MW-22A	MW-23A	MW-24B	MW-25B	MW-26B
Sample Date	3/15/2016	3/15/2016	3/14/2016	3/14/2016	3/14/2016	3/16/2016	3/16/2016	3/16/2016	3/16/2016	3/16/2016	3/16/2016	3/15/2016	3/15/2016	3/15/2016	3/16/2016	3/15/2016	3/15/2016
Sample ID	MW-16B-1Q16	MW-16C-1Q16	MW-17A-1Q16	MW-17B-1Q16	MW-17C-1Q16	MW-18A-1Q16	MW-19A-1Q16	MW-19B1-1Q16	MW-20A-1Q16	MW-20B-1Q16	MW-20C-1Q16	MW-21A-1Q16	MW-22A-1Q16	MW-23A-1Q16	MW-24B-1Q16	MW-25B-1Q16	MW-26B-1Q16
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN
Volatile Organic Compounds (µg/L) - EPA 524.2																	
Dichlorodifluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.6 J, Q4**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
Chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
Vinyl Chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
Bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
Trichlorofluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
1,1-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
Acetone	**4.4 J, Q3**	**3.1 C1, J, Q3**	**5.1 C4, J**	4.0 U	**5.1 C4, J**	4.0 C4, J, U	**2.3 C1, C4, J**	**3.1 C1, C4, J**	**100 J, Q3, Q4**	**4.9 C4, J**	**3.6 C1, C4, J**	**5.0 C4, J**	**5.2 C4, J**	**2.5 C1, C4, J**	4.0 C4, J, U	4.0 J, C4, U	4.0 U
Dichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
tert-Butyl methyl ether (MTBE)	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
2,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
2-Butanone (MEK)	4.0 U	4.0 U	4.0 C4, J, U	4.0 U	4.0 C4, J, U	4.0 C4, J, U	4.0 C4, J, U	4.0 C4, J, U	**3.5 C1, J**	4.0 C4, J, U	4.0 C4, J, U	4.0 C4, J, U	4.0 C4, J, U	4.0 C4, J, U	4.0 C4, J, U	4.0 C4, J, U	4.0 U
Bromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	**2.5**	**0.2 C1, J**	**5.8**	**0.6**	0.5 U	**6.1**	**3.0**	0.5 U	**2.6 J, Q4**	0.5 U	0.5 U	**4.4**	**7.2**	**1.7**	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
1,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	0.5 U	0.5 U	**0.3 C1, J**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	**16**	**1.8**	**3.7**	**76**	0.5 U	**2.1**	0.5 U	**0.3 C1, J**	**32**	**42**	0.5 U	**0.5**	0.5 U	**23**	**86**	**1.8 Q4, J**	**2.6**
1,3-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorodibromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dibromoethane (EDB)	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q2, U
Chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1,2-Tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m&p-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
Styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	0.5 U	0.5 U	0.5 J, Q3, U	0.5 U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 J, Q3, U	0.5 U
Isopropylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
Bromobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Propylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3,5-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
tert-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
1,2,4-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
sec-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
1,3-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
p-Isopropyltoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
1,4-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 J, Q4, U	0.5 U
1,2-Dibromo-3-chloropropane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2,4-Trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexachlorobutadiene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

TABLE B-2
RESULTS SUMMARY FOR LONG-TERM MONITORING: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Well ID	MW-27B	MW-28B	MW-31A	MW-32B	MW-32C	MW-33B	MW-34B	MW-35B	EW-1R	EW-02	MW-25B	MW-05A	MW-20A	MW-24B	N/A	N/A	N/A	N/A
Sample Date	3/15/2016	3/15/2016	3/16/2016	3/16/2016	3/16/2016	3/16/2016	3/16/2016	3/16/2016	3/15/2016	3/15/2016	3/15/2016	3/15/2016	3/16/2016	3/16/2016	3/14/2016	3/15/2016	3/16/2016	3/14/2016
Sample ID	MW-27B-1Q16	MW-28B-1Q16	MW-31A-1Q16	MW-32B-1Q16	MW-32C-1Q16	MW-33B-1Q16	MW-34B-1Q16	MW-35B-1Q16	EW-01R-1Q16	EW-02-1Q16	MW-75B-1Q16	MW-95A-1Q16	MW-80A-1Q16	MW-76B-1Q16	MW-401-1Q16	MW-402-1Q16	MW-403-1Q16	MW-301-1Q16
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FD	FD	FD	FD	FB	FB	FB	TB
Volatile Organic Compounds (µg/L) - EPA 524.2																		
Dichlorodifluoromethane	0.5 U	0.5 C3, J, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**2.8 C3, J**	0.5 C3, J, U	0.5 U	0.5 U	0.5 U	0.5 C3, J, U
Chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	**2.6 C1, J**	**7.2 Q3, J**	**4.2**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**44**	4.0 U	**5.2 J, Q3**	**6.2 J, Q3**	4.0 C4, J, U	4.0 U	4.0 U	4.0 U
Dichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
tert-Butyl methyl ether (MTBE)	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone (MEK)	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**4.1**	4.0 U	4.0 U	4.0 U	4.0 C4, J, U	4.0 U	4.0 U	4.0 U
Bromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	0.5 U	0.5 U	0.5 U	**0.4 C1, J**	0.5 U	**1.8**	0.5 U	0.5 U	**3.4**	**3.3**	0.5 U	**0.6**	**9.6**	0.5 U	**3.8**	**4.0**	**4.0**	0.5 U
1,1,1-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.3 C1, J**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.3 C1, J**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	**0.3 C1, J**	**83**	**3.9**	0.5 U	0.5 U	**11**	**14**	**11**	**19**	**89**	**3.7**	**45**	**150**	**78**	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorodibromomethane	0.5 U	0.5 C3, J, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 C3, J, U	0.5 C3, J, U	0.5 U	0.5 U	0.5 U	0.5 C3, J, U
1,2-Dibromoethane (EDB)	0.5 J, Q2, U	0.5 U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 J, Q2, U	0.5 U	0.5 U	0.5 U	0.5 Q2, J, U	0.5 Q2, J, U	0.5 U
Chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1,2-Tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m&p-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	0.5 U	0.5 C3 ,J, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 C3, J, U	0.5 C3, J, U	0.5 Q3, J, U	0.5 U	0.5 U	0.5 C3, J, U
Isopropylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Propylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3,5-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
tert-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
sec-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
p-Isopropyltoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dibromo-3-chloropropane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2,4-Trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexachlorobutadiene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	0.5 U	0.5 C3 ,J, U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 C3, J, U	0.5 C3, J, U	0.5 U	0.5 U	0.5 U	0.5 C3, J, U
1,2,3-Trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Notes:

Bolded - results indicate positive or estimated detections

-- not analyzed

µg/L - microgram per liter

mg/L - milligrams per liter

J - estimated value

U - not detected above the stated quantitation limit

FN - normal sample

FD - field duplicate

FB - field blank

TB - trip blank

C1 - the reported concentration for this analyte is below the quantitation limit

C3 - the initial calibration for this analyte did not meet calibration criteria

C4 - the calibration verification check did not meet % difference criteria for this analyte

Q2 - the laboratory control standard associated with this sample did not meet recovery criteria for this analyte

Q3 - the quanitiation 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

N/A - Not applicable

TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Sample Port	SP-01			SP-03			SP-04			SP-05			SP-06			SP-07	
Sample Date	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016
Sample ID	GWTS-INF-0102	GWTS-INF-0202	GWTS-INF-0301	CRB INF-0102	CRB INF-0202	CRB INF-0301	CRB Mid-0102	CRB Mid-0202	CRB Mid-0301	CRB EFF-0102	Pre IEX-0201	Pre IEX-0301	IEX Mid-0102	IEX Mid-0201	IEX Mid-0301	EFF-0102	EFF-0202
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN
Volatile Organic Compounds (µg/L) - EPA 524.2																	
Dichlorodifluoromethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Chloromethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Vinyl Chloride	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Bromomethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Chloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Trichlorofluoromethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Methylene Chloride	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
trans-1,2-Dichloroethene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,1-Dichloroethene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
cis-1,2-Dichloroethene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Chloroform	**4.1**	**3.7**	**3.9**	**0.21 J**	**0.12 J**	**0.12 J**	**0.30 J**	**0.19 J**	**0.17 J**	**0.16 J**	--	--	--	--	--	**0.15 J**	**0.30 J**
Bromochloromethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Carbon tetrachloride	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Benzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2-Dichloroethane	**0.040 J**	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Trichloroethene	**0.070 J**	**0.070 J**	**0.060 J**	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2-Dichloropropane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Bromodichloromethane	**0.16 J**	**0.14 J**	**0.15 J**	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Dibromomethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,1-Dichloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Toluene	0.50 U	**0.060 J**	0.50 U	0.50 U	**0.050 J**	**0.080 J**	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	**0.050 J**	0.50 U
trans-1,3-Dichloropropene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Tetrachloroethene	**92**	**80**	**76**	**1.2**	**0.38 J**	**0.43 J**	**0.13 J**	**0.26 J**	**0.28 J**	0.50 U	--	--	--	--	--	0.50 U	0.50 U
2,2-Dichloropropane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,3-Dichloropropane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Dibromochloromethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2-Dibromoethane (EDB)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Chlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Ethylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Styrene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
m&p-Xylene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
o-Xylene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,1,1-Trichloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Bromoform	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U

TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Sample Port	SP-01			SP-03			SP-04			SP-05			SP-06			SP-07	
Sample Date	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016
Sample ID	GWTS-INF-0102	GWTS-INF-0202	GWTS-INF-0301	CRB INF-0102	CRB INF-0202	CRB INF-0301	CRB Mid-0102	CRB Mid-0202	CRB Mid-0301	CRB EFF-0102	Pre IEX-0201	Pre IEX-0301	IEX Mid-0102	IEX Mid-0201	IEX Mid-0301	EFF-0102	EFF-0202
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN
Isopropylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,1-Dichloropropene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Bromobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
n-Propylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,3,5-Trimethylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
2-Chlorotoluene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
4-Chlorotoluene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
tert-Butylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2,4-Trimethylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
sec-Butylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
p-Isopropyltoluene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,3-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,4-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
n-Butylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2,4-Trichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Hexachlorobutadiene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Naphthalene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,1,2-Trichloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2,3-Trichloropropane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
1,2,3-Trichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	--	--	--	0.50 U	0.50 U
Total Uranium (pCi/L) - ASTM D5174																	
Total Uranium	**54.2**	--	--	--	--	--	--	--	--	--	**56.8**	**57.7**	0.125 U	**0.396**	**0.526**	**13.9**	--
Total Dissolved Solids (mg/L) - SM2540C																	
Total Dissolved Solids	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**609**	**631**
Total Suspended Solids (mg/L) - SM2540D																	
Total Suspended Solids	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.0 U	5.0 U
Biochemical Oxygen Demand (mg/L) - SM5210B																	
Biochemical Oxygen Demand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.0 U	2.0 U

(URS, 2016)

TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Sample Port	SP-01			SP-03			SP-04			SP-05			SP-06			SP-07	
Sample Date	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016
Sample ID	GWTS-INF-0102	GWTS-INF-0202	GWTS-INF-0301	CRB INF-0102	CRB INF-0202	CRB INF-0301	CRB Mid-0102	CRB Mid-0202	CRB Mid-0301	CRB EFF-0102	Pre IEX-0201	Pre IEX-0301	IEX Mid-0102	IEX Mid-0201	IEX Mid-0301	EFF-0102	EFF-0202
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN
Volatile Organic Compounds (ppbv) - TO-15 - Soil Gas/Soil Vapor																	
1,2-Dichlorotetrafluoroethane (Freon 114)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane (Freon 11)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane (EDB)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m&p-Xylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(URS, 2016)

TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Sample Port		SP-08			SP-09			SP-10			SP-06	SP-03			
Sample Date	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	3/3/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016
Sample ID	EFF-0301	GWTS Pr GAC-0102	GWTS Pr GAC-0201	GWTS Pr GAC-0301	GWTS Stack-0102	GWTS Stack-0201	GWTS Stack-0301	IEXEFF-0102	IEXEFF-0201	IEXEFF-0301	MW-106-0301	MW-103-0301	MW-301-1Q16	MW-302-1Q16	MW-303-1Q16
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FD	FD	TB	TB	TB
Volatile Organic Compounds (µg/L) - EPA 524.2															
Dichlorodifluoromethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl Chloride	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Methylene Chloride	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	**0.23 J**	**0.090 J**
trans-1,2-Dichloroethene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform	**0.24 J**	--	--	--	--	--	--	--	--	--	--	**0.13 J**	0.50 U	**0.090 J**	0.50 U
Bromochloromethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Benzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	**0.040 J**	0.50 U	0.50 U
Trichloroethene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Dibromomethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	0.50 U	--	--	--	--	--	--	--	--	--	--	**0.14 J**	0.50 U	0.50 U	**0.31 J**
trans-1,3-Dichloropropene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	0.50 U	--	--	--	--	--	--	--	--	--	--	**0.38 J**	0.50 U	0.50 U	0.50 U
2,2-Dichloropropane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichloropropane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (EDB)	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1-Trichloroethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U

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TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Sample Port		SP-08			SP-09			SP-10			SP-06	SP-03			
Sample Date	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	3/3/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016
Sample ID	EFF-0301	GWTS Pr GAC-0102	GWTS Pr GAC-0201	GWTS Pr GAC-0301	GWTS Stack-0102	GWTS Stack-0201	GWTS Stack-0301	IEXEFF-0102	IEXEFF-0201	IEXEFF-0301	MW-106-0301	MW-103-0301	MW-301-1Q16	MW-302-1Q16	MW-303-1Q16
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FD	FD	TB	TB	TB
Isopropylbenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloropropene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Bromobenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
n-Propylbenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,3,5-Trimethylbenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
2-Chlorotoluene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
4-Chlorotoluene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
tert-Butylbenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
sec-Butylbenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
p-Isopropyltoluene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
n-Butylbenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorobutadiene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Naphthalene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2,3-Trichloropropane	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
1,2,3-Trichlorobenzene	0.50 U	--	--	--	--	--	--	--	--	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Total Uranium (pCi/L) - ASTM D5174															
Total Uranium	--	--	--	--	--	--	--	0.161 U	0.0173 U	0.161 U	**0.466**	--	--	--	--
Total Dissolved Solids (mg/L) - SM2540C															
Total Dissolved Solids	**625**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids (mg/L) - SM2540D															
Total Suspended Solids	5.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand (mg/L) - SM5210B															
Biochemical Oxygen Demand	2.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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TABLE B-3
RESULTS SUMMARY FOR GROUNDWATER TREATMENT SYSTEM: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Sample Port		SP-08			SP-09			SP-10			SP-06	SP-03			
Sample Date	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016	3/3/2016	3/3/2016	1/7/2016	2/11/2016	3/3/2016
Sample ID	EFF-0301	GWTS Pr GAC-0102	GWTS Pr GAC-0201	GWTS Pr GAC-0301	GWTS Stack-0102	GWTS Stack-0201	GWTS Stack-0301	IEXEFF-0102	IEXEFF-0201	IEXEFF-0301	MW-106-0301	MW-103-0301	MW-301-1Q16	MW-302-1Q16	MW-303-1Q16
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FD	FD	TB	TB	TB
Volatile Organic Compounds (ppbv) - TO-15 - Soil Gas/Soil Vapor															
1,2-Dichlorotetrafluoroethane (Freon 114)	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12)	--	**0.91 J**	**0.56 J**	**0.54 J**	**1.2 J**	**0.71 J**	**0.83 J**	--	--	--	--	--	--	--	--
Chloromethane	--	**0.80 J**	12 U	12 U	**1.2 J**	12 U	12 U	--	--	--	--	--	--	--	--
Vinyl Chloride	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Bromomethane	--	1.1 U	12 U	12 U	12 U	12 U	12 U	--	--	--	--	--	--	--	--
Chloroethane	--	4.6 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	--	--	--	--	--	--	--	--
Trichlorofluoromethane (Freon 11)	--	**0.38 J**	1.2 U	**0.23 J**	**0.38 J**	1.2 U	**0.24 J**	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	--	1.1 U	1.2 U	1.2 U	**0.23 J**	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,1-Dichloroethane	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Chloroform	--	**11**	**11**	**13**	**13**	**10**	**12**	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Carbon tetrachloride	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Benzene	--	**0.33 J**	1.2 U	**0.28 J**	**1.1 J**	**1.0 J**	**1.3**	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Trichloroethene	--	1.1 U	1.2 U	**0.37 J**	1.2 U	1.2 U	**0.34 J**	--	--	--	--	--	--	--	--
1,2-Dichloropropane	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Toluene	--	1.1 U	**0.44 J**	**0.37 J**	1.2 U	1.2 U	**0.16 J**	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Tetrachloroethene	--	**210**	**180**	**200**	**26**	**43**	**53**	--	--	--	--	--	--	--	--
1,2-Dibromoethane (EDB)	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Chlorobenzene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Ethylbenzene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
m&p-Xylene	--	1.1 U	**0.32 J**	1.2 U	1.2 U	**0.21 J**	1.2 U	--	--	--	--	--	--	--	--
o-Xylene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
Styrene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	4.6 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	--	--	--	--	--	--	--	--
Hexachlorobutadiene	--	4.6 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	--	--	--	--	--	--	--	--

Notes:
Bolded - results indicate positive or estimated detections
-- not analyzed
ppbv - parts per billion by volume
µg/L - micrograms per Liter
mg/L - milligrams per Liter
pCi/L - pico Curies per Liter
FD - field duplicate
FN - normal sample
TB - trip blank
J - estimated value
U - not detected above the stated quantitation limit

(URS, 2016)

TABLE B-4
RESULTS SUMMARY FOR SOIL VAPOR SAMPLES: FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Well/Monitoring Point ID	SVE-01	SVE-02	SVE-03	SVE-04	DP-05	DP-05	DP-06	DP-06	OSVE-10	OSVE-11	DP-06
Sample Date	3/15/2016	3/16/2016	3/16/2016	3/15/2016	3/15/2016	3/15/2016	3/16/2016	3/16/2016	3/15/2016	3/15/2016	3/16/2016
Sample ID	SVE-01-1Q16	SVE-02-1Q16	SVE-03-1Q16	SVE-04-1Q16	DP-05-031516-16	DP-05-031516-35	DP-06-031616-16	DP-06-031616-35	OSVE-10-1Q16	OSVE-11-1Q16	DP-106-031616-16
Sample Type	FN	FN	FN	FN	FN	FN	FN	FN	FN	FN	FD
Volatile Organic Compounds (ppbv) - TO-15											
1,2-Dichlorotetrafluoroethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Chloromethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Vinyl Chloride	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Bromomethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Chloroethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Trichlorofluoromethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,1-Dichloroethene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Dichloromethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,1-Dichloroethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	**2.3**	**2.2**	2.0 U
Chloroform	**3.2**	**10**	**11**	**12**	1.9 U	**50**	2.0 U	**58**	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Carbon tetrachloride	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Benzene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,2-Dichloroethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Trichloroethene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	**2.1**	2.0 U
1,2-Dichloropropane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
cis-1,3-Dichloropropene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Toluene	2.0 U	**1 C1, J**	**2.6**	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
trans-1,3-Dichloropropene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,1,2-Trichloroethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Tetrachloroethene	**26**	**210**	**210**	**57**	**170**	**39**	**28**	**50**	**280**	**120**	**9.6**
1,2-Dibromoethane (EDB)	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Chlorobenzene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Ethylbenzene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
m&p-Xylene	4.0 U	3.8 U	3.8 U	4.0 U	3.8 U	3.9 U	4.1 U	4.2 U	4.1 U	4.0 U	4.1 U
o-Xylene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Styrene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,1,2,2-Tetrachloroethane	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,3,5-Trimethylbenzene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,2,4-Trimethylbenzene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,3-Dichlorobenzene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,4-Dichlorobenzene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
1,2,4-Trichlorobenzene	2.0 C3, J, U	1.9 C3, J, U	1.9 C3, J, U	2.0 C3, J, U	1.9 C3, J, U	1.9 C3, J, U	2.0 C3, J, U	2.1 U	2.0 C3, J, U	2.0 C3, J, U	2.0 U
Hexachlorobutadiene	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U

Notes:
Bolded - results indicate positive or estimated detections
-- not analyzed
ppbv - parts per billion by volume
FD - field duplicate
J - estimated value
C1 - the reported concentration for this analyte is below the quantitation limit
C3 - the initial calibration for this analyte did not meet calibration criteria
U - not detected above the stated quantitation limit
FN - normal sample

TABLE B-4
RESULTS SUMMARY FOR VAPOR SAMPLES (INDOOR AIR, SUB-SLAB, AND SOIL VAPOR): FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Indoor Air Monitoring Point ID	941-IA-01	941-IA-02	939-IA-01	939-IA-03	931-IA-01	931-IA-01
Sample Date	3/14/2016	3/14/2016	3/14/2016	3/14/2016	3/14/2016	3/14/2016
Sample ID	941-IA-01-1Q16	941-IA-02-1Q16	939-IA-01-1Q16	939-IA-03-1Q16	931-IA-01-1Q16	931-IA-101-1Q16
Sample Type	FN	FN	FN	FN	FN	FD
Volatile Organic Compounds (µg/m^3) - TO-15 SIM						
Vinyl Chloride	0.50 U	0.51 U	0.51 U	0.50 U	0.51 U	0.51 U
1,3-Butadiene	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
Bromoethene	0.86 U	0.87 U	0.87 U	0.86 U	0.87 U	0.87 U
1,1,2-Trichloro-1,2,2-trifluoroethane	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,1-Dichloroethene	0.78 U	0.79 U	0.79 U	0.78 U	0.79 U	0.79 U
Dichloromethane	**1.0**	**1.1**	**8.3**	**9.2**	**0.52 C2, J**	**0.52 C1, J**
tert-Butyl methyl ether (MTBE)	0.71 U	0.72 U	0.72 U	0.71 U	0.72 U	0.72 U
trans-1,2-Dichloroethene	0.78 U	0.79 U	0.79 U	0.78 U	0.79 U	0.79 U
Hexane	**0.52 C1, J**	**0.67 C1, J**	**6.7**	**4.6**	**2.9**	**3.1**
1,1-Dichloroethane	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U
cis-1,2-Dichloroethene	0.78 U	0.79 U	0.79 U	0.78 U	0.79 U	0.79 U
Chloroform	0.96 U	0.97 U	0.97 U	0.96 U	0.97 U	0.97 U
1,1,1-Trichloroethane	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Carbon tetrachloride	1.2 U	1.2 U	**0.75 C1, J**	1.2 U	1.2 U	1.2 U
Benzene	**0.57 C1, J**	**0.58 C1, J**	**3.1 J, Q1**	**2.2**	**1.5**	**1.5 J, Q1**
1,2-Dichloroethane	0.80 U	0.80 U	0.80 J, Q1, U	0.80 U	0.80 U	0.80 Q1, J, U
Trichloroethene	**4.3 C3, J**	**3.4 C3, J**	1.1 C3, J, Q1, U	1.1 C3, J, U	1.1 C3, J, U	1.1 C3, J, Q1, U
1,2-Dichloropropane	0.91 U	0.92 U	0.92 J, Q1, U	0.91 U	0.92 U	0.92 J, Q1, U
Toluene	**3.4**	**2.5**	**22**	**17**	**14 J, Q1**	**16**
Tetrachloroethene	**2.7**	**2.1**	1.3 J, Q1, U	1.3 U	1.3 U	1.3 U
1,2-Dibromoethane (EDB)	1.5 U	1.5 U	1.5 J, Q1, U	1.5 U	1.5 U	1.5 U
Chlorobenzene	0.91 U	0.91 U	0.91 J, Q1, U	0.91 U	0.91 U	0.91 U
Ethylbenzene	**1.4**	**2.3**	**5.5 J, Q1**	**4.3**	**2.8**	**2.7**
m&p-Xylene	**5.9**	**9.9**	**20**	**17**	**11**	**11**
o-Xylene	**2.4**	**3.4**	**7.1 J, Q1**	**6.1**	**4.9**	**4.8**
Styrene	0.84 U	0.85 U	**0.50 C1, J, Q1**	**0.55 J**	**0.44 C1, J**	**0.43 C1, J**
1,2-Dichlorobenzene	1.2 U	1.2 U	1.2 J, Q1, U	1.2 U	1.2 U	1.2 U

Notes:
Bolded - results indicate positive or estimated detections
-- not analyzed
µg/m^3 - micrograms per cubic meter
FD - field duplicate
FN - normal sample
J - estimated value
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
C3 - the initial calibration for this analyte did not meet calibration criteria
Q1 - the internal standard associated with this analyte did not meet area count criteria
U - not detected above the stated quantitation limit

TABLE B-4
RESULTS SUMMARY FOR VAPOR SAMPLES (INDOOR AIR, SUB-SLAB, AND SOIL VAPOR): FIRST QUARTER 2016
MODESTO GROUNDWATER SUPERFUND SITE

Sub-Slab Monitoring Point ID	931-SS-01	939-SS-01	939-SS-02	941-SS-01	OSC-3	939- SS-01
Sample Date	3/14/2016	3/14/2016	3/14/2016	3/14/2016	3/14/2016	3/14/2016
Sample ID	931-SS-01-1Q16	939-SS-01-1Q16	939-SS-02-1Q16	941-SS-01-1Q16	OSC-3-1Q16	939-SS-101-1Q16
Sample Type	FN	FN	FN	FN	FN	FD
Volatile Organic Compounds (µg/m^3) - TO-15						
1,2-Dichlorotetrafluoroethane	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	4 U	4 U	4 U	3 U	3 U	4 U
Vinyl Chloride	5 U	5 U	5 U	4 U	4 U	5 U
Bromomethane	8 U	8 U	8 U	6 U	6 U	8 U
Chloroethane	5 U	5 U	5 U	4 U	4 U	5 U
Trichlorofluoromethane	10 U	10 U	10 U	8 U	8 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane	20 U	10 U	20 U	10 U	10 U	20 U
1,1-Dichloroethene	8 U	8 U	8 U	6 U	6 U	8 U
Dichloromethane	7 U	**5 C1, J**	7 U	**3 C1, J**	5 U	**5 C1, J**
1,1-Dichloroethane	8 U	8 U	8 U	6 U	6 U	8 U
cis-1,2-Dichloroethene	8 U	8 U	8 U	6 U	6 U	8 U
Chloroform	10 U	9 U	10 U	7 U	7 U	10 U
1,1,1-Trichloroethane	10 U	10 U	10 U	8 U	8 U	10 U
Carbon tetrachloride	10 U	10 U	10 U	9 U	9 U	10 U
Benzene	**7**	6 U	7 U	5 U	5 U	6 U
1,2-Dichloroethane	8 U	8 U	8 U	6 U	6 U	8 U
Trichloroethene	10 U	10 U	10 U	**5 C1, J**	**7 C1, J**	10 U
1,2-Dichloropropane	9 U	9 U	9 U	7 U	7 U	9 U
cis-1,3-Dichloropropene	9 U	9 U	9 U	7 U	7 U	9 U
Toluene	**70**	7 U	8 U	6 U	6 U	**4 C1, J**
trans-1,3-Dichloropropene	9 U	9 U	9 U	7 U	7 U	9 U
1,1,2-Trichloroethane	10 U	10 U	10 U	8 U	8 U	10 U
Tetrachloroethene	**20**	**70**	**80**	**40 J, Q5**	**30**	**50**
1,2-Dibromoethane (EDB)	20 U	10 U	20 U	10 U	10 U	20 U
Chlorobenzene	9 U	9 U	9 U	7 U	7 U	9 U
Ethylbenzene	9 U	8 U	9 U	6 U	6 U	9 U
m&p-Xylene	**10 C1, J**	20 U	20 U	10 U	10 U	20 U
o-Xylene	9 U	8 U	9 U	6 U	6 U	9 U
Styrene	9 U	8 U	9 U	6 U	6 U	9 U
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene	10 U	10 U	10 U	7 U	7 U	10 U
1,2,4-Trimethylbenzene	**8 C1, J**	10 U	10 U	7 U	7 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U	9 U	9 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U	9 U	9 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U	9 U	9 U	10 U
1,2,4-Trichlorobenzene	20 C3, U, J	10 C3, J, U	10 U	10 C3, J, U	10 C3, J, U	10 C3, J, U
Hexachlorobutadiene	20 U	20 U	20 C3, J, U	20 U	20 U	20 U

Notes:
Bolded - results indicate positive or estimated detections
-- not analyzed
µg/m^3 - micrograms per cubic meter
FD - field duplicate
J - estimated value
C1 - the reported concentration for this analyte is below the quantitation limit
C3 - the initial calibration for this analyte did not meet calibration criteria
Q5 - Sample duplicate precision criteria were not met for this analyte
U - not detected above the stated quantitation limit
FN - normal sample

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Appendix C

Operation and Maintenance Process Logs

Groundwater/Soil Vapor Sampling Field Data Logs

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URS Corporation
Modesto, Superfund Site
Process Data Sheet

Groundwater Treatment System

						System Influent				Anti-Scalent Sequestrant	Air Stripper Water						
			Hour Meter	Utility Power		Flow	Pressure	Total Flow	pH		Influent Pressure	Effluent Pressure	Flow	Pressure	Influent Pressure	Effluent Pressure	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	1/7/16	8:45	81417	15.98	14304	48	30	—	7.70	30	9	7	58	68	59.2	57.6	58
GB	1/12/16	7:45	81526	15.98	15756	48	28	—	—	27	6.6	4.6	64	67	59.4	57.4	59
GB	1/22/16	9:15	81668	—	—	47	30	—	—	24	6.4	4.4	61	66	58.3	57.3	58
GB	1/29/16	8:15	81853	—	—	47.5	28	—	—	19	7.1	5.1	64	65	58.5	57.5	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

GroundWater Treatment System

Air Stripper Vapor						Liquid Carbon			Ion Exchange			System Effluent				Radiation Meter	
Sump Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Influent Pressure	Mid-Bed Pressure	Effluent Pressure	Influent Pressure	Mid-Bed Pressure	Flow	Flow	Pressure	pH	Effluent Total Flow	Outside GWTS	Inside GWTS
Air Stripper Trays		VGAC Vessel		Stack													
in. H2O	in. H2O	ppm	ppm	°F	CFM	PSI	PSI	PSI	PSI	PSI	GPM	Gpm	~~PSI~~ in.H2O	pH	Gallons	mR/hr Peak	mR/hr Peak
14	7	~~S~~	~~S~~	620	67.2	43	33	31	21	12	~~34~~ 37	52	5	7.40	56410	<0.1	<0.1
14	7	—	—	610	67.8	43	33	30	20	12	38	53	5	—	89797	—	<0.1
14	7	—	—	615	68.0	43	33	30	21	12	36	52	5	—	93541	—	<0.1
14	7	—	—	615	68.6	42	32	29	20	12	~~35~~	52	5	—	99868	<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

75

Soil Vapor Extraction System

		SVE Influent				Blower				Filter		Vapor				Radiation Meter	
		Pressure	Temp	Flow	Dilution	Hour Meter	Effluent Pressure	Temp	Flow	Influent Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Outside SVE	Inside SVE
												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: _____

31/52 = 71%
38/53 = 72%
36/52 = 69% (increased) 37/52 = 71%

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URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto GWTS
Period: 1/1/16 (month/day/year) to 1/31/16 (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.)
1/7/16	GB	81407	Cleaned EW1 Vault	Y / N			Y / N		
1/7/16	GB	81407	Changed Bag Filters	Y / N			Y / N		
1/14/16	GB	81526	Changed Bag Filters	Y / N			Y / N		
1/14/16	GB	81668	Pumped Out EW1 Vault	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 GWTS

Shutdown Date: 1/5/16 Startup Date: 1/7/16
Shutdown Time: 1646 AM Startup Time: 0830 AM
Shutdown Purpose or Cause: EW-1 Vault Flood, High Level due to rain water infiltration
Corrective Actions Taken (if shutdown was unplanned): Pumped Rainwater out of vault. Restarted System
Performed By:

49.7 hours Down

Shutdown Date: 1/18/16 Startup Date: 1/20/16
Shutdown Time: 5:13 AM AM Startup Time: 0900
Shutdown Purpose or Cause: EW-1 Vault Flood, High Level due to Rainwater Infiltration
Corrective Actions Taken (if shutdown was unplanned): Pumped Rainwater out of vault. Restarted System.
Performed By:

51.8 hours down

Shutdown Date: Startup Date:
Shutdown Time: Startup Time:
Shutdown Purpose or Cause:
Corrective Actions Taken (if shutdown was unplanned):
Performed By:

Total Shutdown 101.5 hrs.

Shutdown Date: Startup Date:
Shutdown Time: Startup Time:
Shutdown Purpose or Cause:
Corrective Actions Taken (if shutdown was unplanned):
Performed By:

Reviewed by: Date:

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URS Corporation
Modesto Superfund Site
Site Inspections

Task Description	1/12/16	1/12/16	1/20/16	1/29/16	/ /
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	OFFLINE				
Clean up compound area					
Drain VGAC condensate					
Perform autodialer operational check					
Inspection of Spill Response Kit					
Inspection of Emergency Response Plan/MSDS Binder					

Task Description	Performed		
MONTHLY	Date	Initials	Reading
Check fire extinguisher	1/7/16	GB	
Inspect EW-1R vault	1/7/16	GB	
Inspect VI Mitigation operations - "Part House"	N/A		
Replace Auto Dialer Batteries (if necessary)	1/7/16	GB	
Quarterly			
Interlock Checks Groundwater	11/23/15	GB	
Interlock Checks SVE	N/A	GB	
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			
Instrument Calibration			
System Effluent Flow Meter (Performed in June and December)	12/16/15	GB	

Notes:

Reviewed by: _____ Date: _____

Date: 1/7/2016
Weather: CLEAR
Sampler: George Bradshaw

SAMPLE COLLECTION RECORD
MODESTO SUPERFUND SITE

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
8:45	GWTS Effluent	8641000	52

Time	Sample Location - Test Method		Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
9:00	MW-301-1Q16	E524.2	TB	xxxxx	2	40 ml VOA	HCl	n/a	n/a	n/a
/	MW-401-1Q16	E524.2	FB	xxxxx	3	40 ml VOA	HCl	n/a	n/a	n/a
9:37	EFF-0102	E524.2	Effluent	SP-07	3	40 ml VOA	HCl	7.40	950	17.0
9:37	EFF-0102	SM5210B	Effluent	SP-07	1	1 Liter Poly	None	7.40	950	17.0
9:37	EFF-0102	SM2540D/SM2540C	Effluent	SP-07	1	1 Liter Poly	None	7.40	950	17.0
9:37	EFF-0102	D5174	Effluent	SP-07	1	1 250 ml Poly	HNO3	7.40	950	17.0
9:45	IEXEFF-0102	D5174	IEX Effluent	SP-10	1	1 250 ml Poly	HNO3	7.57	980	18.0
0948	IEX Mid-0102	D5174	IEX Mid	SP-06	1	1 250 ml Poly	HNO3	7.57	970	18.9
/	Pre IEX-0102	D5174	IEX Influent	SP-05	1	1 250 ml Poly	HNO3			
/	MW-105-0102	D5174	IEX Influent - FD	SP-05	1	1 250ml Poly	HNO3			
0953	CRB EFF-0102	E524.2	CRB Effluent	SP-05	3	40 ml VOA	HCl	7.61	1000	18.4
0958	CRB Mid-0102	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCl	7.60	1010	18.5
1013	~~1004~~ CRB INF-0102	E524.2	CRB Influent	SP-03	3	40 ml VOA	HCl	7.56	1020	18.9
/	MW-103-0102	E524.2	CRB Influent - FD	SP-03	3	40 ml VOA	HCl			
1020	~~1013~~ GWTS-INF-0102	E524.2	Influent	SP-01	3	40 ml VOA	HCl	7.70	1060	19.1
1020	GWTS-INF-0102	D5174	Influent	SP-01	1	1 250 ml Poly	HNO3	7.70	1060	19.1
1048	GWTS Stack-0102	TO-15	GWTP VGAC Effluent	SP-09	1	1 Liter Summa	None	#34641	-30	-35.5
1054	GWTS Pr GAC-0102	TO-15	GWTP VGAC Influent	SP-08	1	1 Liter Summa	None	#35543	-30	-35

Sampler Signature	Date
George Bradshaw	1/7/2016

Notes:

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

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

URS Corporation
Modesto, Superfund Site
Process Data Sheet

Groundwater Treatment System

			Hour Meter	Utility Power		System Influent				Anti-Scalent Sequestrant	Air Stripper Water						
						Flow	Pressure	Total Flow	pH		Influent Pressure	Effluent Pressure	Flow	Pressure	Influent Pressure	Effluent Pressure	Flow
Initials	Date	Time	Hrs.	kW	kWh	GPM	PSI	Gallons	pH	T-3 Gallons	Bag Filter F-1 PSI	Bag Filter F-1 PSI	Bag Filter F-1 GPM	Pump P-3 PSI	Bag Filter F-2 PSI	Bag Filter F-2 PSI	Bag Filter F-2 GPM
GB	2/3/16	8:20	82052	15.98	22110	47.5	29	—	—	15	7	7.5	~~5.0~~	64	60	57	58
GB	2/4/16	8:10	82415	15.98	23852	48	29	—	7.40	29	7	7	63	62	60	55	57
GB	2/5/16	8:54	82364	15.98	25876	47.5	29	—	—	25	7.0	5.0	63	66.5	58.3	57.3	59
GB	2/23/16	8:53	82484	15.98	27321	47.5	29	—	—	22	7.7	4.7	62	66.5	60	59	59
GB	2/29/16	8:07	82627	—	—	48	29	—	—	18	8.7	4.7	63	65	58	58	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

GroundWater Treatment System

Air Stripper Vapor						Liquid Carbon			Ion Exchange			System Effluent				Radiation Meter	
Sump Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Influent Pressure	Mid-Bed Pressure	Effluent Pressure	Influent Pressure	Mid-Bed Pressure	Flow	Flow	Pressure	pH	Effluent Total Flow	Outside GWTS	Inside GWTS
Air Stripper Trays		VGAC Vessel		Stack													
in. H2O	in. H2O	ppm	ppm	°F	CFM	PSI	PSI	PSI	PSI	PSI	GPM	Gpm	~~PSI~~ ~~in H2O~~	pH	~~Gal~~ ~~Gal~~	mR/hr Peak	mR/hr Peak
12	5	—	—	68.3	600	41	31	25	19	12	36	52	5	—	04593	—	—
15	6	0.2	0	68.6	565	39	30	27	18	11	35	51	5	7.96	08628	—	<0.1
15	6	—	—	68.7	560	42	32	29	19	12	36.5	53	5	—	13383	—	<0.1
15	6	—	—	68.5	560	42	31.5	28.5	19	11.5	36.5	52	5	—	16754	<0.1	<0.1
14	5	—	—	68.7	565	42	31	28	18	11	35	52	5	—	20797	<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				Blower				Filter		Vapor				Radiation Meter	
		Pressure	Temp	Flow	Dilution	Hour Meter	Effluent Pressure	Temp	Flow	Influent Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Outside SVE	Inside SVE
Date	Time	In H2O	°F	CFM	Yes/No	Hrs	in H2O	°F	CFM	in. H2O	in. H2O	VGAC Vessel ppm	VGAC Vessel ppm	Stack °F	Stack CFM	mR/hr Peak	mR/hr Peak
		25-70	65-75	100-200	NO	N/A	20-10	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: _____

36/52 = 69%

35/51 = 69%

36.5/53 = 69%

36.5/52 = 70%

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URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto GW
Period: 2/1/16 to 2/29/16
(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.)
2/5/16	GB	82052	Change Bag Filters	Y / N			Y / N		
2/18/16	GB	82364	Change Bag Filters	Y / N			Y / N		
2/23/16	GB	82484	Increased Bag Rate	Y / N			Y / N		
2/29/16	GB	82627	Change 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 GW

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: _____

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URS Corporation
Modesto Superfund Site
Site Inspections

Task Description	3/5/16	3/11/16	3/18/16	3/23/16	3/29/16
WEEKLY	Task Performed (Technician Initials or Value)				
Groundwater TreatmentSystem					
Record Process Logs	GS	GS	GS	GS	GS
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	NOT	OPERATIONAL			
Drain VGAC condensate					
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	3/18	GS	
Inspect EW-1R vault	2/15	GS	
Inspect VI Mitigation operations - "Part House"	N/A		
Replace Auto Dialer Batteries (if necessary)	02/16	GS	
Quarterly			
Interlock Checks Groundwater			
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			
Instrument Calibration			
System Effluent Flow Meter (Performed in June and December)	12/16/15	GS	

Notes:

Reviewed by:_____ Date:_____

Date: 2/11/16
Weather: Sunny Warm
Sampler: George Bradshaw

SAMPLE COLLECTION RECORD
MODESTO SUPERFUND SITE

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
0810	GWTS Effluent	0562800	51

Time	Sample Location - Test Method		Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
0830	MW-302-1Q16	E524.2	TB	xxxxx	2	40 ml VOA	HCl	n/a	n/a	n/a
	MW-401-1Q16	E524.2	FB	xxxxx	3	40 ml VOA	HCl	n/a	n/a	n/a
0910	EFF-0202	E524.2	Effluent	SP-07	3	40 ml VOA	HCl	7.96	1070	19.0
0910	EFF-0202	SM5210B	Effluent	SP-07	1	1 Liter Poly	None	7.96	1070	19.0
0910	EFF-0202	SM2540D/SM2540C	Effluent	SP-07	1	1 Liter Poly	None	7.96	1070	19.0
	EFF-0202	D5174	Effluent	SP-07	1	1 250 ml Poly	HNO3			
0931	IEXEFF-0202	D5174	IEX Effluent	SP-10	1	1 250 ml Poly	HNO3	7.76	1040	19.7
0939	IEX Mid-0202	D5174	IEX Mid	SP-06	1	1 250 ml Poly	HNO3	7.88	1050	18.9
0942	Pre IEX-0202	D5174	IEX Influent	SP-05	1	1 250 ml Poly	HNO3	7.90	1050	19.5
	MW-105-0202	D5174	IEX Influent - FD	SP-05	1	1 250ml Poly	HNO3			
	CRB EFF-0202	E524.2	CRB Effluent	SP-05	3	40 ml VOA	HCl			
0947	CRB Mid-0202	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCl	7.97	1050	19.4
0957	CRB INF-0202	E524.2	CRB Influent	SP-03	3	40 ml VOA	HCl	8.08	1050	19.7
	MW-103-0202	E524.2	CRB Influent - FD	SP-03	3	40 ml VOA	HCl			
1007	GWTS-INF-0202	E524.2	Influent	SP-01	3	40 ml VOA	HCl	7.40	1070	19.6
	GWTS-INF-0202	D5174	Influent	SP-01	1	1 250 ml Poly	HNO3	Summa	Start	End
1010	GWTS Stack-0202	TO-15	GWTP VGAC Effluent	SP-09	1	1 Liter Summa	None	#33734	-30"	-4.5"
1031	GWTS Pr GAC-0202	TO-15	GWTP VGAC Influent	SP-08	1	1 Liter Summa	None	#36396	-30"	-5"

Sampler Signature	Date
George Bradshaw	2/11/16

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

						System Influent				Anti-Scalent Sequestrant	Air Stripper Water						
			Hour Meter	Utility Power		Flow	Pressure	Total Flow	pH		Influent Pressure	Effluent Pressure	Flow	Pressure	Influent Pressure	Effluent Pressure	Flow
											Bag Filter F-1			Pump P-3	Bag Filter F-2		
Initials	Date	Time	Hrs	kW	kWh	GPM	PSI	Gallons	pH	T-3 Gallons	PSI	PSI	GPM	PSI	PSI	PSI	GPM
GB	3/3/16	0737	82699	15.98	29407	47	29	—	7.75	17	7.3	5.3	63	64	58.0	57.0	58
GB	3/6/16	0844	82795	15.98	31064	47	30	—	—	14	5.7	3.7	59	64	58.3	55.3	56
GB	3/7/16	0843	83010	15.98	33627	48	29	—	—	27	7.0	5.0	62	67	58.9	57.9	58
GB	3/25/16	0917	83196	15.98	35786	31	14 ~~22~~	—	—	22	6.9	4.9	62	67	59.1	57.1	58
GB	3/29/16	0834	83316	15.98	36812	31	14	—	—	19	6.7	4.7	62	67	59.1	57.1	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

GroundWater Treatment System

Air Stripper Vapor						Liquid Carbon			Ion Exchange			System Effluent				Radiation Meter	
Sump Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Influent Pressure	Mid-Bed Pressure	Effluent Pressure	Influent Pressure	Mid-Bed Pressure	Flow	Flow	Pressure ~~PSI~~ ~~in H2O~~	pH	Effluent Total Flow	Outside GWTS	Inside GWTS
Air Stripper Trays		VGAC Vessel		Stack													
in. H2O	in. H2O	ppm	ppm	°F	CFM	PSI	PSI	PSI	PSI	PSI	GPM	Gpm		pH	Gallons	mR/hr Peak	mR/hr Peak
14	5	0.4	0.2	69	525	41	31	28	18	11	36	51.5	5	7.85	22804	<0.1	<0.1
15	6	—	—	67.2	565	41	31	25	19	11	36	51	4.5	—	25506	<0.1	<0.1
15	6	—	—	68.8	560	42	31	28	19	11	36	52	5	—	31568	<0.1	<0.1
15	5	—	—	69.6	570	43	32	28	19	11	36	52	5	—	36789	<0.1	<0.1
15	6	—	—	68.9	575	43	32	29	19	12	36	52	5	—	39057	<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	30-50	1.0-5	5.0-12	N/A	0-1	0-1

Soil Vapor Extraction System

		SVE Influent				Blower				Filter		Vapor				Radiation Meter	
		Pressure	Temp	Flow	Dilution	Hour Meter	Effluent Pressure	Temp	Flow	Influent Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Outside SVE	Inside SVE
												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

NOT OPERATING

Note: For pressures measured relative to atmospheric (barometric) pressure, use ( ) for vacuum

Reviewed By: _____ Date: _____

36/51.5 = 70%
36/52 = 69%
36/51 = 71%

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URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto ~~GB~~ Col TP
Period: 3/1/16 (month/day/year) to 3/31/16 (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.)
3/3/16	CB	82795	Added Sysorant	Y / N			Y / N		
3/8/16	CB	82795	Changed Bag Filters	Y / N			Y / N		
3/8/16	CB	82795	Pumped Out Elev 1 Vault	Y / N			Y / N		
3/17/16	CB	83010	Removed Trees	Y / N			Y / N		
3/25/16	CB	83196	Changed Bag Filters	Y / N			Y / N		
3/25/16	CB	83196	Shutdown Elev 2 for Repair	Y / N			Y / N		

URS Group
Preventative and Corrective Maintenance Log
Modesto Superfund Site

Site Name: Modesto Col

Total 31.5 hours

Shutdown Date: 3/2/16 Startup Date: 3/5/16
Shutdown Time: 0750 Startup Time: 0832 24 hours 42 min
Shutdown Purpose or Cause:
Flooding of Elev 1 Vault due to Heavy Rains 24.7 hrs.
Corrective Actions Taken (if shutdown was unplanned):
Pumped down Elev 1 Vault and restarted System
Performed By:

Shutdown Date: 3/24/16 Startup Date: 3/24/16
Shutdown Time: 0434 Startup Time: 1124 6 hours 50 min
Shutdown Purpose or Cause:
System Shutdown on General Air Stripper Fault. 6.8 hrs
Corrective Actions Taken (if shutdown was unplanned):
No apparent Cause. Reset and restarted system.
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:

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URS Corporation
Modesto Superfund Site
Site Inspections

Task Description	12/3/16	12/8/16	12/17/16	12/25/16	12/30/16
WEEKLY	Task Performed (Technician Initials or Value)				
Groundwater TreatmentSystem					
Record Process Logs	GB	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	NOT OPERATING				
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	3/8/16	GB	
Inspect EW-1R vault	3/8/16	GB	
Inspect VI Mitigation operations - "Part House"	N/A	—	
Replace Auto Dialer Batteries (if necessary)	3/8/16	GB	
Quarterly			
Interlock Checks Groundwater	3/8/16	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	N/A	—	
Instrument Calibration			
System Effluent Flow Meter (Performed in June and December)	12/16/15	GB	

Notes:

Reviewed by _____ Date _____

Date: 3/3/16
Weather: Cool / Overcast
Sampler: *George Bradshaw*

SAMPLE COLLECTION RECORD
MODESTO SUPERFUND SITE

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
0737	GWTS Effluent	2280400	52

Time	Sample Location - Test Method		Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
0814	MW-303-1Q16	E524.2	TB	xxxxx	2	40 ml VOA	HCl	n/a	n/a	n/a
	MW-401-1Q16	E524.2	FB	xxxxx	3	40 ml VOA	HCl	n/a	n/a	n/a
0820	EFF-0301	E524.2	Effluent	SP-07	3	40 ml VOA	HCl	7.85	1050	19.8
0820	EFF-0301	SM5210B	Effluent	SP-07	1	1 Liter Poly	None	7.85	1050	19.8
0820	EFF-0301	SM2540D/SM2540C	Effluent	SP-07	1	1 Liter Poly	None	7.85	1050	19.8
	EFF-0301	D5174	Effluent	SP-07	1	1 250 ml Poly	HNO3			
0828	IEXEFF-0301	D5174	IEX Effluent	SP-10	1	1 250 ml Poly	HNO3	7.80	1050	20.0
0831	IEX Mid-0301	D5174	IEX Mid	SP-06	1	1 250 ml Poly	HNO3	7.87	1050	20.0
0833	MW-106-0301	D5174	IEX Mid FD	SP-06	1	1 250 ml Poly	HNO3	7.87	1050	20.0
0836	Pre IEX-0301	D5174	IEX Influent	SP-05	1	1 250 ml Poly	HNO3	7.92	1050	20.2
	CRB EFF-0301	E524.2	CRB Effluent	SP-05	3	40 ml VOA	HCl			
0840	CRB Mid-0301	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCl	7.98	1050	20.2
0850	CRB INF-0301	E524.2	CRB Influent	SP-03	3	40 ml VOA	HCl	8.20 ~~0852~~	1050	19.8
0852	MW-103-0301	E524.2	CRB Influent - FD	SP-03	3	40 ml VOA	HCl	8.20	1050	19.8
0859	GWTS-INF-0301	E524.2	Influent	SP-01	3	40 ml VOA	HCl	7.75	1070	20.1
	GWTS-INF-0301	D5174	Influent	SP-01	1	1 250 ml Poly	HNO3	#	Start	End
0918	GWTS Stack-0301	TO-15	GWTP VGAC Effluent	SP-09	1	1 Liter Summa	None	36468	-30	-5
0924	GWTS Pr GAC-0301	TO-15	GWTP VGAC Influent	SP-08	1	1 Liter Summa	None	36399	-30	-5

Sampler Signature	Date
George Bradshaw	3/3/16

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 # 160314-JF1 Date 3/14/16 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-01A	4	1400					48.45	101.00	
MW-02A	4	1055					47.62	97.81	
MW-03A	4	15~~20~~ 20 JF					49.72	93.50	
MW-04A	4	1055					49.71	88.50	
MW-04B	2	1110					48.81	153.70	
MW-04C	2	1138					48.40	237.30	
MW-05A	2	1340					48.04	89.11	
MW-06A	2	1658					47.20	82.45	
MW-07A	2	1248					47.44	88.38	
JF ~~MW-08A~~									
MW-08A	2	1410					49.01	88.11	
MW-09B	2	1400					48.49	153.48	
MW-10A	2	1600					48.68	90.39	
MW-10B	2	1545					48.04	162.61	
MW-10C	2	1623					48.05	230.15	
MW-11A	2	1036					45.54	91.85	
MW-12A	2	0705					49.29	98.45	

WELL GAUGING DATA

Project # 160314-JP1 Date 3/14/16 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-13A	2	0952					47.20	97.66	
MW-14A	2	1015					46.73	89.90	
MW-15A	2	1440					48.60	101.20	
MW-16A	2	0840					50.75	85.65	
MW-16B	2	0857					50.68	138.86	
MW-16C	2	0840					50.51	237.91	
MW-17A	2	1505					48.10	87.00	
MW-17B	2	1540					48.04	138.05	
MW-17C	2	1605					48.00	231.95	
MW-18A	2	1000					48.45	65.54	
MW-19A	2	0732					49.53	101.20	
MW-19B1	2	0740					147.55	49.91	
MW-20A	2	0900					49.31	85.65	
MW-20B	2	0845					49.29	162.10	
MW-20C	2	0820					49.00	234.80	
MW-21A	0710	2					50.90	100.40	
MW-22A	2	0730					50.69	60.22	

WELL GAUGING DATA

Project # 160314-JF1 Date 3/14/16 Client RORE

Site 941 Mc Henry 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-23A	2	1015					46.83	99.30	
MW-24B	2	1100					51.20	154.70	
MW-25B	2	0745					50.60	155.70	
MW-26B	2	0930					48.26	156.44	
MW-27B	2	0930					47.56	154.90	
MW-28B	2	0954					46.88	154.78	
MW-29B	—	unable to open well - lid is stuck on						—	
JF ~~EW-01~~ MW-35B	2	1300					47.80	168.30	
EW-01R	6	1500					54.15	—	
EW-02	6	1210					59.81	—	
MW-30A	—		unable to access these wells due to Road construction						
MW-30B	—								
MW-31A	1335	2					46.44	99.50	
MW-32B	2	1225					50.16	155.90	
MW-32C	2	1201					50.35	236.15	
MW-33B	1300	2					50.30	168.30	
MW-34B	1315	2					44.46	154.04	

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-01A	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 101.00	Depth to Water: 48.45
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 PDB

Flow Rate: — Pump Depth: — ~~MS/MSD~~ J

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1410	Removed PDB for sampling / sampled - water clear							
1416	Set PDB at 96							
		PDB Reading - 0/0/20.9						

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 1410	Sampling Date: 3/16/16
Sample I.D.: MW-01A-071616-WG-96	Laboratory: EPA
Analyzed for: see COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-SF1	Client: RORE
Sampler: JC	Start Date: 03/15/16
Well I.D.: MW-02A	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth: 97.81	Depth to Water: 47.62
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 PDB

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
1103	Removed PDB. Sampled. Replaced mw PDB @ 91'							
	PID Reading - 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated:
Sampling Time: 1105	Sampling Date: 03/15/16
Sample I.D.: MW-02A-031516-WG91	Laboratory: EPA
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160315-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-03A	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 93.50	Depth to Water: 49.72
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 PDB
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
1526	Removed PDB for sampling / sampled - water clear							
1530	Set PDB at 89'							
	PID Reading - 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 1526	Sampling Date: 3/15/16
Sample I.D.: MW-03A-031516-WG-89	Laboratory: EPA
Analyzed for: See CoC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-04A	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 88.50	Depth to Water: 49.71
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 PDB

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
1100	Removed	PDB for	Sampling	/	sampled	- water	clear	
1107	Sep	PDB	at	83'				
	PID	Reading	-	0/0/	20.9.			

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1100 Sampling Date: 3/15/16

Sample I.D.: MW-04A-031516-WG-83 Laboratory: EPA

Analyzed for: see COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JP1	Client: RORE
Sampler: JF	Start Date: 3 / 15 / 16
Well I.D.: MW-04B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 153.70	Depth to Water: 48.81
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 PDB

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 17	Removed	PDB to	sample	/ sampled-	water	clear		
1123	Set	PDB	at	149				
	PID	Reading	-	0/0/20.9	- VOC	0.1		

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1117 Sampling Date: 3/15/16

Sample I.D.: MW-04B-031516-WG-149 Laboratory: EPA

Analyzed for: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-04C	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 237.30	Depth to Water: 48.40
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 PDB

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
1146	Removed PDB to sampling / sampled - water clear							
1151	Set PDB at 232'							
	PID Reading 0/0/20.9							

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1146 Sampling Date: 3/15/16

Sample I.D.: MW-04C-031516-WG-232 Laboratory: EPA

Analyzed for: See CoC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3 / 15 / 16
Well I.D.: MW-05A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 89.11	Depth to Water: 48.04
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 PDB

Flow Rate: — Pump Depth: — MS / MSD

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1345	Removed PDB for sampling / sampled - water clear / ~~slight odor~~							
1355	Set PDB at 75'							
	PID Reading - 0/0/21.1 - LEL=4							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 1345	Sampling Date: 3 / 15/16
Sample I.D.: MW-05A-031516-WG-75	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.: DUP-2 @ —

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160315-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-6A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 82.45	Depth to Water: 47.20
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 PDB

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
1805	Removed PDB for sampling / sampled - water clear							
1710	Set PDB at 75							
		PID Reading		- 0 / 0 / 20.9				

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1705 Sampling Date: 3/15/16

Sample I.D.: MW-06A-031516-WG-75 Laboratory: EPA

Analyzed for: see COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-07A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 88.38	Depth to Water: 47.44
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 PDB

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
1252	Removed PDB for sampling / sampled - water clear							
1252	Set PDB at 75'							
	DID Reading - 0/0/21.3							

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1252 Sampling Date: 3/15/16

Sample I.D.: MW-07A-031516-WG-75 Laboratory: EPA

Analyzed for: see COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 150214-OF1	Client: RORE
Sampler: OF	Start Date: 3 /15/16
Well I.D.: MW-08A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 88.11	Depth to Water: 49.01
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 PDB

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	Removed	PDB for	sampling /	sampled -	water	clear		
1427	Set	PDB	at ~~[illegible]~~ OF	75'				
	PID	Reading	-	0 /	0 /	20.9		

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1420 Sampling Date: 3 /15/16

Sample I.D.: MW-08A-031516-WG-75 Laboratory: EPA

Analyzed for: See CoC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3 / 15 / 16
Well I.D.: MW-09B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 153.48	Depth to Water: 48.49
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 PDB

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
1409	Removed	PDB for	sampling /	sampled -	water	clear/	slight	odor
1415	Set	PDB	at	149				
	PID Reading	-		0/0/20.9				

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1409 Sampling Date: 3/15/16

Sample I.D.: MW-09B-031516-WG-149 Laboratory: EPA

Analyzed for: See CoC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-10A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 90.39	Depth to Water: 48.68.
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 PDB

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
1630	Removed PDB for sampling / sampled - water clear							
1637	set PDB at 74-5 (JF)							
		PID Reading - 0/0/20.9						

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 1630	Sampling Date: 3/15/16
Sample I.D.: MW-10A-031516-WG-74	Laboratory: EPA
Analyzed for: see COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160315-JF1	Client: RORE
Sampler: JF	Start Date: 3 /15/16
Well I.D.: MW-10B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 162.61	Depth to Water: 48.04
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 PDB

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
1550	Removed	PDB	for sampling	& sampled	- water	clear		
1600	Set	PDB	at 158					
		PID	Reading	- 0/0/20.9				

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1550 Sampling Date: 3/15/16

Sample I.D.: MW-10B-031516-WG-158 Laboratory: EPA

Analyzed for: See CoC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-10C	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 230.15	Depth to Water: 48.05
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 PDB
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
1615	Removed	PDB	for	sampling/-	sampled	-water	clear	
1620	Set	PDB	at 225					
	PID	Reading		0/0	/20.9			

Did well dewater? Yes (No) Amount actually evacuated: —
Sampling Time: 1615 Sampling Date: 3/15/16
Sample I.D.: MW-10C-031516-WG-225 Laboratory: EPA
Analyzed for: see COC
Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-OF1	Client: RORE
Sampler: JT	Start Date: 3 / 15 / 16
Well I.D.: MW-11A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 91.85	Depth to Water: 45.54
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 PDB

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 sampling / - sampled - water					clear
1044	Set	PDB	at 80'					
	PID	Reading	-	0/0/20.9				

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1040 Sampling Date: 3/15/16

Sample I.D.: MW-11A-031516-WG-BO Laboratory: EPA

Analyzed for: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JP1	Client: RORE
Sampler: JF	Start Date: 3 / 16 / 16
Well I.D.: MW-~~24~~ 12 A	Well Diameter: 2 3 4 6 8 ___
Total Well Depth: 98.45	Depth to Water: 49.29
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 PDB

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
0715	Removed	PDB for	sampling. /	sampled	- water	clear		
0720	Set	PDB	at	92'				
	PID Reading	-	0/0/20.9					

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 0715 Sampling Date: 3 /16/16

Sample I.D.: MW-12A-031616-WG-92 Laboratory: EPA

Analyzed for: see COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JC	Start Date: 03/15/16
Well I.D.: MW-13A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 97.66	Depth to Water: 47.20
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 POB

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
0957	Removed PDB. Sampled. Reset new PDB at 87'							
	PID Reading 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated:
Sampling Time: 0957	Sampling Date: 03/15/16
Sample I.D.: MW-13A-031516-WG-87	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JC	Start Date: 03/15/16
Well I.D.: MW-14A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 89.90	Depth to Water: 46.73
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 PDB

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
1020	Removed PDB. Sampled. Set new PDB @ 80'.							
	PID Reading 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated:
Sampling Time: 1020	Sampling Date: 03/15/16
Sample I.D.: MW-14A-031516-WG-80	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-15A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 101.20	Depth to Water: 48.60
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 PDB

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
1450	Removed PDB for sampling / sampled - water clear							
1459	set PDB at 96'							
	PID Reading - 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 1450	Sampling Date: 3/16/16
Sample I.D.: MW-15A-031616-WG-96	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

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Field blank is MW-401-160316 @ 1505

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-16A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 85.65	Depth to Water: 50.75
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 PDB

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
0845	Removed PDB for Sampling / sampled - water clear							
0851	Set PDB at 71'							
	PID reading 0/0/20.9							

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 0845 Sampling Date: 3/15/16

Sample I.D.: MW-16A-031516-WG-71 Laboratory: EPA

Analyzed for: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3 15 16
Well I.D.: MW-16B	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 138.86	Depth to Water: 50.63
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 PDB
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
0900	Removed	PDB	for	sampling /	Sampled	- water	Clear	
0908	Set	PDB	at	134'				
	PID	reading	0/0/20.9	/ LEL = 3				

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 0900 Sampling Date: 3/15/16

Sample I.D.: MW-16B-031516-WG-134 Laboratory: EPA

Analyzed for: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JC	Start Date: 03/15/16
Well I.D.: MW-16C	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: ~~237.91~~	Depth to Water: 50.51
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
0845	Removed PDB and replaced with new PDB.							
		Sampled.		New bag hung at 231'				
	PID Reading 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated:
Sampling Time: 0845	Sampling Date: 03/15/16
Sample I.D.: MW-16C-031516-WG-231	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/14/16
Well I.D.: MW-17A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 87.00	Depth to Water: 48.10
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 PDB

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		Removed PDB for sampling / sampled - water clear						
1536		set new PDB at 82'						
		PID Reading		0 /	0 /	20.9		

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1530 Sampling Date: 3/14/16

Sample I.D.: MW-17A-031416-WG-82 Laboratory: EPA

Analyzed for: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/14/16
Well I.D.: MW-17B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 138.05	Depth to Water: 48.04
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 PDB

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	Removed	PDB for	sampling /	sampled	— water	clear		
1549	Set	PDB	at 134					
		PID	Reading	0/0/20.9				

Did well dewater? Yes (No) Amount actually evacuated:

Sampling Time: 1545 Sampling Date: 3/14/16

Sample I.D.: MW-17B-031416-WG-134 Laboratory: EPA

Analyzed for: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/14/16
Well I.D.: MW-17C	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 231.95	Depth to Water: 48.00
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 PDB

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
1610	Removed PDB for sampling / sampled - water clear							
1617	Set PDB at 227							
		PID Reading		0/0/20.9				

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1610 Sampling Date: 3/14/16

Sample I.D.: MW-17C-031416-WG-227 Laboratory: ERA

Analyzed for: see COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JFi	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-18A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 65.54	Depth to Water: 48.45
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 PDB

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	Removed PDB for sampling / Sampled - water Clear							
1016	Set PDB at 61'							
	PID Reading - 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated:
Sampling Time: 1010	Sampling Date: 3/16/16
Sample I.D.: MW-18A-031616-WG-61	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-19A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 101.20	Depth to Water: 49.53
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 PDB

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
0737	Removed PDB for sampling / sampled - water clear							
0743	set PDB at 96'							
	PID Reading - 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 0737	Sampling Date: 3/16/16
Sample I.D.: MW-19A-031616-WG-96	Laboratory: EPA
Analyzed for: See CoC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-19 B1	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 147.55	Depth to Water: 49.91
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 PDB
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
0749	Removed	PDB	for	sampling	/	sampled	- water	clear
0755	set	PDB	at	142'				
	PID Reading	-	0/0	/	20.9			

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 0749 Sampling Date: 3/16/16

Sample I.D.: MW-19 B1-031616-WG-142 Laboratory: EPA

Analyzed for: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-20A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 85.65	Depth to Water: 49.31
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 PDB

Flow Rate: — Pump Depth: — MS/MSD

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
09 10	Removed PDB for sampling / sampled - water clear							
09 20	set PDB at 81							
	PID Reading - 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 09 10	Sampling Date: 3/16/16
Sample I.D.: MW-20A-031616-WC-81	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.: DUP-3 @ —

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-20B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 162.10	Depth to Water: 49.29
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 PDB

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
0857	Replaced PDB for sampling / sampled - water clear.							
0903	Set PDB at 157'							
	PID Reading - 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 0857	Sampling Date: 3/16/16
Sample I.D.: MW-20B-031616-WG-157	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3 /16/16
Well I.D.: MW-20C	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 234.80	Depth to Water: 49.00
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 PDB

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
0832	Removed PDB for sampling / sampled - water clear							
0840	Set PDB at 230							
	PID Reading 0/0/20.9							

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 0832 Sampling Date: 3 /16/16

Sample I.D.: MW-20C-031616-WG-230 Laboratory: EPA

Analyzed for: See CoC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-21A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 100.40	Depth to Water: 50.90
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 PDB
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	Removed PDB for sampling / sampled - clear water							
0733	set PDB at 95'							
			PID reading		0/0/	20.9		

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 0725	Sampling Date: 3/15/16
Sample I.D.: MW-21A-031516-WG-95	Laboratory: EPA
Analyzed for: See CoC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-22A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 60.22	Depth to Water: 50.69
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 PDB

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
0737	Removed	PDB for	sampling - /	Sampled	- water	clear		
0743	set	PDB	at	55'				
		PID Reading	-	0/0/20.9				

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 0737 Sampling Date: 3/15/16

Sample I.D.: MW-22A-031516-WG-55 Laboratory: EPA

Analyzed for: See CoC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-23A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 99.30	Depth to Water: 46.83
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 PDB
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
1020	Removed PDB for sampling / sampled - water clear							
1027	Set PDB at 94'							
	PID Reading 0/0/20.9 - LEL=4							

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1020 Sampling Date: 3/15/16

Sample I.D.: MW-23A-031516-WG-94 Laboratory: EPA

Analyzed for: see COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-24B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 154.70	Depth to Water: 51.20
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 PDB

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	Removed PDB for sampling / sampled - water clear							
1120	Set PDB at 150							
	PID Reading -			0 / 0 /	20.9			

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1110 Sampling Date: 3/16/16

Sample I.D.: MW-24B-031616-DG-150 Laboratory: EPA

Analyzed for: See CoC

Equipment Blank I.D.: @ Time Duplicate I.D.: DUP-4 @ —

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160316-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-25B	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 155.70	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 PDB

Flow Rate: — Pump Depth: — MS/MSD

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
0755	Removed	PDB	for	sampling /	sampled -	water	Clear	
0803	set	PDB	at	150'				
		PID	Reading	0/	0/	20.9		

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 0755 Sampling Date: 3/15/16

Sample I.D.: MW-25B-031516-WG-150 Laboratory: EPA

Analyzed for: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.: DUP-1 @ —

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: Rore
Sampler: JC	Start Date: 03/15/16
Well I.D.: MW-26B	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 156.44	Depth to Water: 48.26
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 PDB

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
0935	Removed PDB. Set new PDB at 150'.						Sampled	
	PID Reading 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 0935	Sampling Date: 03/15/16
Sample I.D.: MW-26B-031516-WG-150	Laboratory:
Analyzed for:	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3 15 16
Well I.D.: MW-27B	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 154.90	Depth to Water: 47.56
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 PDB

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
0936	Removed	PDB for	sampling	/ sampled	- water	clear		
0940	Set	PDB	at	150'				
	PID reading	-	0/0/20.9	- LEL = 1				

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 0936 Sampling Date: 3/15/16

Sample I.D.: MW-27B-031516-WG-150 Laboratory: EPA

Analyzed for: see COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: MW-28 B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 154.78	Depth to Water: 46.88
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 PDB
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
0958	Removed	PDB	for	sampling /		sampled	- water	clear
1003	set	PDB	at	150'				
	PID	Reading		0/0/20.9	-	LEL=	5	

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 0958	Sampling Date: 3/15/16
Sample I.D.: MW-28B-031516-WG-150	Laboratory: EPA
Analyzed for: see CoC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JP1	Client: PORE
Sampler: JF	Start Date: 3 / 16 / 16
Well I.D.: MW-29B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: —	Depth to Water: —
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	unable to open well due to well head lid being stuck.							
—	tried to open for 15 mins - unsuccessfully.							—
—		no PDB sample taken				—		

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 #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-30A / MW-30B	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: —	Depth to Water: —
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
—	unable	to	sample	wells	due	to	Road	construction —
		(MW-	30A	&	MW	30	B)	

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 #: 1603 1EJTF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-31A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 99.50	Depth to Water: 46.44
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 PDB

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	Removed PDB for sampling / sampled - water clear							
1349	Set PDB at 94'							
	PID Reading - 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 1340	Sampling Date: 3/16/16
Sample I.D.: MW-31A-031616-WG-94	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-32B	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 155.90	Depth to Water: 50.16
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 PDB
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
1230	Removed PDB for Sampling / sampled - water clear - slight odor							
1236	Set PDB at 150'							
	PID reading - 0 / 0 / 20.9							

Did well dewater? Yes (No) Amount actually evacuated: —
Sampling Time: 1230 Sampling Date: 3/16/16
Sample I.D.: MW-32B-031616-WG-150 Laboratory: EPA
Analyzed for: See COC
Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-OF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-32C	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 236.15	Depth to Water: 50.75
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 PDB

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
1210	Removed PDB for sampling / Sampled - water clear / slight odo							
1214	Set PDB at 231							
	PID reading 0/0/21.2							

Did well dewater? Yes (No) Amount actually evacuated: —

Sampling Time: 1210 Sampling Date: 3/16/16

Sample I.D.: MW-32C-031616-WG-231 Laboratory: EPA

Analyzed for:

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JT1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-33B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 161.30	Depth to Water: 50.03
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 PDB

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
1240	Removed PDB for sampling / sampled - water clear							
1250	Set PDB at 157							
	PID Reading 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 1240	Sampling Date: 3/16/16
Sample I.D.: MW-33B-031616-WG-157	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3/16/16
Well I.D.: MW-34B	Well Diameter: 2 3 4 6 8 ___
Total Well Depth: 154.04	Depth to Water: 44.46
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 PDB
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	Removed PDB for sampling / sampled - water clear							
1326	Set PDB at 149'							
	PID Reading - 0/0/20.9							

Did well dewater? Yes NO	Amount actually evacuated: —
Sampling Time: 1320	Sampling Date: 3/16/16
Sample I.D.: MW-34B-031616-WG-149	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160714-JF1	Client: RORE
Sampler: JF	Start Date: 7/16/16
Well I.D.: MW-35B	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 168.30	Depth to Water: 47.80
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 PDB

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
1307	Removed PDB for sampling / sampled - water clear							
1312	Set PDB at 163'							
	PID Reading 0/0/20.9							

Did well dewater? Yes (No)	Amount actually evacuated: —
Sampling Time: 1307	Sampling Date: 7/16/16
Sample I.D.: MW-35B-031616-WG-163	Laboratory: EPA
Analyzed for: See CoC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160318-JF1	Client: RORE
Sampler: JF	Start Date: 3/15/16
Well I.D.: ~~MW-01~~ JF EW-01R	Well Diameter: 2 3 4 (6) 8 ___
Total Well Depth: pump in well	Depth to Water: 54.15
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 ~~Extraction po~~ Sump

Flow Rate: — 2gpm 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
1509	75.5	7.63	1059	3	—	106	2gallons	
—	took	port	sample,	let it	run for	2	minutes prior	—
	PID	Reading	-	0/0	/20.9			

Did well dewater? Yes (No)	Amount actually evacuated: 2 gal
Sampling Time: 1509	Sampling Date: 3/15/16
Sample I.D.: EW-01R-031516-WG	Laboratory: EPA
Analyzed for: See COC	
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 160314-JF1	Client: RORE
Sampler: JF	Start Date: 3 /15 /16
Well I.D.: EW-02	Well Diameter: 2 3 4 (6) 8 ___
Total Well Depth: Pump in well	Depth to Water: 59.81
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 Port sample

Flow Rate: 2 gpm 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
1222	67.3	7.61	1048	1	—	198	2	
—	took	port	sample.	let it	run for	two	minutes prior	—
		PID	Reading	0/0/20.9				

Did well dewater? Yes (No) Amount actually evacuated: 2 gallons

Sampling Time: 1224 Sampling Date: 3 /15/16

Sample I.D.: EW-02-031516-WG 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 # 160314-JP1

CLIENT RORE, Inc.

SITE Modesto Superfund Site
941 McHenry Ave.
Modesto, CA

CONDUCT ANALYSIS TO DETECT

LAB: EPA Lab Region 9

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

C = COMPOSITE ALL CONTAINERS

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-031616-WG-96		1410	W	3	voas		X				
MW-02A-031516-WG-91		1105	W	3	voas		X				
MW-03A-031516-WG-89		1526	W	3	voas		X				
MW-04A-031516-WG-83		1100	W	3	voas		X				
MW-04B-031516-WG-149		1117	W	3	voas		X				
MW-04C-031516-WG-232		1146	W	3	voas		X				
MW-05A-031516-WG-75		1345	W	9	voas		X	MS/MSD			
MW-06A-031516-WG-75		1705	W	3	voas		X				
MW-07A-031516-WG-75		1252	W	3	voas		X				
MW-08A-031516-WG-75		1420	W	3	voas		X				

RESULTS NEEDED NO LATER THAN **As contracted**

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY						
	3/16/16	1500	J. Fountain						

RELEASED BY		DATE 3/16/16	TIME 1500	RECEIVED BY		DATE 3/17/16	TIME 0700
RELEASED BY		DATE ~~3/17/16~~ 3-17-16	TIME ~~0700~~ 1640 JF	RECEIVED BY		DATE	TIME
RELEASED BY	Nancie Fung	DATE 3/18/16	TIME 1325	RECEIVED BY	R9 Lab	DATE 3/18/16	TIME 1325
		DATE SENT	TIME SENT	COOLER #	Hand delivered on ice 4°C		

BLAINE
TECH SERVICES, INC.

1630 ROGERS AVENUE
SAN JOSE, CA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 160314-JF(

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 ☐ 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

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-09B-0315	16-WG-49	1409		3	voa			X										
MW-10A-0315	16-WG-74	1630						X										
MW-10B-0315	16-WG-158	1550						X										
MW-10C-0315	16-WG-225	1615						X										
MW-11A-0315	16-WG-80	1040						X										
MW-12A-0316	16-WG-92	0715						X										
MW-13A-0315	16-WG-87	0957						X										
MW-14A-0315	16-WG-80	1020						X										
MW-15A-0316	16-WG-96	1450						X										
MW-16A-0315	16-WG-71	0845						X										

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN
	3/16/16	1500	J. Fountain	As contracted

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	3/16/16	1500	[signature]	3/17/16	0700
[signature]	3/17/16 3/16/16 (JF)	1640			
Vince Lamb	3/18/16	1325	[signature]	3/18/16	1325

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 # 160314-JF1

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 ☐ 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

C = COMPOSITE ALL CONTAINERS

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-16B-031516	6-WG-134	0900	W	3	VOA			X										
MW-16C-031516	6-WG-231	0845	W	3	VOA			X										
MW-17A-031416	6-WG-82	1530	W	3	VOA			X										
MW-17B-031416	6-WG-134	1545	W	3	VOA			X										
MW-17C-031416	6-WG-227	1610	W	3	VOA			X										
MW-18A-031616	6-WG-61	1010	W	3	VOA			X										
MW-19A-031616	6-WG-96	0737	W	3	VOA			X										
MW-19B1-031616	6-WG-142	0749	W	3	VOA			X										
MW-20A-031616	6-WG-81	0910	W	6	VOA			X							MS/MSD			
MW-20B-031616	6-WG-157	0857	W	3	VOA			X										

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN
	3/16/16	1500	Fountain	As contracted

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	3/16/16	1500	[signature]	3/17/16	0700
[signature]	~~3/16/16~~ 3-17-16	1640			
Willie Fonti	3/18/16	1325	[signature]	3/18/16	~~1326~~ 1325

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 # 160314-JF1

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 ☐ 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

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-20C-0316	16-WG-230	0832		3	voa			X										
MW-21A-0315	16-WG-95	0725						X										
MW-22A-0315	16-WG-55	0737						X										
MW-23A-0315	16-WG-94	1020						X										
MW-24B-0316	16-WG-150	1110						X										
MW-25B-0315	16-WG-150	0755		9				X							MS/MSD			
MW-26B-0315	16-WG-150	0935		3				X										
MW-27B-0315	16-WG-150	0936		3				X										
MW-28B-0315	16-WG-150	0958		3				X										
MW-31A-0316	16-WG-94	1340		3				X										

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN
	3/16/16	1500	J. Fountain	As contracted

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	3/16/16	1500	[signature]	3/17/16	0700
[signature]	~~3/16/16~~ 3-18-16	1040			
Vince Fonda	3/18/16	1325	[signature] R9 Lab	3/18/16	1325

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 # 160314-JF1

CLIENT: RORE, Inc.

SITE: Modesto Superfund Site
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☐ 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

C = COMPOSITE ALL CONTAINERS

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-32B-0316	16-WG-150	1230		3	Voa			X										
MW-32C-0316	16-WG-231	1210						X										
MW-33B-0316	16-WG-157	1240						X										
MW-34B-0316	16-WG-149	1320						X										
MW-35B-0316	16-WG-163	1307						X										
EW-01R-0315	16-WG	1509						X										
EW-02-0315	16-WG	1224						X										
MW-401-15	0316	1720						X										
MW-401-14	0316	1630						X										
MW-401-16	0316	1505						X										

SAMPLING COMPLETED: DATE 3/16/16 TIME 1500
SAMPLING PERFORMED BY: J. Fountain

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

RELEASED BY		DATE 3/16/16	TIME 1500	RECEIVED BY	DATE 3/17/16	TIME 0700
RELEASED BY	7223	DATE ~~3/16/16~~ 3-18-16	TIME (JF) 1040	RECEIVED BY	DATE	TIME
RELEASED BY	Vince Ford	DATE 3/18/16	TIME 1325	RECEIVED BY	DATE 3/18/16	TIME 1325
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 # 160314-JF1

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 ☐ 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

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 #
DUP-1	3/15/16	—		3	voa			X										
DUP-2	3/15/16	—						X										
DUP-3	3/16/16	—						X										
DUP-4	3/16/16	—						X										
MW-301-16	0316	1100		3				X										

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN
	3/16/16	1500	J. Fountain	**As contracted**

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	3/16/16	1500		3/17/16	0700
7522	3/17/16	1640			
Umei Fouli	3/18/16	1325	R9 Lab	3/18/16	1325

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

WELLHEAD INSPECTION CHECKLIST

Client RORE Date 3/16/16

Site Address 941 mc Henry Ave modesto

Job Number 160314-JF1 Technician JF

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		missing bolts				X		
MW-02A	X							
MW-03A	X							
MW-04A	X							
MW-04B	X							
MW-04C	X							
MW-05A		missing bolts						
MW-06A	X							
MW-07A		missing bolts						
MW-08A	X							
MW-09B	X							
MW-10A	X							
MW-10B	X	tabs stripped						
MW-10C	X							
MW-11A		missing bolts				X		
MW-12A	X							

NOTES:

WELLHEAD INSPECTION CHECKLIST

Client RORE Date 3/14/16

Site Address 941 mc Henry Ave, modesto

Job Number 160314-JF1 Technician JF

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	—	missing bolts				X		
MW-14A	X							
MW-15A	X							
MW-16A	X	missing bolts				X		
MW-16B	X							
MW-16C	X							
MW-17A	X							
MW-17B	X							
MW-17C	X							
MW-18A	X							
MW-19A		missing bots				X	X	
MW-19B1		missing bolts				X	X	
MW-20A	X							
MW-20B	X							
MW-20C		stripped tabs				X		
MW-21A	X	~~tab broken~~				~~X~~		

NOTES:

WELLHEAD INSPECTION CHECKLIST

Client RORE Date 3/14/16

Site Address 941 McHenry Ave, Modesto

Job Number 160314-JF1 Technician JF

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	—	missing bolts				X	X	
MW-23A		missing bolts						
MW-24B	X							
MW-25B	—	missing bolts				X		
MW-26B	—		tabs stripped					
MW-27B	X	X	missing bolts			X		
MW-28B	X	X	no tabs					
MW-29B	X	X						
MW-31A	X	X						
MW-32B	X	X						
MW-32C	X	X						
MW-33B	X	X						
MW-34B	X	X						
MW-35B	X	X						
EW-01R	X	X						
EW-02	X	X						

NOTES: JF

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3/15/16

S. McMullen, B. Zanec

Weather: Clear, ~55°F

SOW: Collect 24hr IA samples, conduct soil gas sampling, proposed drilling recon.;
-Blaintech: groundwater sampling

8:30 Load supplies/equipment, print maps.
-Mob to site

845 Onsite @ 941 McHenry; Blaintech arrival (tomorrow)

955 Collect 941-1A-01, -2 in Hg
Collect 941-1A-02, -1 in-Hg

1005 Collect 939-1A-03, -15 in-Hg
Collect 939-1A-02, -2 in-Hg

1015 Collect 931-1A-01-A, 0 in Hg
931-1A-01-B, -0.5 in Hg

1030 Decon pump tubing.
Calibrate PID. 0-100.0 ppm isobutylene
-Prep. for soil gas sampling

1100 SVE-01, begin purging @ 5 L/min
-PID: 0.0 ppm (well vault).

1121 Collect sample SVE-01, canister 851
start: -29 in Hg end: -3 in-Hg
-Decon pump tubing

1212 SVE-04, begin purging @ 4 L/min
-PID: 0.0 ppm (well vault)

1243 Collect sample SVE-04, canister 632
start: -29 in Hg end: -3 in Hg

100 Lunch/Change air pump.

130 Meet w/ J. McGuire

130 DP-05-S, begin purging @ 5 L/min

150 Collect sample, DP-05-S, canister 873
start: -29 in-Hg end: -3 in Hg
-Decon air pump
-Air pump running slow. Order new pump from rental company.

600 DP-05-D, begin purging @ 5 L/min

614 Collect sample, DP-05-D, canister 882
start: -29 in-Hg end: -3 in Hg, Decon pump

1640 OSVE-10, begin purging @ 4 L/min

1646 Collect sample OSVE-10, canister 1059
start: -29 in-Hg end: -3 in Hg, PID: 0.2 ppm
-Decon pump.

1700 OSVE-11, begin purging @ 3 L/min

1705 Collect sample OSVE-11, canister 636
start: -29 in-Hg end: -3 in-Hg

1730 Secure samples
Stop for day.

B2

Scale: 1 square = _____

3/16/16

S. McMullen, B. Zanco

Weather: Clear, 54°F

SOW: Complete soil gas sampling, scout proposed monitoring well locations; (Blaketech) groundwater sampl

830 Load supplies/equipment, mob to site

- Contact PM
- Calibrate PID 100.0 ppm
- Decon Air pump.

915 Blaketech onsite sampling @ 700

950 SVE-03, begin purging @ 7 L/min

1010 Collect sample SVE-03 BR, ~~container~~ canister 2001

start: -29 inHg end: -3 inHg

p.d: 0.0 ppm

1030 Retrieve new pump, decon tubing

1100 SVE-02, begin purging @ 10 L/min

- PID: 0.0 ppm

1110 Collect sample SVE-02, canister 865

start: -29 inHg end: -3 inHg

- Decon pump.

1120 DP-06-S, begin purging @ 10 L/min

- PID 0.0 ppm

1125 DP-06-S-A collect sample, canister 877

start: -30 inHg, end -3 inHg

DP-06-S-B collect sample, canister ~~1589~~ 891

- duplicate start: -30 inHg end -3 inHg

- Decon pump

1140 DP-06-D begin purging @ 10 L/min

PID 0.0 ppm

1150 Collect sample DP-06-D, canister 1589

start -30 inHg end -4 inHg

- Decon pump.

1204 DP-01-S begin purging @ 10 L/min

- PID 0.0 ppm

1210 DP-01-S, collect sample, canister 1581

- Unable to collect sample DP-01-S; regulator failure.
- Thread on all remaining regulators and connection to pressure gage are damaged/stripped
- Unable to collect samples DP-01-S and DP-01-D

1320 Prepare sample COC, pack samples, pack rental equipment; ship samples and rental equipment

- Unpack vehicle

Appendix D

System Uptime and Shutdown Tables

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Appendix D

System Uptime and Shutdown Tables

This section presents quantitative results on operational time for the groundwater treatment system (GWTS) and soil vapor extraction (SVE) systems. Operation time and percentage of uptime for this reporting period (January 1 through March 31, 2016) are as follows:

Remedial System	Total Operation Hours	Approximate Percentage in Operation
Groundwater Treatment	2,051	93.9%
SVE	0	0%

Tables D-1 through D-3 present GWTS shutdown summaries for January, February, and March 2016 respectively.

Table D-1. GWTS Shutdown Summary, January 2016

Date	Duration, hours	Reason	
1/5/16 – 1/7/16	49.7	EW-01R vault flood and high level alarm due to rain water.	
1/18/16 – 1/20/16	51.8	EW-01R vault flood and high level alarm due to rain water.	
Total	101.5	Hours in month: 744	Percent operational: 86

GWTS = groundwater treatment system

Table D-2. GWTS Shutdown Summary, February 2016

Date	Duration, hours	Reason	
NA	NA	None reported	
Total	0	Hours in month: 696	Percent operational: 100

LGAC = liquid-phase granular-activated carbon
GWTS = groundwater treatment system
NA = Not applicable

Table D-3. GWTS Shutdown Summary, March 2016

Date	Duration, hours	Reason	
3/7/16 – 3/8/16	24.7	EW-01R vault flood and high level alarm due to rain water.	
3/24/16	6.8	System shutdown due to general air stripper fault.	
Total	31.5	Hours in month: 744	Percent operational: 96

GWTS = groundwater treatment system

Appendix E

Groundwater LTM, Soil Gas, Indoor Air, and Sub-Slab Air

Analytical Data Validation Reports

(Provided on CD Only)

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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

May 2, 2016

SUBJECT: Modesto March 2016 GW Monitoring, Data Validation

Dear Mr. McGuire,

Enclosed is the revised validation report for the fraction listed below. This SDG was received on April 7, 2016. Attachment 1 is a summary of the sample that was reviewed for each analysis.

LDC Project #36148:

SDG #	Fraction
16078G	Volatiles

The data validation was performed under 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,

Shauna McKellar
Project Manager/Chemist

Data Validation Report
Modesto March 2016 GW Monitoring

SDG: 16078G

Prepared for

Rore, Inc.
5151 Shoreham Place, Suite 260
San Diego, CA 92122

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, CA 92010

May 1, 2016

INTRODUCTION

This Data Validation Report (DVR) presents Level III and Level IV data validation results for samples collected during the March 2016 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. Level III Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which Level IV validation was performed are presented in Enclosure II.

All sample results were subjected to 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), field duplicate samples, and internal standards. Approximately 10 percent of samples were subjected to Level IV evaluation as indicated in Attachment 1, which comprised a review 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): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte 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 & 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 were met with the following exceptions:

SDG/ Method	Date	Compound	%RSD (Limits)	Associated Samples	Flag	A or P
16078G/ 524.2	03/23/16	Dibromochloromethane Bromoform Naphthalene	22.75 (≤20) 32.10 (≤20) 21.34 (≤20)	MW-80A-1Q16 MW-301-1Q16 MW-76B-1Q16 MW-28B-1Q16	J (all detects) UJ (all non-detects)	P

All criteria for the initial calibration verifications were met with the following exceptions:

SDG/ Method	Date	Compound	%D (Limits)	Associated Samples	Flag	A or P
16078G/ 524.2	03/24/16	Dichlorodifluoromethane	33 (≤30)	MW-80A-1Q16 MW-301-1Q16 MW-76B-1Q16 MW-28B-1Q16	J- (all detects) 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
16078G/ 524.2	03/21/16	Dichlorodifluoromethane	43.9 (≤30)	MW-01A-1Q16 MW-02A-1Q16 MW-03A-1Q16 MW-04A-1Q16 MW-04B-1Q16 MW-04C-1Q16 MW-05A-1Q16 MW-06A-1Q16 MW-07A-1Q16 MW-08A-1Q16 MW-09B-1Q16 MW-10A-1Q16	NA	-
16078G/ 524.2	03/23/16	Acetone 2-Butanone	32.4 (≤30) 31.8 (≤30)	MW-17A-1Q16 MW-17C-1Q16 MW-18A-1Q16 MW-19A-1Q16 MW-19B1-1Q16 MW-20B-1Q16 MW-20C-1Q16 MW-21A-1Q16 MW-22A-1Q16 MW-23A-1Q16 MW-24B-1Q16 MW-25B-1Q16 MW-401-1Q16	J- (all detects) UJ (all non-detects) J- (all detects) UJ (all non-detects)	P
16078G/ 524.2	03/24/16	2,2-Dichloropropane	42.1 (≤30)	MW-80A-1Q16 MW-301-1Q16 MW-76B-1Q16 MW-28B-1Q16	NA	-

V. Laboratory Blanks

Laboratory blanks were performed as required by the method. No contaminant concentrations were detected in the laboratory blanks.

VI. Field Blank

One trip blank was collected and analyzed for VOCs. No volatile contaminants were found in the trip blank.

Three field blanks were collected and analyzed for VOCs. All field blanks had detections for chloroform. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blank were not qualified. The field blank outlier reports are presented in Enclosures I and II.

VII. Surrogate

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

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. No data were qualified where sample concentrations were significantly greater (>4X) than the spike amount. The remainder of the data were qualified as detected estimated (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 two LCS for VOCs. The associated sample results were qualified as non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

X. Field Duplicate

Four field duplicate pairs were collected and analyzed for VOCs. The field duplicate result comparisons are provided in Enclosure I.

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 this SDG.

Due to initial calibration %RSD and ICV %D, data were qualified as estimated in four samples.

Due to continuing calibration %D, data were qualified as estimated in twelve samples.

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

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

Due to results below the RL, data were qualified as estimated in seventeen samples.

Due to field blank contamination, data were qualified as not detected in thirty-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
14-Mar-2016	MW-301-1Q16	1603049-54	TB	5030B	524.2	IV
14-Mar-2016	MW-17A-1Q16	1603049-23	N	5030B	524.2	III
14-Mar-2016	MW-17B-1Q16	1603049-24	N	5030B	524.2	III
14-Mar-2016	MW-17C-1Q16	1603049-25	N	5030B	524.2	III
14-Mar-2016	MW-401-1Q16	1603049-49	FB	5030B	524.2	III
15-Mar-2016	MW-75B-1Q16	1603049-51	FD	5030B	524.2	III
15-Mar-2016	MW-95A-1Q16	1603049-52	FD	5030B	524.2	III
15-Mar-2016	MW-21A-1Q16	1603049-32	N	5030B	524.2	III
15-Mar-2016	MW-22A-1Q16	1603049-33	N	5030B	524.2	III
15-Mar-2016	MW-25B-1Q16	1603049-36	N	5030B	524.2	III
15-Mar-2016	MW-25B-1Q16MS	B16C122-MS1	MS	5030B	524.2	III
15-Mar-2016	MW-25B-1Q16MSD	B16C122-MSD1	MSD	5030B	524.2	III
15-Mar-2016	MW-16A-1Q16	1603049-20	N	5030B	524.2	IV
15-Mar-2016	MW-16C-1Q16	1603049-22	N	5030B	524.2	III
15-Mar-2016	MW-16B-1Q16	1603049-21	N	5030B	524.2	III
15-Mar-2016	MW-26B-1Q16	1603049-37	N	5030B	524.2	III
15-Mar-2016	MW-27B-1Q16	1603049-38	N	5030B	524.2	III
15-Mar-2016	MW-13A-1Q16	1603049-17	N	5030B	524.2	III
15-Mar-2016	MW-28B-1Q16	1603049-39	N	5030B	524.2	III
15-Mar-2016	MW-14A-1Q16	1603049-18	N	5030B	524.2	III
15-Mar-2016	MW-23A-1Q16	1603049-34	N	5030B	524.2	III
15-Mar-2016	MW-11A-1Q16	1603049-15	N	5030B	524.2	III
15-Mar-2016	MW-04A-1Q16	1603049-04	N	5030B	524.2	III
15-Mar-2016	MW-02A-1Q16	1603049-02	N	5030B	524.2	III
15-Mar-2016	MW-04B-1Q16	1603049-05	N	5030B	524.2	III
15-Mar-2016	MW-04C-1Q16	1603049-06	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
15-Mar-2016	EW-02-1Q16	1603049-47	N	5030B	524.2	III
15-Mar-2016	MW-07A-1Q16	1603049-09	N	5030B	524.2	IV
15-Mar-2016	MW-05A-1Q16	1603049-07	N	5030B	524.2	III
15-Mar-2016	MW-05A-1Q16MS	B16C091-MS1	MS	5030B	524.2	III
15-Mar-2016	MW-05A-1Q16MSD	B16C091-MSD1	MSD	5030B	524.2	III
15-Mar-2016	MW-09B-1Q16	1603049-11	N	5030B	524.2	III
15-Mar-2016	MW-08A-1Q16	1603049-10	N	5030B	524.2	III
15-Mar-2016	EW-01R-1Q16	1603049-46	N	5030B	524.2	III
15-Mar-2016	MW-03A-1Q16	1603049-03	N	5030B	524.2	III
15-Mar-2016	MW-10B-1Q16	1603049-13	N	5030B	524.2	III
15-Mar-2016	MW-10C-1Q16	1603049-14	N	5030B	524.2	III
15-Mar-2016	MW-10A-1Q16	1603049-12	N	5030B	524.2	III
15-Mar-2016	MW-06A-1Q16	1603049-08	N	5030B	524.2	III
15-Mar-2016	MW-402-1Q16	1603049-48	FB	5030B	524.2	IV
16-Mar-2016	MW-80A-1Q16	1603049-53	FD	5030B	524.2	III
16-Mar-2016	MW-76B-1Q16	1603049-55	FD	5030B	524.2	III
16-Mar-2016	MW-12A-1Q16	1603049-16	N	5030B	524.2	III
16-Mar-2016	MW-19A-1Q16	1603049-27	N	5030B	524.2	IV
16-Mar-2016	MW-19B1-1Q16	1603049-28	N	5030B	524.2	III
16-Mar-2016	MW-20C-1Q16	1603049-31	N	5030B	524.2	III
16-Mar-2016	MW-20B-1Q16	1603049-30	N	5030B	524.2	III
16-Mar-2016	MW-20A-1Q16	1603049-29	N	5030B	524.2	III
16-Mar-2016	MW-20A-1Q16MS	B16C111-MS1	MS	5030B	524.2	III
16-Mar-2016	MW-20A-1Q16MSD	B16C111-MSD1	MSD	5030B	524.2	III
16-Mar-2016	MW-18A-1Q16	1603049-26	N	5030B	524.2	III
16-Mar-2016	MW-24B-1Q16	1603049-35	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
16-Mar-2016	MW-32C-1Q16	1603049-42	N	5030B	524.2	III
16-Mar-2016	MW-32B-1Q16	1603049-41	N	5030B	524.2	III
16-Mar-2016	MW-33B-1Q16	1603049-43	N	5030B	524.2	III
16-Mar-2016	MW-35B-1Q16	1603049-45	N	5030B	524.2	III
16-Mar-2016	MW-34B-1Q16	1603049-44	N	5030B	524.2	III
16-Mar-2016	MW-31A-1Q16	1603049-40	N	5030B	524.2	IV
16-Mar-2016	MW-01A-1Q16	1603049-01	N	5030B	524.2	III
16-Mar-2016	MW-15A-1Q16	1603049-19	N	5030B	524.2	III
16-Mar-2016	MW-403-1Q16	1603049-50	FB	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: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **EW-01R-1Q16** ***Collected:*** **3/15/2016 3:09:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	3.4		0.2	MDL	0.5	MRL	ug/L	U	Fb
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

Sample ID: **EW-02-1Q16** ***Collected:*** **3/15/2016 12:24:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	3.3		0.2	MDL	0.5	MRL	ug/L	U	Fb
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

Sample ID: **MW-01A-1Q16** ***Collected:*** **3/16/2016 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
CHLOROFORM	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	U	Fb
TETRACHLOROETHENE	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

Sample ID: **MW-02A-1Q16** ***Collected:*** **3/15/2016 11:05:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	2.4		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-03A-1Q16** ***Collected:*** **3/15/2016 3:26:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	0.6		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-04A-1Q16** ***Collected:*** **3/15/2016 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	4.0		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-04C-1Q16** ***Collected:*** **3/15/2016 11:46:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **MW-05A-1Q16** ***Collected:*** **3/15/2016 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	28	J,Q3,Q4	2.0	MDL	4.0	MRL	ug/L	J-	Ms
CHLOROFORM	0.5		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-05A-1Q16** ***Collected:*** **3/15/2016 1:45:00 PM** ***Analysis Type:*** **Reanalysis-01/TOT/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	76		1.2	MDL	2.5	MRL	ug/L	J-	Ms

Sample ID: **MW-06A-1Q16** ***Collected:*** **3/15/2016 5:05:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BROMODICHLOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
CHLOROFORM	7.8		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-07A-1Q16** ***Collected:*** **3/15/2016 12:52:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	2.8		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-08A-1Q16** ***Collected:*** **3/15/2016 2:20:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	4.8		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-10A-1Q16** ***Collected:*** **3/15/2016 4:30:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	7.7		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-10B-1Q16** ***Collected:*** **3/15/2016 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
CHLOROFORM	0.5		0.2	MDL	0.5	MRL	ug/L	U	Fb

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **MW-11A-1Q16** ***Collected:*** **3/15/2016 10:40:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	3.6		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-12A-1Q16** ***Collected:*** **3/16/2016 7:15:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	3.0	J,C1,Q3	2.0	MDL	4.0	MRL	ug/L	J	RI
CHLOROFORM	20		0.2	MDL	0.5	MRL	ug/L	U	Fb
TRICHLOROFLUOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

Sample ID: **MW-13A-1Q16** ***Collected:*** **3/15/2016 9:57:00 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	2.6		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-14A-1Q16** ***Collected:*** **3/15/2016 10:20:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-15A-1Q16** ***Collected:*** **3/16/2016 2:50:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	0.2	J,C1	0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-16A-1Q16** ***Collected:*** **3/15/2016 8:45:00 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	2.8	J,C1,Q3	2.0	MDL	4.0	MRL	ug/L	J	RI
CHLOROFORM	2.2		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-16B-1Q16** ***Collected:*** **3/15/2016 9:00:00 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	2.5		0.2	MDL	0.5	MRL	ug/L	U	Fb

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **MW-16C-1Q16** ***Collected:*** **3/15/2016 8:45:00 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	3.1	J,C1,Q3	2.0	MDL	4.0	MRL	ug/L	J	RI
CHLOROFORM	0.2	J,C1	0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-17A-1Q16** ***Collected:*** **3/14/2016 3:30:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	5.1	J,C4	2.0	MDL	4.0	MRL	ug/L	J-	Ccv
BROMODICHLOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
CHLOROFORM	5.8		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-17B-1Q16** ***Collected:*** **3/14/2016 3:45:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	0.6		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-17C-1Q16** ***Collected:*** **3/14/2016 4:10:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	5.1	J,C4	2.0	MDL	4.0	MRL	ug/L	J-	Ccv

Sample ID: **MW-18A-1Q16** ***Collected:*** **3/16/2016 10:10:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
CHLOROFORM	6.1		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-19A-1Q16** ***Collected:*** **3/16/2016 7:37:00 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-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	2.3	J,C1,C4	2.0	MDL	4.0	MRL	ug/L	J	RI, Ccv
CHLOROFORM	3.0		0.2	MDL	0.5	MRL	ug/L	U	Fb

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **MW-19B1-1Q16** ***Collected:*** **3/16/2016 7:49:00 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-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	3.1	J,C1,C4	2.0	MDL	4.0	MRL	ug/L	J	RI, Ccv
TETRACHLOROETHENE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

Sample ID: **MW-20A-1Q16** ***Collected:*** **3/16/2016 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
2-BUTANONE	3.5	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
ACETONE	100	J,Q3,Q4	2.0	MDL	4.0	MRL	ug/L	J-	Ms, Ms
CHLOROFORM	2.6	J,Q4	0.2	MDL	0.5	MRL	ug/L	UJ	Ms, Fb
DICHLORODIFLUOROMETHANE	0.6	J,Q4	0.2	MDL	0.5	MRL	ug/L	J+	Ms
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,Q4	0.2	MDL	0.5	MRL	ug/L	UJ	Ms

Sample ID: **MW-20B-1Q16** ***Collected:*** **3/16/2016 8:57:00 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-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	4.9	J,C4	2.0	MDL	4.0	MRL	ug/L	J-	Ccv

Sample ID: **MW-20C-1Q16** ***Collected:*** **3/16/2016 8:32:00 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-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	3.6	J,C1,C4	2.0	MDL	4.0	MRL	ug/L	J	RI, Ccv

Sample ID: **MW-21A-1Q16** ***Collected:*** **3/15/2016 7:25:00 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-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	5.0	J,C4	2.0	MDL	4.0	MRL	ug/L	J-	Ccv
CHLOROFORM	4.4		0.2	MDL	0.5	MRL	ug/L	U	Fb

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **MW-22A-1Q16** ***Collected:*** **3/15/2016 7:37:00 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-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	5.2	J,C4	2.0	MDL	4.0	MRL	ug/L	J-	Ccv
CHLOROFORM	7.2		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-23A-1Q16** ***Collected:*** **3/15/2016 10:20:00 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-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	2.5	J,C1,C4	2.0	MDL	4.0	MRL	ug/L	J	RI, Ccv
CHLOROFORM	1.7		0.2	MDL	0.5	MRL	ug/L	U	Fb

Sample ID: **MW-24B-1Q16** ***Collected:*** **3/16/2016 11:10:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv

Sample ID: **MW-25B-1Q16** ***Collected:*** **3/15/2016 7:55:00 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-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
TETRACHLOROETHENE	1.8	J,Q4	0.2	MDL	0.5	MRL	ug/L	J+	Ms

Sample ID: **MW-26B-1Q16** ***Collected:*** **3/15/2016 9:35:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-27B-1Q16** ***Collected:*** **3/15/2016 9:36:00 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	2.6	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs
TETRACHLOROETHENE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **MW-28B-1Q16** ***Collected:*** **3/15/2016 9:58:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-301-1Q16** ***Collected:*** **3/14/2016 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
BROMOFORM	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DIBROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-31A-1Q16** ***Collected:*** **3/16/2016 1:40:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-32B-1Q16** ***Collected:*** **3/16/2016 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
CHLOROFORM	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	U	Fb
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

Sample ID: **MW-32C-1Q16** ***Collected:*** **3/16/2016 12:10:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-33B-1Q16** ***Collected:*** **3/16/2016 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
CHLOROFORM	1.8		0.2	MDL	0.5	MRL	ug/L	U	Fb
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **MW-34B-1Q16** ***Collected:*** **3/16/2016 1:20:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-35B-1Q16** ***Collected:*** **3/16/2016 1:07:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-401-1Q16** ***Collected:*** **3/14/2016 4:30:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv
ACETONE	4.0	J,U,C4	2.0	MDL	4.0	MRL	ug/L	UJ	Ccv

Sample ID: **MW-402-1Q16** ***Collected:*** **3/15/2016 5:20:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-403-1Q16** ***Collected:*** **3/16/2016 3:05:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-75B-1Q16** ***Collected:*** **3/15/2016 12:00:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

Sample ID: **MW-76B-1Q16** ***Collected:*** **3/16/2016 12:00:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

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

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method Category: **VOA**

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

Sample ID: **MW-80A-1Q16** ***Collected:*** **3/16/2016 12:00:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
BROMODICHLOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
BROMOFORM	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
CHLOROFORM	9.6		0.2	MDL	0.5	MRL	ug/L	U	Fb
DIBROMOCHLOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	2.8	J,C3	0.2	MDL	0.5	MRL	ug/L	J-	Icv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: **MW-95A-1Q16** ***Collected:*** **3/15/2016 12:00:00 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	0.6		0.2	MDL	0.5	MRL	ug/L	U	Fb
ETHYLENE DIBROMIDE (EDB)	0.5	J,U,Q2	0.2	MDL	0.5	MRL	ug/L	UJ	Lcs

* denotes a non-reportable result

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Reason Code Legend

Reason Code	*Description*
Ccv	Continuing Calibration Verification Percent Difference Lower Estimation
Fb	Field Blank Contamination
IcRsd	Initial Calibration Percent Relative Standard Deviation
Icv	Initial Calibration Verification Percent Difference Lower Estimation
Lcs	Laboratory Control Spike Lower Estimation
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

16078G

Field Blank Outlier Report

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

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

Field Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
MW-401-1Q16(Initial/TOT)	3/14/2016 4:30:00 PM	CHLOROFORM	3.8 ug/L	MW-17A-1Q16 MW-17B-1Q16 MW-17C-1Q16
MW-402-1Q16(Initial/TOT)	3/15/2016 5:20:00 PM	CHLOROFORM	4 ug/L	EW-01R-1Q16 EW-02-1Q16 MW-02A-1Q16 MW-03A-1Q16 MW-04A-1Q16 MW-04B-1Q16 MW-04C-1Q16 MW-05A-1Q16 MW-06A-1Q16 MW-07A-1Q16 MW-08A-1Q16 MW-09B-1Q16 MW-10A-1Q16 MW-10B-1Q16 MW-10C-1Q16 MW-11A-1Q16 MW-13A-1Q16 MW-14A-1Q16 MW-16A-1Q16 MW-16B-1Q16 MW-16C-1Q16 MW-21A-1Q16 MW-22A-1Q16 MW-23A-1Q16 MW-25B-1Q16 MW-26B-1Q16 MW-27B-1Q16 MW-28B-1Q16 MW-75B-1Q16 MW-95A-1Q16
MW-403-1Q16(Initial/TOT)	3/16/2016 3:05:00 PM	CHLOROFORM	4 ug/L	MW-01A-1Q16 MW-12A-1Q16 MW-15A-1Q16 MW-18A-1Q16 MW-19A-1Q16 MW-19B1-1Q16 MW-20A-1Q16 MW-20B-1Q16 MW-20C-1Q16 MW-24B-1Q16 MW-31A-1Q16 MW-32B-1Q16 MW-32C-1Q16 MW-33B-1Q16 MW-34B-1Q16 MW-35B-1Q16 MW-76B-1Q16 MW-80A-1Q16

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
EW-01R-1Q16(Initial/TOT)	CHLOROFORM	3.4 ug/L	3.4U ug/L
EW-02-1Q16(Initial/TOT)	CHLOROFORM	3.3 ug/L	3.3U ug/L
MW-01A-1Q16(Initial/TOT)	CHLOROFORM	0.3 ug/L	0.5U ug/L
MW-02A-1Q16(Initial/TOT)	CHLOROFORM	2.4 ug/L	2.4U ug/L
MW-03A-1Q16(Initial/TOT)	CHLOROFORM	0.6 ug/L	0.6U ug/L

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Field Blank Outlier Report

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

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

Field Blank Sample ID	Collected Date	Analyte	Result	Associated Samples

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-04A-1Q16(Initial/TOT)	CHLOROFORM	4.0 ug/L	4.0U ug/L
MW-05A-1Q16(Initial/TOT)	CHLOROFORM	0.5 ug/L	0.5U ug/L
MW-06A-1Q16(Initial/TOT)	CHLOROFORM	7.8 ug/L	7.8U ug/L
MW-07A-1Q16(Initial/TOT)	CHLOROFORM	2.8 ug/L	2.8U ug/L
MW-08A-1Q16(Initial/TOT)	CHLOROFORM	4.8 ug/L	4.8U ug/L
MW-10A-1Q16(Initial/TOT)	CHLOROFORM	7.7 ug/L	7.7U ug/L
MW-10B-1Q16(Initial/TOT)	CHLOROFORM	0.5 ug/L	0.5U ug/L
MW-11A-1Q16(Initial/TOT)	CHLOROFORM	3.6 ug/L	3.6U ug/L
MW-12A-1Q16(Initial/TOT)	CHLOROFORM	20 ug/L	20U ug/L
MW-13A-1Q16(Initial/TOT)	CHLOROFORM	2.6 ug/L	2.6U ug/L
MW-14A-1Q16(Initial/TOT)	CHLOROFORM	0.4 ug/L	0.5U ug/L
MW-15A-1Q16(Initial/TOT)	CHLOROFORM	0.2 ug/L	0.5U ug/L
MW-16A-1Q16(Initial/TOT)	CHLOROFORM	2.2 ug/L	2.2U ug/L
MW-16B-1Q16(Initial/TOT)	CHLOROFORM	2.5 ug/L	2.5U ug/L
MW-16C-1Q16(Initial/TOT)	CHLOROFORM	0.2 ug/L	0.5U ug/L
MW-17A-1Q16(Initial/TOT)	CHLOROFORM	5.8 ug/L	5.8U ug/L
MW-17B-1Q16(Initial/TOT)	CHLOROFORM	0.6 ug/L	0.6U ug/L
MW-18A-1Q16(Initial/TOT)	CHLOROFORM	6.1 ug/L	6.1U ug/L
MW-19A-1Q16(Initial/TOT)	CHLOROFORM	3.0 ug/L	3.0U ug/L
MW-20A-1Q16(Initial/TOT)	CHLOROFORM	2.6 ug/L	2.6U ug/L
MW-21A-1Q16(Initial/TOT)	CHLOROFORM	4.4 ug/L	4.4U ug/L
MW-22A-1Q16(Initial/TOT)	CHLOROFORM	7.2 ug/L	7.2U ug/L
MW-23A-1Q16(Initial/TOT)	CHLOROFORM	1.7 ug/L	1.7U ug/L
MW-32B-1Q16(Initial/TOT)	CHLOROFORM	0.4 ug/L	0.5U ug/L
MW-33B-1Q16(Initial/TOT)	CHLOROFORM	1.8 ug/L	1.8U ug/L
MW-80A-1Q16(Initial/TOT)	CHLOROFORM	9.6 ug/L	9.6U ug/L
MW-95A-1Q16(Initial/TOT)	CHLOROFORM	0.6 ug/L	0.6U ug/L

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **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-05A-1Q16MS MW-05A-1Q16MSD (MW-05A-1Q16)	ACETONE	47	-	60.00-125.00	-	ACETONE	J- (all detects) UJ (all non-detects)
	TETRACHLOROETHENE	56	34	87.00-118.00	-	TETRACHLOROETHENE	
MW-05A-1Q16MS MW-05A-1Q16MSD (MW-05A-1Q16)	1,1,2-TRICHLORO-1,2,2-TRIFLUOR	163	176	73.00-139.00	-	1,1,2-TRICHLORO-1,2,2-TRIFLUO	J+(all detects)
	1,1-DICHLOROETHENE	132	133	80.00-126.00	-	1,1-DICHLOROETHENE	
	1,1-DICHLOROPROPENE	124	127	88.00-120.00	-	1,1-DICHLOROPROPENE	
	DICHLORODIFLUOROMETHANE	186	198	53.00-153.00	-	DICHLORODIFLUOROMETHANE	
	TRANS-1,2-DICHLOROETHENE	120	126	86.00-119.00	-	TRANS-1,2-DICHLOROETHENE	
	TRICHLOROETHENE	114	118	90.00-112.00	-	TRICHLOROETHENE	
	TRICHLOROFLUOROMETHANE	155	165	74.00-141.00	-	TRICHLOROFLUOROMETHANE	
	VINYL CHLORIDE	137	143	77.00-127.00	-	VINYL CHLORIDE	
MW-20A-1Q16MS MW-20A-1Q16MSD (MW-20A-1Q16)	ACETONE	19	-6	60.00-125.00	-	ACETONE	J-(all detects) R(all non-detects)
MW-20A-1Q16MSD (MW-20A-1Q16)	TRANS-1,3-DICHLOROPROPENE	-	74	75.00-135.00	-	TRANS-1,3-DICHLOROPROPENE	J-(all detects) UJ(all non-detects)
MW-20A-1Q16MS MW-20A-1Q16MSD (MW-20A-1Q16)	1,1,2-TRICHLORO-1,2,2-TRIF	196	175	73.00-139.00	-	1,1,2-TRICHLORO-1,2,2-TRI	J+(all detects) Tetrachloroethene, No Qual, >4x
	1,1-DICHLOROETHANE	135	120	85.00-117.00	-	1,1-DICHLOROETHANE	
	1,1-DICHLOROETHENE	154	138	80.00-126.00	-	1,1-DICHLOROETHENE	
	1,1-DICHLOROPROPENE	122	121	88.00-120.00	-	1,1-DICHLOROPROPENE	
	BROMOCHLOROMETHANE	124	-	84.00-114.00	-	BROMOCHLOROMETHANE	
	CHLOROETHANE	146	-	75.00-135.00	-	CHLOROETHANE	
	CHLOROFORM	138	-	85.00-117.00	-	CHLOROFORM	
	CHLOROMETHANE	135	-	70.00-124.00	-	CHLOROMETHANE	
	CIS-1,2-DICHLOROETHENE	123	-	87.00-113.00	-	CIS-1,2-DICHLOROETHENE	
	DICHLORODIFLUOROMETHANE	242	205	53.00-153.00	-	DICHLORODIFLUOROMETHANE	
	METHYLENE CHLORIDE	126	-	73.00-114.00	-	METHYLENE CHLORIDE	
	TETRACHLOROETHENE	-	132	87.00-118.00	-	TETRACHLOROETHENE	
	TRANS-1,2-DICHLOROETHENE	144	120	86.00-119.00	-	TRANS-1,2-DICHLOROETHENE	
	TRICHLOROETHENE	120	118	90.00-112.00	-	TRICHLOROETHENE	
	TRICHLOROFLUOROMETHANE	188	164	74.00-141.00	-	TRICHLOROFLUOROMETHANE	
	VINYL CHLORIDE	172	150	77.00-127.00	-	VINYL CHLORIDE	
MW-25B-1Q16MS MW-25B-1Q16MSD (MW-25B-1Q16)	1,1,2-TRICHLORO-1,2,2-TRIF	172	176	73.00-139.00	-	1,1,2-TRICHLORO-1,2,2-TRI	J+(all detects)
	1,1-DICHLOROETHANE	-	121	85.00-117.00	-	1,1-DICHLOROETHANE	
	1,1-DICHLOROETHENE	139	139	80.00-126.00	-	1,1-DICHLOROETHENE	
	1,1-DICHLOROPROPENE	124	129	88.00-120.00	-	1,1-DICHLOROPROPENE	
	CHLOROETHANE	-	136	75.00-135.00	-	CHLOROETHANE	
	CHLOROMETHANE	126	140	70.00-124.00	-	CHLOROMETHANE	
	CIS-1,2-DICHLOROETHENE	114	122	87.00-113.00	-	CIS-1,2-DICHLOROETHENE	
	DICHLORODIFLUOROMETHANE	222	222	53.00-153.00	-	DICHLORODIFLUOROMETHANE	
	ISOPROPYLBENZENE	-	121	90.00-118.00	-	ISOPROPYLBENZENE	
	N-BUTYLBENZENE	-	126	86.00-123.00	-	N-BUTYLBENZENE	
	O-XYLENE	-	114	90.00-111.00	-	O-XYLENE	
	P-ISOPROPYLTOLUENE	-	123	89.00-119.00	-	P-ISOPROPYLTOLUENE	
	SEC-BUTYLBENZENE	-	125	87.00-122.00	-	SEC-BUTYLBENZENE	
	TERT-BUTYLBENZENE	-	121	89.00-118.00	-	TERT-BUTYLBENZENE	
	TETRACHLOROETHENE	-	119	87.00-118.00	-	TETRACHLOROETHENE	
	TRANS-1,2-DICHLOROETHE	-	122	86.00-119.00	-	TRANS-1,2-DICHLOROETH	
	TRICHLOROETHENE	115	116	90.00-112.00	-	TRICHLOROETHENE	
	TRICHLOROFLUOROMETHANE	155	173	74.00-141.00	-	TRICHLOROFLUOROMETHANE	
	VINYL CHLORIDE	138	146	77.00-127.00	-	VINYL CHLORIDE	

Project Name and Number: R16S40 - Modesto March 2016 Groundwater Monitoring

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **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
B16C131-BS1 (EW-01R-1Q16 EW-02-1Q16 MW-03A-1Q16 MW-26B-1Q16 MW-27B-1Q16 MW-31A-1Q16 MW-32B-1Q16 MW-32C-1Q16 MW-33B-1Q16 MW-34B-1Q16 MW-35B-1Q16 MW-402-1Q16 MW-403-1Q16 MW-75B-1Q16 MW-95A-1Q16)	ETHYLENE DIBROMIDE (EDB)	84	-	85.00-114.00	-	ETHYLENE DIBROMIDE (EDB)	J- (all detects) UJ (all non-detects)
B16C136-BS1 (EW-02-1Q16 MW-95A-1Q16)	BROMOMETHANE	50	-	58.00-172.00	-	BROMOMETHANE	J-(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method: **524.2**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
MW-01A-1Q16	CHLOROFORM TETRACHLOROETHENE	J,C1 J,C1	0.3 0.4	0.5 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-04C-1Q16	TETRACHLOROETHENE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-06A-1Q16	BROMODICHLOROMETHANE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-12A-1Q16	ACETONE TRICHLOROFLUOROMETHANE	J,C1, Q3 J,C1	3.0 0.3	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-14A-1Q16	CHLOROFORM	J,C1	0.4	0.5	MRL	ug/L	J (all detects)
MW-15A-1Q16	CHLOROFORM	J,C1	0.2	0.5	MRL	ug/L	J (all detects)
MW-16A-1Q16	ACETONE	J,C1, Q3	2.8	4.0	MRL	ug/L	J (all detects)
MW-16C-1Q16	ACETONE CHLOROFORM	J,C1, Q3 J,C1	3.1 0.2	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-17A-1Q16	BROMODICHLOROMETHANE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-19A-1Q16	ACETONE	J,C1,C4	2.3	4.0	MRL	ug/L	J (all detects)
MW-19B1-1Q16	ACETONE TETRACHLOROETHENE	J,C1,C4 J,C1	3.1 0.3	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-20A-1Q16	2-BUTANONE	J,C1	3.5	4.0	MRL	ug/L	J (all detects)
MW-20C-1Q16	ACETONE	J,C1,C4	3.6	4.0	MRL	ug/L	J (all detects)
MW-23A-1Q16	ACETONE	J,C1,C4	2.5	4.0	MRL	ug/L	J (all detects)
MW-27B-1Q16	ACETONE TETRACHLOROETHENE	J,C1 J,C1	2.6 0.3	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-32B-1Q16	CHLOROFORM	J,C1	0.4	0.5	MRL	ug/L	J (all detects)
MW-35B-1Q16	TRICHLOROETHENE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-80A-1Q16	BROMODICHLOROMETHANE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 16078G **Laboratory: FALSE**

EDD Filename: 16078G_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_GW_100115**

Method: 524.2
Matrix: Water

Analyte	Concentration (ug/L) MW-20A-1Q16	Concentration (ug/L) MW-80A-1Q16	Sample RPD	eQAPP RPD	Flag
2-BUTANONE	3.5	4.0 U	200	1.00	No Qualifiers Applied
ACETONE	100	5.2	180	1.00	
BROMODICHLOROMETHANE	0.5 U	0.3	200	1.00	
CHLOROFORM	2.6	9.6	115	1.00	
DICHLORODIFLUOROMETHANE	0.6	2.8	129	1.00	
TETRACHLOROETHENE	32	150	130	1.00	

Analyte	Concentration (ug/L) MW-24B-1Q16	Concentration (ug/L) MW-76B-1Q16	Sample RPD	eQAPP RPD	Flag
ACETONE	4.0 J,U,C4	6.2	200	1.00	No Qualifiers Applied
TETRACHLOROETHENE	86	78	10	1.00	

Analyte	Concentration (ug/L) MW-25B-1Q16	Concentration (ug/L) MW-75B-1Q16	Sample RPD	eQAPP RPD	Flag
2-BUTANONE	4.0 J,U,C4	4.1	200	1.00	No Qualifiers Applied
ACETONE	4.0 J,U,C4	44	200	1.00	
TETRACHLOROETHENE	1.8	3.7	69	1.00	

Analyte	Concentration (ug/L) MW-05A-1Q16	Concentration (ug/L) MW-95A-1Q16	Sample RPD	eQAPP RPD	Flag
ACETONE	28	4.0 U	200	1.00	No Qualifiers Applied
CHLOROFORM	0.5	0.6	18	1.00	
TETRACHLOROETHENE	76	45	51	1.00	

LDC #: 36148A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 04/08/16
SDG #: 16078G ADR/IV Page: 1 of 3
Laboratory: USEPA Region 9 Laboratory Reviewer: JN6
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	ICAL ≤ 20% ICV ≤ 30%
IV.	Continuing calibration	SW	CCV ≤ 30%
V.	Laboratory Blanks	N	Not reviewed for ADR validation.
VI.	Field blanks		
VII.	Surrogate spikes		Not reviewed for ADR validation.
VIII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation.
IX.	Laboratory control samples		Not reviewed for ADR validation.
X.	Field duplicates		D = 7/52 ; 29/53 ; 35/55 ; 36/51
XI.	Internal standards		Not reviewed for ADR validation.
XII.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation.
XIII.	Target compound identification		Not reviewed for ADR validation.
XIV.	System performance		Not reviewed for ADR validation.
XV.	Overall assessment of data		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	1	MW-01A-~~031616-WG-96~~ 1016	1603049-01	Water	03/16/16
2	1	MW-02A-~~031516-WG-91~~	1603049-02	Water	03/15/16
3	1	MW-03A-~~031516-WG-89~~ 15	1603049-03	Water	03/15/16
4	1	MW-04A-~~031516-WG-83~~ 13	1603049-04	Water	03/15/16
5	1	MW-04B-~~031516-WG-149~~	1603049-05	Water	03/15/16
6	1	MW-04C-~~031516-WG-232~~	1603049-06	Water	03/15/16
7	1	MW-05A-~~031516-WG-75~~ 3 D2	1603049-07	Water	03/15/16
8	1	MW-06A-~~031516-WG-75~~	1603049-08	Water	03/15/16
9	1	MW-07A-~~031516-WG-75~~**	1603049-09**	Water	03/15/16
10	1	MW-08A-~~031516-WG-75~~	1603049-10	Water	03/15/16
11	1	MW-09B-~~031516-WG-149~~	1603049-11	Water	03/15/16
12	1	MW-10A-~~031516-WG-74~~	1603049-12	Water	03/15/16
13	1	MW-10B-~~031516-WG-158~~	1603049-13	Water	03/15/16

LDC #: 36148A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 04/08/16

SDG #: 16078G ADR/IV Page: 2 of 3

Laboratory: USEPA Region 9 Laboratory Reviewer: JVG

2nd Reviewer: SM

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	MW-10C-~~031616-WG-225~~ 1Q16	1603049-14	Water	03/15/16
15	MW-11A-~~031516-WG-80~~	1603049-15	Water	03/15/16
16	MW-12A-~~031616-WG-92~~	1603049-16	Water	03/16/16
17	MW-13A-~~031516-WG-87~~	1603049-17	Water	03/15/16
18	MW-14A-~~031516-WG-80~~	1603049-18	Water	03/15/16
19	MW-15A-~~031616-WG-96~~	1603049-19	Water	03/16/16
20	MW-16A-~~031516-WG-71~~**	1603049-20**	Water	03/15/16
21	MW-16B-~~031516-WG-134~~	1603049-21	Water	03/15/16
22	MW-16C-~~031516-WG-231~~	1603049-22	Water	03/15/16
23	MW-17A-~~031416-WG-82~~	1603049-23	Water	03/14/16
24	MW-17B-~~031416-WG-134~~	1603049-24	Water	03/14/16
25	MW-17C-~~031416-WG-227~~	1603049-25	Water	03/14/16
26	MW-18A-~~031616-WG-61~~	1603049-26	Water	03/16/16
27	MW-19A-~~031616-WG-96~~**	1603049-27**	Water	03/16/16
28	MW-19B1-~~031616-WG-142~~	1603049-28	Water	03/16/16
29	MW-20A-~~031616-WG-81~~ D3	1603049-29	Water	03/16/16
30	MW-20B-~~031616-WG-157~~	1603049-30	Water	03/16/16
31	MW-20C-~~031616-WG-230~~	1603049-31	Water	03/16/16
32	MW-21A-~~031516-WG-95~~	1603049-32	Water	03/15/16
33	MW-22A-~~031516-WG-55~~	1603049-33	Water	03/15/16
34	MW-23A-~~031516-WG-94~~	1603049-34	Water	03/15/16
35	MW-24B-~~031616-WG-150~~ D4	1603049-35	Water	03/16/16
36	MW-25B-~~031516-WG-150~~ D1	1603049-36	Water	03/15/16
37	MW-26B-~~031516-WG-150~~	1603049-37	Water	03/15/16
38	MW-27B-~~031516-WG-150~~	1603049-38	Water	03/15/16
39	MW-28B-~~031516-WG-150~~	1603049-39	Water	03/15/16
40	MW-31A-~~031616-WG-94~~**	1603049-40**	Water	03/16/16
41	MW-32B-~~031616-WG-150~~	1603049-41	Water	03/16/16
42	MW-32C-~~031616-WG-231~~	1603049-42	Water	03/16/16
43	MW-33B-~~031616-WG-157~~	1603049-43	Water	03/16/16
44	MW-34B-~~031616-WG-149~~	1603049-44	Water	03/16/16
45	MW-35B-~~031616-WG-165~~	1603049-45	Water	03/16/16
46	EW-01R-~~031516-WG~~	1603049-46	Water	03/15/16
47	EW-02-~~031516-WG~~	1603049-47	Water	03/15/16
48	MW-401-~~150316~~**	1603049-48**	Water	03/15/16

LDC #: 36148A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 04/08/16
SDG #: 16078G ADR/IV Page: 2 of 2
Laboratory: USEPA Region 9 Laboratory Reviewer: JVG
2nd Reviewer: SM

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
49 4	MW-401-~~140316~~ 1Q16	1603049-49	Water	03/14/16
50 5	MW-401-~~160316~~	1603049-50	Water	03/16/16
51 5	~~DUP-1~~ MW-75B-1Q16 D1	1603049-51	Water	03/15/16
-M 52 5/6	~~DUP-2~~ MW-95A-1Q16 D2	1603049-52	Water	03/15/16
53 3	~~DUP-3~~ MW-80A-1Q16 D3	1603049-53	Water	03/16/16
54 3	MW-301-~~160316~~** 1Q16	1603049-54**	Water	03/16/16
55 3	~~DUP-4~~ MW-76B-1Q16 D4	1603049-55	Water	03/16/16
56 1	MW-05A-~~031516-WG-75~~MS 1Q16	1603049-07MS	Water	03/15/16
57 1	MW-05A-~~031516-WG-75~~MSD	1603049-07MSD	Water	03/15/16
58 2	MW-20A-~~031616-WG-81~~MS	1603049-29MS	Water	03/16/16
59 2	MW-20A-~~031616-WG-81~~MSD	1603049-29MSD	Water	03/16/16
60 4	MW-25B-~~031616-WG-150~~MS	1603049-36MS	Water	03/15/16
61 4	MW-25B-~~031516-WG-150~~MSD	1603049-36MSD	Water	03/15/16
62				
63				
64				
65				

Notes:

1	B16C091-BLK1							
2	B16C111							
HP 3	B16C119							
4	B16C122							
5	B16C131							
HP 6	B16C136							

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 #: 36198A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 2
Reviewer: JVG
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
	03/23/16	ICAL-HP5973H	T	22.75	39, 53-55, B16C119-BK1 (ND+Det)	J/UJ/P
			X	32.10	↓	↓
			MMM	21.34	↓	↓

INICAL.wpd

LDC #: 36148 A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

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

METHOD: GC/MS VOA (EPA Method 524.3)

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

(Y) N N/A Was an initial calibration verification standard analyzed after each calibration 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
AP	03/24/16	S16C083-SCV1	JJ (-)	33	39, 53-55, B16C119-BLK1 (ND + Det)	J-/UJ/P

LDC #: 36148 A1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS VOA (EPA Method 524.3)
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
	03/21/16	S16C067-CCV1	JJ (+)	43.9	1-12, 56,57, B16C091-Blk1	(ND) J+det/P
	03/23/16	S16C088-CCV1	F (-)	32.4	23, 25-28, 30-36, 49	(ND+Det) J-/UJ/P
			M (-)	31.8	60,61, B16C122-Blk1	
	03/24/16	S16093-CCV1	OO (+)	42.1	39, 53-55, B16C119-Blk1	(ND) J+det/P

CONCAL.wpd

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Modesto March 2016 GW Monitoring

LDC Report Date: May 2, 2016

Parameters: Volatiles

Validation Level: Level IV

Laboratory: USEPA Region 9 Laboratory

Sample Delivery Group (SDG): 16078G

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-07A-1Q16	1603049-09	Water	03/15/16
MW-16A-1Q16	1603049-20	Water	03/15/16
MW-19A-1Q16	1603049-27	Water	03/16/16
MW-31A-1Q16	1603049-40	Water	03/16/16
MW-402-1Q16	1603049-48	Water	03/15/16
MW-301-1Q16	1603049-54	Water	03/14/16

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
03/23/16	Dibromochloromethane Bromoform Naphthalene	22.75 32.10 21.34	MW-301-1Q16	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P

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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
03/24/16	Dichlorodifluoromethane	33	MW-301-1Q16	UJ (all non-detects)	P

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
03/21/16	Dichlorodifluoromethane	43.9	MW-07A-1Q16	NA	-
03/23/16	Acetone 2-Butanone	32.4 31.8	MW-19A-1Q16	J- (all detects) UJ (all non-detects) J- (all detects) UJ (all non-detects)	P
03/24/16	2,2-Dichloropropane	42.1	MW-301-1Q16	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

Sample MW-301-1Q16 was identified a trip blank. No contaminants were found.

Samples MW-402-1Q16 and MW-401-160316 were identified as field blanks. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
MW-402-1Q16	03/15/16	Chloroform	4.0 ug/L	MW-07A-1Q16 MW-16A-1Q16
MW-403-1Q16	03/16/16	Chloroform	4.0 ug/L	MW-19A-1Q16 MW-31A-1Q16

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
MW-07A-1Q16	Chloroform	2.8 ug/L	2.8U ug/L
MW-16A-1Q16	Chloroform	2.2 ug/L	2.2U ug/L
MW-19A-1Q16	Chloroform	3.0 ug/L	3.0U ug/L

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

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were not within QC limits. No data were qualified since there were no associated samples in 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
B16C131-BSI (MW-31A-1Q16 MW-402-1Q16)	1,2-Dibromoethane	84 (85-114)	UJ (all non-detects)	P

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-16A-1Q16 MW-19A-1Q16	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, ICV and continuing calibration %D, LCS %R, and results below the RL, data were qualified as estimated in five samples.

Due to field blank contamination, data were qualified as not detected 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 March 2016 GW Monitoring
Volatiles - Data Qualification Summary - SDG 16078G

Sample	Compound	Flag	A or P	Reason
MW-301-1Q16	Dibromochloromethane Bromoform Naphthalene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P	Initial calibration (%RSD)
MW-301-1Q16	Dichlorodifluoromethane	UJ (all non-detects)	P	Initial calibration verification (%D)
MW-19A-1Q16	Acetone 2-Butanone	J- (all detects) UJ (all non-detects) J- (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
MW-31A-1Q16 MW-402-1Q16	1,2-Dibromoethane	UJ (all non-detects)	P	Laboratory control samples (%R)
MW-16A-1Q16 MW-19A-1Q16	All compounds reported below the RL.	J (all detects)	A	Compound quantitation

Modesto March 2016 GW Monitoring
Volatiles - Laboratory Blank Data Qualification Summary - SDG 16078G

No Sample Data Qualified in this SDG

Modesto March 2016 GW Monitoring
Volatiles - Field Blank Data Qualification Summary - SDG 16078G

Sample	Compound	Modified Final Concentration	A or P
MW-07A-1Q16	Chloroform	2.8U ug/L	A
MW-16A-1Q16	Chloroform	2.2U ug/L	A
MW-19A-1Q16	Chloroform	3.0U ug/L	A

LDC #: 36148A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 04/08/16
SDG #: 16078G ADR(IV) Page: 1 of 3
Laboratory: USEPA Region 9 Laboratory Reviewer: SVG
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	ICAL ≤ 20% ICV ≤ 30%
IV.	Continuing calibration	SW	CCV ≤ 30%
V.	Laboratory Blanks	A	~~Not reviewed for ADR validation~~.
VI.	Field blanks	SW	FB: 48, 50 TB: 54
VII.	Surrogate spikes	A	~~Not reviewed for ADR validation~~.
VIII.	Matrix spike/Matrix spike duplicates	SW	Not reviewed for ADR validation. No asstd sample, NA
IX.	Laboratory control samples	SW	~~Not reviewed for ADR validation~~. LCS
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	~~MW-01A-031616-WG-~~96	1603049-01	Water	03/16/16
2	MW-02A-031516-WG-91	1603049-02	Water	03/15/16
3	MW-03A-031516-WG-89	1603049-03	Water	03/15/16
4	MW-04A-031516-WG-83	1603049-04	Water	03/15/16
5	MW-04B-031516-WG-149	1603049-05	Water	03/15/16
6	MW-04C-031516-WG-232	1603049-06	Water	03/15/16
7	MW-05A-031516-WG-75	1603049-07	Water	03/15/16
8	~~MW-06A-031516-WG-~~75	1603049-08	Water	03/15/16
9	MW-07A-~~031516-WG-75**~~ 1016	1603049-09**	Water	03/15/16
10	~~MW-08A-031516-WG-75~~	1603049-10	Water	03/15/16
11	MW-09B-031516-WG-149	1603049-11	Water	03/15/16
12	MW-10A-031516-WG-74	1603049-12	Water	03/15/16
13	~~MW-10B-031516-WG-~~158	1603049-13	Water	03/15/16

LDC #: 36148A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 04/08/16

SDG #: 16078G ADR(IV) Page: 2 of 3

Laboratory: USEPA Region 9 Laboratory Reviewer: JVG

2nd Reviewer: SM

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	~~MW-10C-031516-WG-225~~	1603049-14	Water	03/15/16
15	MW-11A-031516-WG-80	1603049-15	Water	03/15/16
16	MW-12A-031616-WG-92	1603049-16	Water	03/16/16
17	MW-13A-031516-WG-87	1603049-17	Water	03/15/16
18	MW-14A-031516-WG-80	1603049-18	Water	03/15/16
19	~~MW-15A-031616-WG~~-96	1603049-19	Water	03/16/16
20 2	MW-16A-~~031516-WG-74~~ 1616**	1603049-20**	Water	03/15/16
21	~~MW-16B-031516-WG-134~~	1603049-21	Water	03/15/16
22	MW-16C-~~031516-WG-~~231	1603049-22	Water	03/15/16
23	MW-17A-031416-WG-82	1603049-23	Water	03/14/16
24	MW-17B-031416-WG-134	1603049-24	Water	03/14/16
25	MW-17C-031416-WG-227	1603049-25	Water	03/14/16
26	~~MW-18A-031616-WG~~-61	1603049-26	Water	03/16/16
27 4	MW-19A-~~031616-WG-96~~ 1616**	1603049-27**	Water	03/16/16
28	~~MW-19B1-031616-WG-142~~	1603049-28	Water	03/16/16
29	MW-20A-031616-WG-81	1603049-29	Water	03/16/16
30	MW-20B-031616-WG-157	1603049-30	Water	03/16/16
31	MW-20C-031616-WG-230	1603049-31	Water	03/16/16
32	MW-21A-031516-WG-95	1603049-32	Water	03/15/16
33	MW-22A-031516-WG-55	1603049-33	Water	03/15/16
34	MW-23A-031516-WG-94	1603049-34	Water	03/15/16
35	MW-24B-031616-WG-150	1603049-35	Water	03/16/16
36	MW-25B-031516-WG-150	1603049-36	Water	03/15/16
37	MW-26B-031516-WG-150	1603049-37	Water	03/15/16
38	MW-27B-031516-WG-150	1603049-38	Water	03/15/16
39	~~MW-28B-031516-WG~~-150	1603049-39	Water	03/15/16
40 5	MW-31A-~~031616-WG-94~~ 1616**	1603049-40**	Water	03/16/16
41	~~MW-32B-031616-WG-150~~	1603049-41	Water	03/16/16
42	MW-32C-031616-WG-231	1603049-42	Water	03/16/16
43	MW-33B-031616-WG-157	1603049-43	Water	03/16/16
44	MW-34B-031616-WG-149	1603049-44	Water	03/16/16
45	MW-35B-031616-WG-163	1603049-45	Water	03/16/16
46	EW-01R-031516-WG	1603049-46	Water	03/15/16
47	~~EW-02-031516-WG~~	1603049-47	Water	03/15/16
48 5	MW-40~~2-150316~~ 2-1616**	1603049-48**	Water	03/15/16

LDC #: 36148A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 04/08/16
SDG #: 16078G ADR IV Page: 3 of 3
Laboratory: USEPA Region 9 Laboratory Reviewer: JVG
2nd Reviewer: Sm

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
49	~~MW-401-140316~~	1603049-49	Water	03/14/16
50	MW-401-160316	1603049-50	Water	03/16/16
51	DUP-1	1603049-51	Water	03/15/16
52	DUP-2	1603049-52	Water	03/15/16
53	~~DUP-3~~	1603049-53	Water	03/16/16
54 3	MW-301-~~160316~~** 160316	1603049-54**	Water	03/~~16~~ 14/16
55	~~DUP-4~~	1603049-55	Water	03/16/16
56 1	~~MW-05A-031516-WG-75MS~~	1603049-07MS	Water	03/15/16
57 1	MW-05A-031516-WG-75MSD	1603049-07MSD	Water	03/15/16
58 2	MW-20A-031616-WG-81MS	1603049-29MS	Water	03/16/16
59 2	MW-20A-031616-WG-81MSD	1603049-29MSD	Water	03/16/16
60 4	MW-25B-031516-WG-150MS	1603049-36MS	Water	03/15/16
61 4	~~MW-25B-031516-WG-150MSD~~	1603049-36MSD	Water	03/15/16
62				
63				
64				
65				

Notes:

1	~~B6~~ B16C091 - Blk1							
2	B16C111							
HP 3	B16C119							
4	B16C122							
5	B16C131							
HP 6	B16C136							

LDC #: 36148 A1

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
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 #: 36148A1

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer: SM

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 ± 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 #: 36148 A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: JVG
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
	03/23/16	ICAL - HP5973H	T	22.75	54, B16C119-BLK1 (ND)	J/UJ/P
			X	32.10	↓	↓
			MMM	21.34	↓	↓

LDC #: 36148 A 1

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

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

METHOD: GC/MS VOA (EPA Method 524.3)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Was an initial calibration verification standard analyzed after each calibration 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
	07/24/16	S16C083-SCV1	JJ (-)	33	54, B16C119-BLK1	(ND) J-/UJ

ICV.wpd

LDC #: 36148 A1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: JVG
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method 524.3)
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
	03/21/16	S16C067-CCV1	JJ (+)	43.9	9, B16C091-BLK1 (ND)	J+ dets /P
	03/23/16	S16C088-CCV	F (-)	32.4	27, B16C122-BLK1 (ND+Det)	J-/UJ/P
			M (-)	31.8	↓	↓ ↓
	03/24/16	S16093-CCV	OO (+)	42.1	54, B16C119-BLK1 (ND)	J+dets /P

CONCAL.wpd

LDC #: 36148A1

VALIDATION FINDINGS WORKSHEET
Field Blanks

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

METHOD: GC/MS VOA (EPA Method 524.2)
Y N N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 03/15/16
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other:_____ Associated Samples: 9, 20

Compound	Blank ID	Sample Identification								
	48		9	20						
K	4.0		2.8/U	2.2/U						

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 03/16/16
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other:_____ Associated Samples: 27, 40

Compound	Blank ID	Sample Identification								
	50		27							
K	4.0		3.0/U							

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 36148 A1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: JVG
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 analyzed for this SDG?
Y N N/A Was a LCS analyzed every 20 samples?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	B16C131-BS1	TT	84 (85-114)	( )	( )	4P, 4B, B16C131-BLK1 (ND)	J-/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

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

LDC #: 36148A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method 524.2)

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of Compound
C_x = Concentration of compound,
S= Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 5 std)	Recalculated RRF (RRF 5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL AG5975DV	3/2/2016	Chloroform (IS1)	3.806	3.806	3.834	3.835	3.50	3.51
			Trichloroethene (IS2)	0.266	0.266	0.270	0.270	3.14	3.17
			Tetrachloroethene (IS3)	0.387	0.387	0.406	0.406	4.55	4.58
2	ICAL HP5973H	3/23/2016	Chloroform (IS1)	4.490	4.490	4.392	4.392	4.57	4.57
			Trichloroethene (IS2)	0.250	0.250	0.247	0.247	6.22	6.26
			Tetrachloroethene (IS3)	0.394	0.394	0.391	0.392	7.99	7.94

LDC # 36148A1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: JVG
2nd Reviewer: [illegible]

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 = (Ax)(Cis)/(Ais)(Cx)

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

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	S16C067-CCV1_B16C091 AG5975DV	3/21/2016	Chloroform (IS1)	3.834	3.839	3.839	0.1	0.1
			Trichloroethene (IS2)	0.270	0.271	0.271	0.4	0.4
			Tetrachloroethene (IS3)	0.406	0.383	0.383	5.7	5.7
2	S16C078-CCV1_B16C111 AG5975DV	3/22/2016	Chloroform (IS1)	3.834	3.837	3.837	0.1	0.1
			Trichloroethene (IS2)	0.270	0.269	0.269	0.4	0.4
			Tetrachloroethene (IS3)	0.406	0.390	0.390	3.9	3.9
3	S16C088-CCV1_B16C122 AG5975DV	3/23/2016	Chloroform (IS1)	3.834	3.821	3.821	0.3	0.3
			Trichloroethene (IS2)	0.270	0.270	0.270	0.0	0.0
			Tetrachloroethene (IS3)	0.406	0.420	0.420	3.4	3.4
4	S16C092-CCV1_B16C131 AG5975DV	3/24/2016	Chloroform (IS1)	3.834	3.510	3.510	8.5	8.5
			Trichloroethene (IS2)	0.270	0.263	0.263	2.6	2.6
			Tetrachloroethene (IS3)	0.406	0.406	0.406	0.0	0.0
5	S16C093-CCV1_B16C119 HP5973H	3/24/2016	Chloroform (IS1)	4.392	4.262	4.262	3.0	3.0
			Trichloroethene (IS2)	0.247	0.239	0.239	3.2	3.2
			Tetrachloroethene (IS3)	0.391	0.387	0.387	1.0	1.0

LDC #: 36148A1

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: JVG
2nd reviewer: SM

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: 9

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8	5.00	5.04	101	101	0
Bromofluorobenzene		4.79	96	96	
1,2-Dichlorobenzene-d4		4.88	98	98	
~~Dibromofluoromethane~~ 1,2-DCE-d4		4.89	98	98	

Sample ID:

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

Sample ID:

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

Sample ID:

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

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LDC #: 36148 A1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JVG
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSDC I * 2/(MSC + MSDC) MSC = Matrix spike percent recovery MSDC = Matrix spike duplicate percent recovery

MS/MSD sample: 58 / 59

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
1,1-Dichloroethene	5.00	5.00	0	6.93	6.94	139	139	139	139	0.1	0.14
Trichloroethene				5.76	5.78	115	115	116	116	0.3	0.35
Benzene				5.30	5.35	106	106	107	107	0.9	0.94
Toluene				5.16	5.48	103	103	110	110	6	6
Chlorobenzene				5.31	5.5 ✓	106	106	110	110	4	4

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

LDC #: 36148A1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: JVG
2nd Reviewer: [illegible]

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 LCS - LCSD I * 2/(LCS + LCSD)

LCS = Laboraotry control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS ID: B16C111-BS1

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/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	5.18	NA	104	104				
Trichloroethene			4.98		100	100				
Benzene			4.85		97	97				
Toluene			4.60		92	92				
Chlorobenzene			4.91		98	98				

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 #: 36148 A1

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: JVG
2nd reviewer: SM

METHOD: GC/MS VOA (EPA Method 524.2)

Compound results reported with a positive detect were recalculated and verified using the following equation:

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

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 purged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 9, Chloroform

$$\text{Conc.} = \frac{(52435)(5.0)(\quad)(\quad)}{(25406)(3.834)(\quad)(\quad)}$$

= 2.794

≈ 2.8 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration ( )	Acceptable (Y/N)
	9	Chloroform	2.8		

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

May 4, 2016

SUBJECT: Modesto March 2016 SVE Monitoring, Data Validation

Dear Mr. McGuire,

Enclosed are the revised validation reports for the fraction listed below. These SDGs were received on April 7, 2016. Attachment 1 is a summary of the sample that was reviewed for each analysis.

LDC Project #36147:

SDG #	**Fraction**
16078E, 16078F	Volatiles

- Client Sample IDs revised at clients request.

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

Sincerely,

Shauna McKellar
Project Manager/Chemist

Data Validation Report
Modesto March 2016 SVE Monitoring

SDGs: 16078E

Prepared for

Rore, Inc.
5151 Shoreham Place, Suite 260
San Diego, CA 92122

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, CA 92010

April 28, 2016

INTRODUCTION

This Data Validation Report (DVR) presents Level III and Level IV data validation results for samples collected during the March 2016 sampling period. Data validation was performed in accordance with the US EPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (CLPNFG) (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 TO-15

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. Level III Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which Level IV validation was performed are presented in Enclosure II.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, laboratory blanks, laboratory duplicates (DUP), laboratory control samples (LCS), field duplicate samples and internal standards. Approximately 33 percent of samples were subjected to Level IV evaluation as indicated in Attachment 1, which comprised a review 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

The canisters were properly pressurized and handled.

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 were met with the following exceptions:

SDG/ Method	Date	Compound	%RSD (Limits)	Associated Samples	Flag	A or P
16078E/ TO-15	03/23/16	1,2,4-Trichlorobenzene	36.38 (≤30.0)	All samples in SDG 16078E	UJ (all non-detects)	P

All criteria for the initial calibration verifications were met.

IV. Continuing Calibration

All criteria for the continuing calibration were met.

V. Laboratory Blanks

Laboratory blanks were performed as required by the method. No contaminant concentrations were detected in the laboratory blanks.

Canister blank analyses were performed for every sample canister. No contaminant concentrations were found in the canister blanks.

VI. Field Blank Samples

No field blanks were identified in these SDGs.

VII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analysis was performed on associated project samples. Results were within QC limits.

VIII. Laboratory Control Samples

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

IX. Field Duplicate Samples

One field duplicate pair was collected and analyzed for VOCs. The field duplicate result comparisons are provided in Enclosure I.

X. Internal Standards

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

XI. 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.

XII. 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 six samples.

Due to results below the RL, data were qualified as estimated in five 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
14-Mar-2016	931-SS-01-1Q16	1603047-01	N	None	TO-15	III
14-Mar-2016	939-SS-02-1Q16	1603047-02	N	None	TO-15	III
14-Mar-2016	939-SS-01-1Q16	1603047-03	N	None	TO-15	III
14-Mar-2016	939-SS-101-1Q16	1603047-04	FD	None	TO-15	III
14-Mar-2016	941-SS-01-1Q16	1603047-05	N	None	TO-15	IV
14-Mar-2016	941-SS-01-1Q16DUP	B16C134-DUP1	DUP	None	TO-15	IV
14-Mar-2016	OSC-3-1Q16	1603047-06	N	None	TO-15	IV

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: 16078E **Laboratory: FALSE**

EDD Filename: 16078E_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SS_102215**

Method Category: **VOA**

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

Sample ID: **931-SS-01-1Q16** ***Collected:*** **3/14/2016 11:15:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2.04**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRIMETHYLBENZENE	8	J,C1	5	MDL	10	MRL	ug/m^3	J	RI
m&p-Xylene	10	J,C1	9	MDL	20	MRL	ug/m^3	J	RI
1,2,4-TRICHLOROBENZENE	20	J,U,C3	8	MDL	20	MRL	ug/m^3	UJ	IcRsd

Sample ID: **939-SS-01-1Q16** ***Collected:*** **3/14/2016 12:30:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.94**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	10	J,U,C3	7	MDL	10	MRL	ug/m^3	UJ	IcRsd
METHYLENE CHLORIDE	5	J,C1	3	MDL	7	MRL	ug/m^3	J	RI

Sample ID: **939-SS-02-1Q16** ***Collected:*** **3/14/2016 12:15:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2.04**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	20	J,U,C3	8	MDL	20	MRL	ug/m^3	UJ	IcRsd

Sample ID: **939-SS-101-1Q16** ***Collected:*** **3/14/2016 12:30:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	10	J,U,C3	7	MDL	10	MRL	ug/m^3	UJ	IcRsd
METHYLENE CHLORIDE	5	J,C1	3	MDL	7	MRL	ug/m^3	J	RI
TOLUENE	4	J,C1	4	MDL	8	MRL	ug/m^3	J	RI

Sample ID: **941-SS-01-1Q16** ***Collected:*** **3/14/2016 4:44:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.49**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	10	J,U,C3	6	MDL	10	MRL	ug/m^3	UJ	IcRsd
METHYLENE CHLORIDE	3	J,C1	3	MDL	5	MRL	ug/m^3	J	RI
TRICHLOROETHENE	5	J,C1	4	MDL	8	MRL	ug/m^3	J	RI

Sample ID: **OSC-3-1Q16** ***Collected:*** **3/14/2016 5:05:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.49**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	10	J,U,C3	6	MDL	10	MRL	ug/m^3	UJ	IcRsd

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078E **Laboratory: FALSE**

EDD Filename: 16078E_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SS_102215**

Method Category: **VOA**

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

Sample ID: **OSC-3-1Q16** ***Collected:*** **3/14/2016 5:05:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.49**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
TRICHLOROETHENE	7	J,C1	4	MDL	8	MRL	ug/m^3	J	RI

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078E **Laboratory: FALSE**

EDD Filename: 16078E_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SS_102215**

Reason Code Legend

Reason Code	*Description*
IcRsd	Initial Calibration Percent Relative Standard Deviation
Ld	Laboratory Duplicate Precision
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

16078E

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 16078E **Laboratory: FALSE**

EDD Filename: 16078E_VOCs_Revised SEDD_3May2016 **eQAPP Rore_Modesto_Rebound_SS_102215**

Method: TO-15
Matrix: Air

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
941-SS-01-1Q16DUP (941-SS-01-1Q16)	TETRACHLOROETHENE	54	20.00	No Qual, <5x RL

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Reporting Limit Outliers

Lab Reporting Batch ID: 16078E **Laboratory: FALSE**

EDD Filename: 16078E_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SS_102215**

Method: **TO-15**

Matrix: **Air**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
931-SS-01-1Q16	1,2,4-TRIMETHYLBENZENE m&p-Xylene	J,C1 J,C1	8 10	10 20	MRL MRL	ug/m^3 ug/m^3	J (all detects)
939-SS-01-1Q16	METHYLENE CHLORIDE	J,C1	5	7	MRL	ug/m^3	J (all detects)
939-SS-101-1Q16	METHYLENE CHLORIDE TOLUENE	J,C1 J,C1	5 4	7 8	MRL MRL	ug/m^3 ug/m^3	J (all detects)
941-SS-01-1Q16	METHYLENE CHLORIDE TRICHLOROETHENE	J,C1 J,C1	3 5	5 8	MRL MRL	ug/m^3 ug/m^3	J (all detects)
OSC-3-1Q16	TRICHLOROETHENE	J,C1	7	8	MRL	ug/m^3	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 16078E **Laboratory: FALSE**

EDD Filename: 16078E_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SS_102215**

Method: TO-15
Matrix: Air

Analyte	Concentration (ug/m^3)		Sample RPD	eQAPP RPD	Flag
	939-SS-01-1Q16	939-SS-101-1Q16			
METHYLENE CHLORIDE	5	5	0	1.00	
TETRACHLOROETHENE	70	50	33	1.00	No Qualifiers Applied
TOLUENE	7 U	4	200	1.00	

LDC #: 36147A48bW

VALIDATION COMPLETENESS WORKSHEET

ADR/IV

SDG #: 16078E

Laboratory: USEPA Region 9 Laboratory

Date: 04/08/16

Page: 1 of 1

Reviewer: SVC

2nd Reviewer: SM

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

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW A	ICAL ≤ 30% ICV ≤ 30%
IV.	Continuing calibration	A	CCV ≤ 30%
V.	Laboratory Blanks	N	Not reviewed for ADR validation.
VI.	Field blanks		
VII.	Surrogate spikes		Not reviewed for ADR validation.
VIII.	Sample duplicates		Not reviewed for ADR validation.
IX.	Laboratory control samples		Not reviewed for ADR validation.
X.	Field duplicates	✓	
XI.	Internal standards	A	Not reviewed for ADR validation.
XII.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation.
XIII.	Target compound identification		Not reviewed for ADR validation.
XIV.	System performance		Not reviewed for ADR validation.
XV.	Overall assessment of data	✓	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	931-SS-01-1Q16 SM	1603047-01	Air	03/14/16
2	939-SS-02-1Q16	1603047-02	Air	03/14/16
3	939-SS-01-B1Q16	1603047-03	Air	03/14/16
4	939-SS-01-B1Q16	1603047-04	Air	03/14/16
5	941-SS-01** 1Q16	1603047-05**	Air	03/14/16
6	OSC-3** 1Q16	1603047-06**	Air	03/14/16
7	941-SS-01~~DUP~~ 1Q16DUP	1603047-05DUP	Air	03/14/16
8				
9				
10				
11				

Notes:

–	B16C134-Blk1						

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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 #: 36147 A48b

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

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

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) ≤ 30%?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	03/23/16	ICAL-AG5973	N kkk	36.38		All (ND)	J/UJ (P)

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Modesto March 2016 SVE Monitoring

LDC Report Date: May 4, 2016

Parameters: Volatiles

Validation Level: Level IV

Laboratory: USEPA Region 9 Laboratory

Sample Delivery Group (SDG): 16078E

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
941-SS-01-1Q16	1603047-05	Air	03/14/16
OSC-3-1Q16	1603047-06	Air	03/14/16
941-SS-01-1Q16DUP	1603047-05DUP	Air	03/14/16

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 TO-15

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-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): 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

The canisters were properly pressurized and handled.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 24 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 30.0% for all compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
03/23/16	1,2,4-Trichlorobenzene	36.38	All samples in SDG 16078E	UJ (all non-detects)	P

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.

V. Laboratory Blanks

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

Canister blank analyses were performed for every sample canister. No contaminants were found in the canister blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Duplicates

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

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

XI. 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
All samples in SDG 16078E	All compounds reported below the RL.	J (all detects)	A

XII. Target Compound Identifications

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. 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 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.

Modesto March 2016 SVE Monitoring
Volatiles - Data Qualification Summary - SDG 16078E

Sample	Compound	Flag	A or P	Reason
941-SS-01-1Q16 OSC-3-1Q16	1,2,4-Trichlorobenzene	UJ (all non-detects)	P	Initial calibration (%RSD)
941-SS-01-1Q16 OSC-3-1Q16	All compounds reported below the RL.	J (all detects)	A	Compound quantitation

Modesto March 2016 SVE Monitoring
Volatiles - Laboratory Blank Data Qualification Summary - SDG 16078E

No Sample Data Qualified in this SDG

Modesto March 2016 SVE Monitoring
Volatiles - Field Blank Data Qualification Summary - SDG 16078E

No Sample Data Qualified in this SDG

LDC #: 36147A48b

VALIDATION COMPLETENESS WORKSHEET

SDG #: 16078E

ADR/IV

Laboratory: USEPA Region 9 Laboratory

Date: 04/08/16
Page: 1 of 1
Reviewer: JVG
2nd Reviewer: SM

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

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW / A	ICAL ≤ 30% ICV ≤ 30%
IV.	Continuing calibration	A	CCV ≤ 30%
V.	Laboratory Blanks	A	~~Not reviewed for ADR validation.~~ (Canisters individually certified)
VI.	Field blanks	N	
VII.	Surrogate spikes	N	~~Not reviewed for ADR validation.~~
VIII.	Sample duplicates	A	Not reviewed for ADR validation. (<5x RL)
IX.	Laboratory control samples	A	~~Not reviewed for ADR validation.~~ LCS
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	~~931-SS-01~~ - 1016	1603047-01	Air	03/14/16
2	939-SS-02 - 1016	1603047-02	Air	03/14/16
3	939-SS-01 - 1016	1603047-03	Air	03/14/16
4	~~939-SS-01~~ - 1016	1603047-04	Air	03/14/16
5	941-SS-01** 1016	1603047-05**	Air	03/14/16
6	OSC-3** 1016	1603047-06**	Air	03/14/16
7	~~941-SS-01DUP~~ -1016DUP	1603047-05DUP	Air	03/14/16
8				
9				
10				
11				

Notes:

–	B16C134-BLK1						

LDC #: 36147 A48a

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer: SM

Method: Volatiles (EPA Method TO-15)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was canister pressure criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 24 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30%?	✓	✓		
IIIb. Initial calibration verificattion				
Was an initial calibration verification standard analyzed after every ICAL for each instrument?	✓			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 24 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?	✓			
V. Laboratory Blanks/Canister Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 24 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Was a canister blank analyzed for every canister?	✓			
Was there contamination in the canister blanks? If yes, please see the Canister Blanks validation completeness worksheet.		✓		
VI. Field Blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. Surrogate spikes (Optional)				
Were all surrogate percent recoveries (%R) within QC limits?			✓	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VIII. Laboratory Duplicate				
Was a laboratory duplicate analyzed for this SDG?	✓			
Were the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36147A48a

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer: CM

Validation Area	Yes	No	NA	Findings/Comments
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within ± 40% from the associated calibration standard?	✓			
Were retention times within ± 20.0 seconds from the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

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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 #: 36147A 48b

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

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

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) ≤ 30%?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	03/23/16	ICAL-AG5973N	KKK	36.38		All (ND)	J/UJ/P

LDC #: 36147A48a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer: [illegible]

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

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of Compound
C_x = Concentration of compound,
S= Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF 20ppbv	Recalculated RRF 20ppbv	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL AG5973N	3/23/2016	Dichloromethane (IS1)	1.070	1.070	1.040	1.040	11.16	11.15
			Trichloroethene (IS2)	0.425	0.425	0.369	0.369	15.24	15.25
			Tetrachloroethene (IS3)	1.371	1.371	1.069	1.069	23.56	23.57

LDC # 36147A48a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: JVG
2nd Reviewer: SM

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

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

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

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

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	032416N04 AG5973N	3/24/2016	Dichloromethane (IS1)	1.040	1.076	1.076	3.5	3.5
			Trichloroethene (IS2)	0.369	0.419	0.419	13.6	13.6
			Tetrachloroethene (IS3)	1.069	1.213	1.213	13.9	13.5

LDC #: 36147A48b

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: JVG
2nd reviewer: SM

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

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. 5, AA:

Conc. = $\frac{(448953)(22)(1.49)}{(2475020)(1069)(\quad)(\quad)}$

= 5.562 ppbV

ug/m³ = $\frac{(5.562)(165.85)}{24.45}$ = 37.73

≈ 40 ug/m³

#	Sample ID	Compound	Reported Concentration (ug/m³)	Calculated Concentration ( )	Qualification
	5	AA	40		

Data Validation Report
Modesto March 2016 SVE Monitoring

SDGs: 16078F

Prepared for

Rore, Inc.
5151 Shoreham Place, Suite 260
San Diego, CA 92122

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, CA 92010

May 4, 2016

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected during the March 2016 sampling period. Data validation was performed in accordance with the US EPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (CLPNFG) (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 TO-15

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. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, laboratory blanks, laboratory duplicates (DUP), laboratory control samples (LCS), field duplicate samples and internal standards.

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

The canisters were properly pressurized and handled.

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 were met with the following exceptions:

SDG/ Method	Date	Compound	%RSD (Limits)	Associated Samples	Flag	A or P
16078F/ TO-15	03/23/16	1,2,4-Trichlorobenzene	36.38 (≤30.0)	SVE-01-1Q16 SVE-04-1Q16 DP-05-031516-16 DP-05-031516-35 OSVE-10-1Q16 OSVE-11-1Q16 SVE-03-1Q16 SVE-02-1Q16 DP-06-031616-16	UJ (all non-detects)	P

All criteria for the initial calibration verifications were met.

IV. Continuing Calibration

All criteria for the continuing calibration were met.

V. Laboratory Blanks

Laboratory blanks were performed as required by the method. No contaminant concentrations were detected in the laboratory blanks.

Canister blank analyses were performed for every sample canister. No contaminant concentrations were found in the canister blanks.

VI. Field Blank Samples

No field blanks were identified in these SDGs.

VII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analysis was performed on associated project samples. Results were within QC limits.

VIII. Laboratory Control Samples

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

IX. Field Duplicate Samples

One field duplicate pair was collected and analyzed for VOCs. The field duplicate result comparisons are provided in Enclosure I.

X. Internal Standards

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

XI. 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.

XII. 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 nine samples.

Due to results below the RL, data were qualified as estimated in one sample.

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
15-Mar-2016	SVE-01-1Q16	1603048-01	N	None	TO-15	III
15-Mar-2016	SVE-04-1Q16	1603048-02	N	None	TO-15	III
15-Mar-2016	DP-05-031516-16	1603048-03	N	None	TO-15	III
15-Mar-2016	DP-05-031516-35	1603048-04	N	None	TO-15	III
15-Mar-2016	OSVE-10-1Q16	1603048-05	N	None	TO-15	III
15-Mar-2016	OSVE-10-1Q16DUP	B16D001-DUP1	DUP	None	TO-15	III
15-Mar-2016	OSVE-11-1Q16	1603048-06	N	None	TO-15	III
16-Mar-2016	SVE-03-1Q16	1603048-07	N	None	TO-15	III
16-Mar-2016	SVE-02-1Q16	1603048-08	N	None	TO-15	III
16-Mar-2016	DP-06-031616-16	1603048-09	N	None	TO-15	III
16-Mar-2016	DP-106-031616-16	1603048-10	FD	None	TO-15	III
16-Mar-2016	DP-06-031616-35	1603048-11	N	None	TO-15	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: 16078F **Laboratory: FALSE**

EDD Filename: 16078F_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SVMSVE_102215**

Method Category: **VOA**

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

Sample ID: **DP-05-031516-16** ***Collected:*** **3/15/2016 3:50:00 PM** ***Analysis Type:*** **Initial/TOT/TOT** ***Dilution:*** **1.92**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	1.9	J,U,C3	1.0	MDL	1.9	MRL	ppbv	UJ	IcRsd

Sample ID: **DP-05-031516-35** ***Collected:*** **3/15/2016 4:14:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.93**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	1.9	J,U,C3	1.0	MDL	1.9	MRL	ppbv	UJ	IcRsd

Sample ID: **DP-06-031616-16** ***Collected:*** **3/16/2016 11:25:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2.03**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	2.0	J,U,C3	1.0	MDL	2.0	MRL	ppbv	UJ	IcRsd

Sample ID: **OSVE-10-1Q16** ***Collected:*** **3/15/2016 4:46:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2.03**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	2.0	J,U,C3	1.0	MDL	2.0	MRL	ppbv	UJ	IcRsd

Sample ID: **OSVE-11-1Q16** ***Collected:*** **3/15/2016 5:05:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	2.0	J,U,C3	1.0	MDL	2.0	MRL	ppbv	UJ	IcRsd

Sample ID: **SVE-01-1Q16** ***Collected:*** **3/15/2016 11:21:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2.02**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	2.0	J,U,C3	1.0	MDL	2.0	MRL	ppbv	UJ	IcRsd

Sample ID: **SVE-02-1Q16** ***Collected:*** **3/16/2016 11:10:00 AM** ***Analysis Type:*** **Initial/TOT/TOT** ***Dilution:*** **1.92**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	1.9	J,U,C3	1.0	MDL	1.9	MRL	ppbv	UJ	IcRsd
TOLUENE	1.0	J,C1	1.0	MDL	1.9	MRL	ppbv	J	RI

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078F **Laboratory: FALSE**

EDD Filename: 16078F_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SVMSVE_102215**

Method Category: **VOA**

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

Sample ID: **SVE-03-1Q16** ***Collected:*** **3/16/2016 10:10:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.92**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	1.9	J,U,C3	1.0	MDL	1.9	MRL	ppbv	UJ	IcRsd

Sample ID: **SVE-04-1Q16** ***Collected:*** **3/15/2016 12:43:00 PM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	2.0	J,U,C3	1.0	MDL	2.0	MRL	ppbv	UJ	IcRsd

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078F **Laboratory: FALSE**

EDD Filename: 16078F_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SVMSVE_102215**

Reason Code Legend

Reason Code	*Description*
IcRsd	Initial Calibration Percent Relative Standard Deviation
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

16078F

Reporting Limit Outliers

Lab Reporting Batch ID: 16078F **Laboratory: FALSE**

EDD Filename: 16078F_VOCs_Revised SEDD_3May2016 **eQAPP Name: Rore_Modesto_Rebound_SVMSVE_102215**

Method: **TO-15**

Matrix: **Air**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SVE-02-1Q16	TOLUENE	J,C1	1.0	1.9	MRL	ppbv	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 16078F **Laboratory: FALSE**

EDD Filename: 16078F_VOCs_Revised SEDD_3May2016 **eQAPP Name:**

Method: TO-15
Matrix: Air

Analyte	Concentration (ppbv)		Sample RPD	eQAPP RPD	Flag
	DP-06-031616-16	DP-106-031616-16			
TETRACHLOROETHENE	28	9.6	98	1.00	No Qualifiers Applied

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

LDC #: 36147B48~~b~~a **VALIDATION COMPLETENESS WORKSHEET** Date: 04/05/16
SDG #: 16078F ADR Page: ___ of ___
Laboratory: USEPA Region 9 Laboratory Reviewer: GVG
2nd Reviewer: SM

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

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW / A	ICAV ≤ 30% ICV ≤ 30%
IV.	Continuing calibration	A	CCV ≤ 30%
V.	Laboratory Blanks	N	(canisters individually certified)
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Sample duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	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	1/2 SVE-01-1Q16 SM	1603048-01	Air	03/15/16
2	1/3 SVE-04-1Q16	1603048-02	Air	03/15/16
3	1/3 DP-05-S 031516-16	1603048-03	Air	03/15/16
4	1/3 DP-05-D 031516-35	1603048-04	Air	03/15/16
5	1/3 OSVE-10-1Q16	1603048-05	Air	03/15/16
6	1/3 OSVE-11-1Q16	1603048-06	Air	03/15/16
7	1/3 SVE-03-1Q16	1603048-07	Air	03/16/16
8	1/3 SVE-02-1Q16	1603048-08	Air	03/16/16
9	1 DP-06-S-S 031616-16	1603048-09	Air	03/16/16
10	2 DP-06-S-S 031616-16	1603048-10	Air	03/16/16
11	2/3 DP-06-D 031616-35	1603048-11	Air	03/16/16
12				
13	- 1 B16C134-BlK1			
	- 2 B16C140-			
	- 3 B16D001- (AA, K only)			

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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 #: 36147B48b

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

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

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) ≤ 30%?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	03/23/16	ICAL-AG5973N	kkk	36.38		All (ND) (except 10 11 MB2, MB3)	J / UJ / p

INICAL.wpd

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

May 3, 2016

SUBJECT: Modesto March 2016 SVE Monitoring, Data Validation

Dear Mr. McGuire,

Enclosed is the revised validation report for the fraction listed below. This SDG was received on March 31, 2016. Attachment 1 is a summary of the sample that was reviewed for each analysis.

LDC Project #36122:

SDG #	Fraction
16078D	Volatiles

- Client Sample IDs revised at the clients request.

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

Sincerely,

Shauna McKellar
Project Manager/Chemist

Data Validation Report
Modesto March 2016, SVE Monitoring

SDG: 16078D

Prepared for

Rore, Inc.
5151 Shoreham Place, Suite 260
San Diego, CA 92122

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, CA 92010

April 14, 2016

INTRODUCTION

This Data Validation Report (DVR) presents Level III and Level IV data validation results for samples collected during the March 2016 sampling period. Data validation was performed in accordance with the US EPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (CLPNFG) (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 TO-15 in Selected Ion Monitoring (SIM) mode

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. Level III Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which Level IV validation was performed are presented in Enclosure II.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, laboratory blanks, laboratory duplicates (DUP), laboratory control samples (LCS), field duplicate samples and internal standards. Approximately 17 percent of samples were subjected to Level IV evaluation as indicated in Attachment 1, which comprised a review 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

The canisters were properly pressurized and handled.

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 were met.

All criteria for the initial calibration verifications were met with the following exceptions:

SDG/ Method	Date	Compound	%D (Limits)	Associated Samples	Flag	A or P
16078D/ TO-15 SIM	03/22/16	Trichloroethene	34 (≤30)	All samples in SDG 16078D	J- (all detects) UJ (all non-detects)	P

IV. Continuing Calibration

All criteria for the continuing calibration were met.

V. Laboratory Blanks

Laboratory blanks were performed as required by the method. No contaminant concentrations were detected in the laboratory blanks.

Canister blank analyses were performed for every sample canister. No contaminant concentrations were found in the canister blanks.

VI. Field Blank Samples

No field blanks were identified in this SDG.

VII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analysis was performed on associated project samples. Results were within QC limits.

VIII. 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 two LCS for VOCs. No data were qualified due to high %Rs since the associated results were non-detected. The details are provided in Enclosure I.

IX. Field Duplicate Samples

One field duplicate pair was collected and analyzed for VOCs. The field duplicate result comparisons are provided in Enclosure I.

X. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

SDG/ Method	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
16078D/ TO-15 SIM	931-IA-01-1Q16	Chlorobenzene-d5	201522 (85268-198960)	Toluene	J (all detects)	A
16078D/ TO-15 SIM	931-IA-101-1Q16	1,4-Difluorobenzene	242690 (99427-231995)	Benzene 1,2-Dichloroethane Trichloroethene 1,2-Dichloropropane	J (all detects) UJ (all non-detects)	A
16078D/ TO-15 SIM	939-IA-01-1Q16	1,4-Difluorobenzene Chlorobenzene-d5	247403 (99427-231995) 201893 (85268-198960)	Benzene 1,2-Dichloroethane Trichloroethene 1,2-Dichloropropane Tetrachloroethene 1,2-Dibromoethane Chlorobenzene Ethylbenzene o-Xylene Styrene 1,2-Dichlorobenzene	J (all detects) UJ (all non-detects)	A

The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable.

XI. 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.

XII. 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 verification %D and results below the RL, data were qualified as estimated in six samples.

Due to internal standards area, 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.

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
14-Mar-2016	941-IA-01-1Q16	1603046-01	N	None	TO-15 SIM	III
14-Mar-2016	941-IA-01-1Q16DUP	B16C120-DUP1	DUP	None	TO-15 SIM	III
14-Mar-2016	941-IA-02-1Q16	1603046-02	N	None	TO-15 SIM	III
14-Mar-2016	939-IA-01-1Q16	1603046-06	N	None	TO-15 SIM	III
14-Mar-2016	939-IA-03-1Q16	1603046-03	N	None	TO-15 SIM	IV
14-Mar-2016	931-IA-01-1Q16	1603046-04	N	None	TO-15 SIM	III
14-Mar-2016	931-IA-101-1Q16	1603046-05	FD	None	TO-15 SIM	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: 16078D **Laboratory: FALSE**

EDD Filename: 16078D_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_Rebound_IA_102215**

Method Category: **VOA**

Method: **TO-15 SIM** ***Matrix:*** **Air**

Sample ID: **931-IA-01-1Q16** ***Collected:*** **3/14/2016 10:18:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.49**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.52	J,C2	0.34	MDL	0.69	MRL	ug/m^3	J	RI
STYRENE	0.44	J,C1	0.42	MDL	0.85	MRL	ug/m^3	J	RI
TRICHLOROETHENE	1.1	J,U,C3	0.53	MDL	1.1	MRL	ug/m^3	UJ	Icv

Sample ID: **931-IA-01-1Q16** ***Collected:*** **3/14/2016 10:18:00 AM** ***Analysis Type:*** **Reinjection-01/TOT** ***Dilution:*** **1.49**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TOLUENE	14	J,Q1	1.1	MDL	2.2	MRL	ug/m^3	J	Is

Sample ID: **931-IA-101-1Q16** ***Collected:*** **3/14/2016 10:18:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.49**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2-DICHLOROETHANE	0.80	J,U,Q1	0.40	MDL	0.80	MRL	ug/m^3	UJ	Is
1,2-DICHLOROPROPANE	0.92	J,U,Q1	0.46	MDL	0.92	MRL	ug/m^3	UJ	Is
BENZENE	1.5	J,Q1	0.32	MDL	0.63	MRL	ug/m^3	J	Is
METHYLENE CHLORIDE	0.52	J,C1	0.34	MDL	0.69	MRL	ug/m^3	J	RI
STYRENE	0.43	J,C1	0.42	MDL	0.85	MRL	ug/m^3	J	RI
TRICHLOROETHENE	1.1	J,U,C3,Q1	0.53	MDL	1.1	MRL	ug/m^3	UJ	Icv, Is

Sample ID: **939-IA-01-1Q16** ***Collected:*** **3/14/2016 10:05:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.49**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2-DIBROMOETHANE	1.5	J,U,Q1	0.76	MDL	1.5	MRL	ug/m^3	UJ	Is
1,2-DICHLOROBENZENE	1.2	J,U,Q1	0.60	MDL	1.2	MRL	ug/m^3	UJ	Is
1,2-DICHLOROETHANE	0.80	J,U,Q1	0.40	MDL	0.80	MRL	ug/m^3	UJ	Is
1,2-DICHLOROPROPANE	0.92	J,U,Q1	0.46	MDL	0.92	MRL	ug/m^3	UJ	Is
BENZENE	3.1	J,Q1	0.32	MDL	0.63	MRL	ug/m^3	J	Is
CARBON TETRACHLORIDE	0.75	J,C1	0.62	MDL	1.2	MRL	ug/m^3	J	RI
CHLOROBENZENE	0.91	J,U,Q1	0.46	MDL	0.91	MRL	ug/m^3	UJ	Is
ETHYLBENZENE	5.5	J,Q1	0.43	MDL	0.86	MRL	ug/m^3	J	Is
O-XYLENE	7.1	J,Q1	0.43	MDL	0.86	MRL	ug/m^3	J	Is
STYRENE	0.50	J,C1,Q1	0.42	MDL	0.85	MRL	ug/m^3	J	RI, Is
TETRACHLOROETHENE	1.3	J,U,Q1	0.67	MDL	1.3	MRL	ug/m^3	UJ	Is
TRICHLOROETHENE	1.1	J,U,C3,Q1	0.53	MDL	1.1	MRL	ug/m^3	UJ	Icv, Is

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078D **Laboratory: FALSE**

EDD Filename: 16078D_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_Rebound_IA_102215**

Method Category: **VOA**

Method: **TO-15 SIM** ***Matrix:*** **Air**

Sample ID: **939-IA-03-1Q16** ***Collected:*** **3/14/2016 10:10:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.48**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STYRENE	0.55	J	0.42	MDL	0.84	MRL	ug/m^3	J	RI
TRICHLOROETHENE	1.1	J,U,C3	0.53	MDL	1.1	MRL	ug/m^3	UJ	Icv

Sample ID: **941-IA-01-1Q16** ***Collected:*** **3/14/2016 9:54:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.48**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZENE	0.57	J,C1	0.31	MDL	0.63	MRL	ug/m^3	J	RI
HEXANE	0.52	J,C1	0.35	MDL	0.69	MRL	ug/m^3	J	RI
TRICHLOROETHENE	4.3	J,C3	0.53	MDL	1.1	MRL	ug/m^3	J-	Icv

Sample ID: **941-IA-02-1Q16** ***Collected:*** **3/14/2016 10:00:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1.49**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZENE	0.58	J,C1	0.32	MDL	0.63	MRL	ug/m^3	J	RI
HEXANE	0.67	J,C1	0.35	MDL	0.70	MRL	ug/m^3	J	RI
TRICHLOROETHENE	3.4	J,C3	0.53	MDL	1.1	MRL	ug/m^3	J-	Icv

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Data Qualifier Summary

Lab Reporting Batch ID: 16078D **Laboratory: FALSE**

EDD Filename: 16078D_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_Rebound_IA_102215**

Reason Code Legend

Reason Code	*Description*
Icv	Initial Calibration Verification Percent Difference Lower Estimation
Is	Internal Standard Estimation
Lcs	Laboratory Control Spike Upper Estimation
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

16078D

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 16078D **Laboratory: FALSE**

EDD Filename: 16078D_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_Rebound_IA_102215**

Method: **TO-15 SIM**
Matrix: **Air**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B16C120-BS1 (931-IA-01-1Q16 931-IA-101-1Q16 939-IA-01-1Q16 939-IA-03-1Q16 941-IA-01-1Q16 941-IA-02-1Q16)	METHYL TERT-BUTYL ETHER	114	-	63.00-111.00	-	METHYL TERT-BUTYL ETHER	J+ (all detects)
B16C124-BS1 (939-IA-03-1Q16)	HEXANE METHYL TERT-BUTYL ETHER TRANS-1,2-DICHLOROETHENE	128 127 110	- - -	66.00-115.00 63.00-111.00 61.00-108.00	- - -	HEXANE METHYL TERT-BUTYL ETHER TRANS-1,2-DICHLOROETHENE	J+(all detects)

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

Reporting Limit Outliers

Lab Reporting Batch ID: 16078D **Laboratory: FALSE**

EDD Filename: 16078D_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_Rebound_IA_102215**

Method: **TO-15 SIM**

Matrix: **Air**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
931-IA-01-1Q16	METHYLENE CHLORIDE STYRENE	J,C2 J,C1	0.52 0.44	0.69 0.85	MRL MRL	ug/m^3 ug/m^3	J (all detects)
931-IA-101-1Q16	METHYLENE CHLORIDE STYRENE	J,C1 J,C1	0.52 0.43	0.69 0.85	MRL MRL	ug/m^3 ug/m^3	J (all detects)
939-IA-01-1Q16	CARBON TETRACHLORIDE STYRENE	J,C1 J,C1, Q1	0.75 0.50	1.2 0.85	MRL MRL	ug/m^3 ug/m^3	J (all detects)
939-IA-03-1Q16	STYRENE	J	0.55	0.84	MRL	ug/m^3	J (all detects)
941-IA-01-1Q16	BENZENE HEXANE	J,C1 J,C1	0.57 0.52	0.63 0.69	MRL MRL	ug/m^3 ug/m^3	J (all detects)
941-IA-02-1Q16	BENZENE HEXANE	J,C1 J,C1	0.58 0.67	0.63 0.70	MRL MRL	ug/m^3 ug/m^3	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 16078D **Laboratory: FALSE**

EDD Filename: 16078D_VOCs_Revised SEDD_29April2016 **eQAPP Name: Rore_Modesto_Rebound_IA_102215**

Method: TO-15 SIM
Matrix: Air

Analyte	Concentration (ug/m^3)		Sample RPD	eQAPP RPD	Flag
	931-IA-01-1Q16	931-IA-101-1Q16			
BENZENE	1.5	1.5	0	1.00	No Qualifiers Applied
ETHYLBENZENE	2.8	2.7	4	1.00	
HEXANE	2.9	3.1	7	1.00	
m&p-Xylene	11	11	0	1.00	
METHYLENE CHLORIDE	0.52	0.52	0	1.00	
O-XYLENE	4.9	4.8	2	1.00	
STYRENE	0.44	0.43	2	1.00	
TOLUENE	14	16	13	1.00	

Project Name and Number: R16S39 - Modesto March 2016 SVE Monitoring

LDC #: 36122A48b

VALIDATION COMPLETENESS WORKSHEET

ADR/Level IV

SDG #: 16078D

Laboratory: USEPA Region 9 Laboratory

Date: 4/4/16

Page: 1 of 1

Reviewer: EJ

2nd Reviewer: KMC

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

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 / Δ	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A / SW	% RSD / ICV ≤ 30
IV.	Continuing calibration	Δ	CCV ≤ 30
V.	Laboratory Blanks / canister check per sample	A	Not reviewed for ADR validation.
VI.	Field blanks	N	
VII.	Surrogate spikes	N	Not reviewed for ADR validation.
VIII.	Sample duplicates	Δ	Not reviewed for ADR validation.
IX.	Laboratory control samples	SW/N	Not reviewed for ADR validation. LCS
X.	Field duplicates	N	
XI.	Internal standards Δ	~~SW~~	Not reviewed for ADR validation.
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for ADR validation.
XIII.	Target compound identification	Δ	Not reviewed for ADR validation.
XIV.	System performance	Δ	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	941-IA-01-1Q16 SW	1603046-01	Air	03/14/16
2	941-IA-02-1Q16	1603046-02	Air	03/14/16
3	939-IA-03** 1Q16 (2= Y1, CC)	1603046-03**	Air	03/14/16
4	931-IA-01-1Q16	1603046-04	Air	03/14/16
5	931-IA-01-D1Q16	1603046-05	Air	03/14/16
6	939-IA-01-1Q16	1603046-06	Air	03/14/16
7	941-IA-01~~DUP~~ -1Q16DUP	1603046-01DUP	Air	03/14/16
8				
9				
10	B16C120			
11	B16C124			

Notes:

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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. Dichloromethane
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 36122A48b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: AR

METHOD: GC/MS VOA (EPA Method TO-15)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Was an initial calibration verification standard analyzed after each ICAL for each instrument?
Y N N/A Were all percent differences (%D) ≤ 30%?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Associated Samples	Qualifications
-	3/22/16	ICV	S	34	All	J-/UJ/P ND +Det

LDC #: 36122A48b

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: FT
2nd Reviewer: SM

METHOD: GC/MS VOA (EPA Method TO-15)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Were all internal standard area counts within +/- 40% of the associated calibration standard?
Y N N/A Were the retention times of the internal standards within +/- 20 seconds of the retention times of the associated calibration standard?

#	Date	Lab ID/Reference	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		4	~~CBZ~~	201522 (85268-198960)	(Det)	J/UJ/A qual CC
		5	DFB	242690 (99427-231995)	(ND + Det)	J/UJ/A qual V, L, S, Q
		6	DFB	247403 (99427-231995)	(ND + Det)	J/UJ/A qual
			CBZ	201893 (85268-198960)		V, L, S, Q, AA, TT, DD, EE, SSS, FF, JJJ

IS1 (BCM) = Bromochloromethane IS2 (DFB) = 1,4-Difluorobenzene IS3 (CBZ) = Chlorobenzene-d5

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Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Modesto March 2016 SVE Monitoring

LDC Report Date: May 2, 2016

Parameters: Volatiles

Validation Level: Level IV

Laboratory: USEPA Region 9 Laboratory

Sample Delivery Group (SDG): 16078D

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
939-IA-03-1Q16	1603046-03	Air	03/14/16

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 TO-15 in Selected Ion Monitoring (SIM) mode

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-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): 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

The canisters were properly pressurized and handled.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 24 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 30.0% for all compounds.

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

Date	Compound	%D	Associated Samples	Flag	A or P
03/22/16	Trichloroethene	34	All samples in SDG 16078D	UJ (all non-detects)	P

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.

V. Laboratory Blanks

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

Canister blank analyses were performed for every sample canister. No contaminants were found in the canister blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Duplicates

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. 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
B16C120-LCS (All samples in SDG 16078D)	Methyl-tert-butyl ether	114 (63-111)	NA	-

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

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

XI. 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
All samples in SDG 16078D	All compounds reported below the RL.	J (all detects)	A

XII. Target Compound Identifications

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

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

Due to ICV %D and results below the RL, data were qualified as estimated in one sample.

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 March 2016 SVE Monitoring
Volatiles - Data Qualification Summary - SDG 16078D

Sample	Compound	Flag	A or P	Reason
939-IA-03-1Q16	Trichloroethene	UJ (all non-detects)	P	Initial calibration verification (%D)
939-IA-03-1Q16	All compounds reported below the RL.	J (all detects)	A	Compound quantitation

Modesto March 2016 SVE Monitoring
Volatiles - Laboratory Blank Data Qualification Summary - SDG 16078D

No Sample Data Qualified in this SDG

Modesto March 2016 SVE Monitoring
Volatiles - Field Blank Data Qualification Summary - SDG 16078D

No Sample Data Qualified in this SDG

LDC #: 36122A48b

VALIDATION COMPLETENESS WORKSHEET

ADR/Level IV

SDG #: 16078D

Laboratory: USEPA Region 9 Laboratory

Date: 4/4/16

Page: 1 of 1

Reviewer: EJ

2nd Reviewer: AM

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

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 / SW	% RSD / ICV ≤ 30
IV.	Continuing calibration	A	CCV ≤ 30
V.	Laboratory Blanks / canister check per sample	A	~~Not reviewed for ADR validation~~.
VI.	Field blanks	N	
VII.	Surrogate spikes	N	~~Not reviewed for ADR validation~~.
VIII.	Sample duplicates	A	Not reviewed for ADR validation.
IX.	Laboratory control samples	SW A	~~Not reviewed for ADR validation~~. LCS
X.	Field duplicates	N	
XI.	Internal standards A	~~SW~~	~~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	~~941-IA-01~~ -1Q16	1603046-01	Air	03/14/16
2	~~941-IA-02~~ -1Q16	1603046-02	Air	03/14/16
3	939-IA-03** 1Q16 (2x 91, CC)	1603046-03**	Air	03/14/16
4	~~931-IA-01-A~~ 1Q16	1603046-04	Air	03/14/16
5	~~931-IA-01-B~~ 101- 1Q16	1603046-05	Air	03/14/16
6	939-IA-01- 1Q16	1603046-06	Air	03/14/16
7	941-IA-01DUP -1Q16	1603046-01DUP	Air	03/14/16
8				
9				
10	B16C120			
11	B16C124			

Notes:

LDC #: 36122A48b

VALIDATION FINDINGS CHECKLIST

Reviewer: FT
2nd Reviewer: APL

Method: Volatiles (EPA Method TO-15)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was canister pressure criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 24 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30%?	✓			
IIIb. Initial calibration verificattion				
Was an initial calibration verification standard analyzed after every ICAL for each instrument?	✓			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?		✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 24 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?	✓			
V. Laboratory Blanks/Canister Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 24 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Was a canister blank analyzed for every canister?	✓			
Was there contamination in the canister blanks? If yes, please see the Canister Blanks validation completeness worksheet.		✓		
VI. Field Blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. Surrogate spikes (Optional)				
Were all surrogate percent recoveries (%R) within QC limits?			✓	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VIII. Laboratory Duplicate				
Was a laboratory duplicate analyzed for this SDG?	✓			
Were the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36122A48b

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: FT
2nd Reviewer: APL

Validation Area	Yes	No	NA	Findings/Comments
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within ± 40% from the associated calibration standard?	✓			
Were retention times within ± 20.0 seconds from the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

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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. Dichloromethane
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 36122A48b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

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

METHOD: GC/MS VOA (EPA Method TO-15)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was an initial calibration verification standard analyzed after each ICAL for each instrument?
Y N N/A Were all percent differences (%D) ≤ 30%?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Associated Samples	Qualifications
-	3/22/16	ICV	S	34	All	J-/UJ/P ND ~~Det~~

LDC #: 36122A48b

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT
2nd Reviewer: AYL

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

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?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	B16C120-LCS	LL	114 (63-111)	( )	( )	All	J+ all / P (ND)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 36122A48b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: [illegible]
2nd Reviewer: AYL

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

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

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
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 (260 std) 260/262.5	Recalculated RRF (260 std) 260/262.5	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	1CAL	3/22/16	c (260)	1.018	1.018	0.983	0.983	3.07	3.07
			✓ (260)	1.326	1.326	1.242	1.242	4.62	4.62
			cc 262.50	1.470	1.470	1.472	1.472	6.60	6.60
2									
3									

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 #: 36122A486

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 6 of 7
Reviewer: [illegible]
2nd Reviewer: APL

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

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

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

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)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CCV	3/22/16	a	0.983	Not Reported	0.8351	15	15
			V	1.242	↓	1.1059	11	11
			cc	1.472	↓	1.3469	8	8
2	CCV	3/23/16	Dichloromethane	1.127	1.050	1.050	6.8	6.8
			cc	1.472	1.689	1.689	14.7	14.7
3								

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.

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LDC #: 36122.A48b

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

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

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. #3, V:

Conc. = $\frac{(131206)(375.0)}{(223770)(1.242)}$

= 177.10 pptv

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification
		$\frac{(177.10)(400)(1.48)}{(150)(1000)}$ =		0.698	J
	in	ug/m³			
		= $\frac{(78.12)(0.6985)}{24.46}$ =			
		= 2.2 ug/m³			

RECALC.wpd

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Appendix F

Well Construction Details, Groundwater Elevations, Analytical Data, Historical PCE Information, and Mass Removal Data

F-1a – Historical Groundwater Monitoring Well Table Elevations 2000 to 2009

F-1b – Groundwater Monitoring Well Table Elevations 2010 to 1Q16

F-2 – Searchable Historical and Current Analytical Table

F-3 – Historical PCE Concentration Trends in Groundwater Monitoring Wells

F-4 – PCE Mass Removed by Groundwater Treatment System

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TABLE F-1a

HISTORICAL 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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

TABLE F-1
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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 F-1a
(CONTINUED)

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

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TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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
				Mar-16	54.15	37.88
EW-02			91.64	Dec-12	53.07	38.57
				Mar-13	--	--
				May-13	--	--
				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
				Mar-16	59.81	31.83
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	41.51	50.10
				Aug-12	42.00	49.61
				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
				Mar-16	48.45	43.16
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
				Mar-16	47.62	43.26
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	46.89	44.60
				Mar-11	44.95	46.54
				Jun-11	44.00	47.49
				Sep-11	44.56	46.93
				Nov-11	44.89	46.60
				Jan-12	44.19	47.30
				Apr-12	41.84	49.65
				Aug-12	43.82	47.67
				Dec-12	43.76	47.73
				Mar-13	42.70	48.79
				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
				Mar-16	49.72	41.77
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	49.53	41.60
				Nov-15	49.95	41.18
				Mar-16	49.71	41.42
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
				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
				Mar-16	48.81	42.30
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Nov-15	50.64	40.61
				Mar-16	48.40	42.85
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
				Mar-16	48.04	42.70
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				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
				Mar-16	47.20	42.52
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
				Mar-16	47.44	43.80
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	45.53	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
				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
				Mar-16	49.01	42.43
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	49.38	41.82
				Nov-15	49.50	41.70
				Mar-16	48.49	42.71
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
				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
				Mar-16	48.68	41.80
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	48.04	42.17
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
				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
				Mar-16	48.05	42.45
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	45.54	44.37
MW-12A	99	87 - 97	91.15	Mar-10	45.17	45.98
				May-10	44.07	47.08
				Aug-10	44.86	46.29
				Nov-10	45.56	45.59
				Mar-11	43.31	47.84
				Jun-11	42.40	48.75
				Sep-11	43.22	47.93
				Nov-11	43.54	47.61
				Jan-12	42.79	48.36
				Apr-12	42.12	49.03
				Aug-12	46.93	44.22
				Dec-12	43.49	47.66
				Mar-13	42.72	48.43
				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
				Mar-16	49.29	41.86
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Oct-15	46.91	42.36
				Nov-15	47.45	41.82
				Mar-16	47.20	42.07
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	46.38	43.41
				Nov-15	47.05	42.74
				Mar-16	46.73	43.06
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
				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
				Mar-16	48.60	43.16
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	50.75	41.14
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
				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
				Mar-16	50.63	41.19
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	50.51	41.13
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
				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
				Mar-16	48.10	41.54
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	48.04	41.65
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
				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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	52.72	37.04
				Nov-15	50.22	39.54
				Mar-16	48.00	41.76
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
				Mar-16	48.45	41.69
MW-19A	101	91 - 101	91.22	Mar-10	45.43	45.79
				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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	49.53	41.69
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
				Jun-15	48.74	42.34
				Oct-15	51.12	39.96
				Nov-15	51.04	40.04
				Mar-16	49.91	41.17
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	49.31	41.39
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
				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
				Mar-16	49.29	41.36
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	45.78	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
				Mar-16	49.00	41.79
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
				Jan-15	48.74	43.01
				Jun-15	49.28	42.47
				Oct-15	51.91	39.84
				Nov-15	51.37	40.38
				Mar-16	50.90	40.85
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	50.69	41.00
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
				Mar-16	46.83	43.43
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
				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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	49.41	43.52
				Jun-15	49.75	43.18
				Oct-15	52.02	40.91
				Nov-15	52.17	40.76
				Mar-16	51.20	41.73
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
				Mar-16	50.60	41.18
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
				Mar-16	48.26	41.45
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	41.19	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
				Mar-16	47.56	41.78
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
				Mar-16	46.88	42.33
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
				Apr-14	41.84	47.90

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	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
				Mar-16	--	--
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
				Mar-16	--	--
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
				Mar-16	--	--
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
				Mar-16	46.44	43.13
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

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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	51.23	40.52
				Nov-15	51.43	40.32
				Mar-16	50.16	41.59
MW-32C	240	226 - 236	91.86	Sep-13	51.00	40.86
				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
				Mar-16	50.35	41.51
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
				Mar-16	50.30	41.04
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
				Mar-16	44.46	43.60
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
				Mar-16	47.80	41.53

TABLE F-1b
GROUNDWATER MONITORING WELL WATER TABLE ELEVATIONS
2010 TO 1Q16

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)
--	not measured					
ft bgs	feet below ground surface					
MSL	mean sea level					
MW	monitoring well					
TOC	top of casing					

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Table F-2. Historical and 1Q16 Analytical Data included as Excel file on this CD.

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FIGURE F-3(a)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

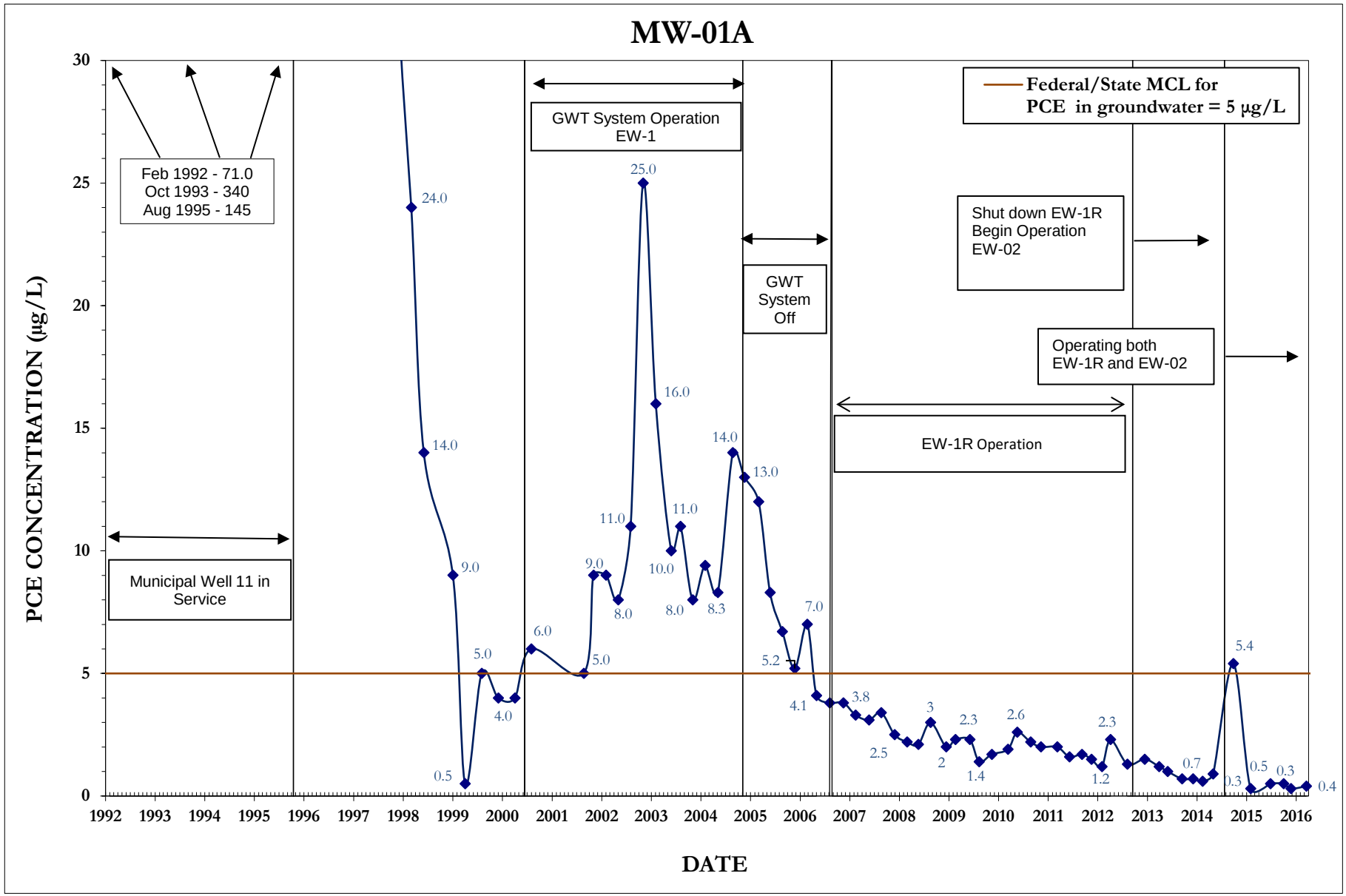

FIGURE F-3(b)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

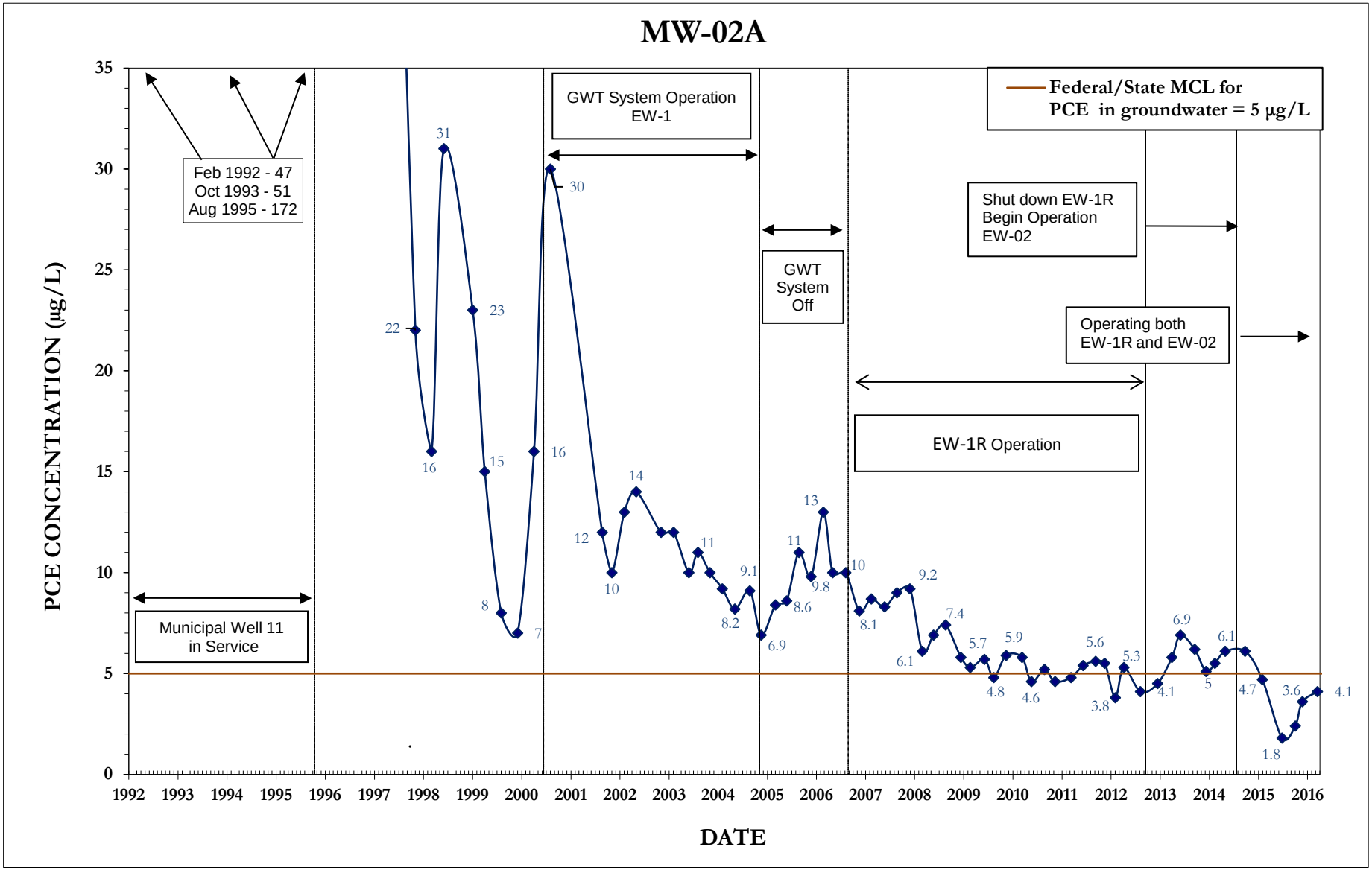

FIGURE F-3(c)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

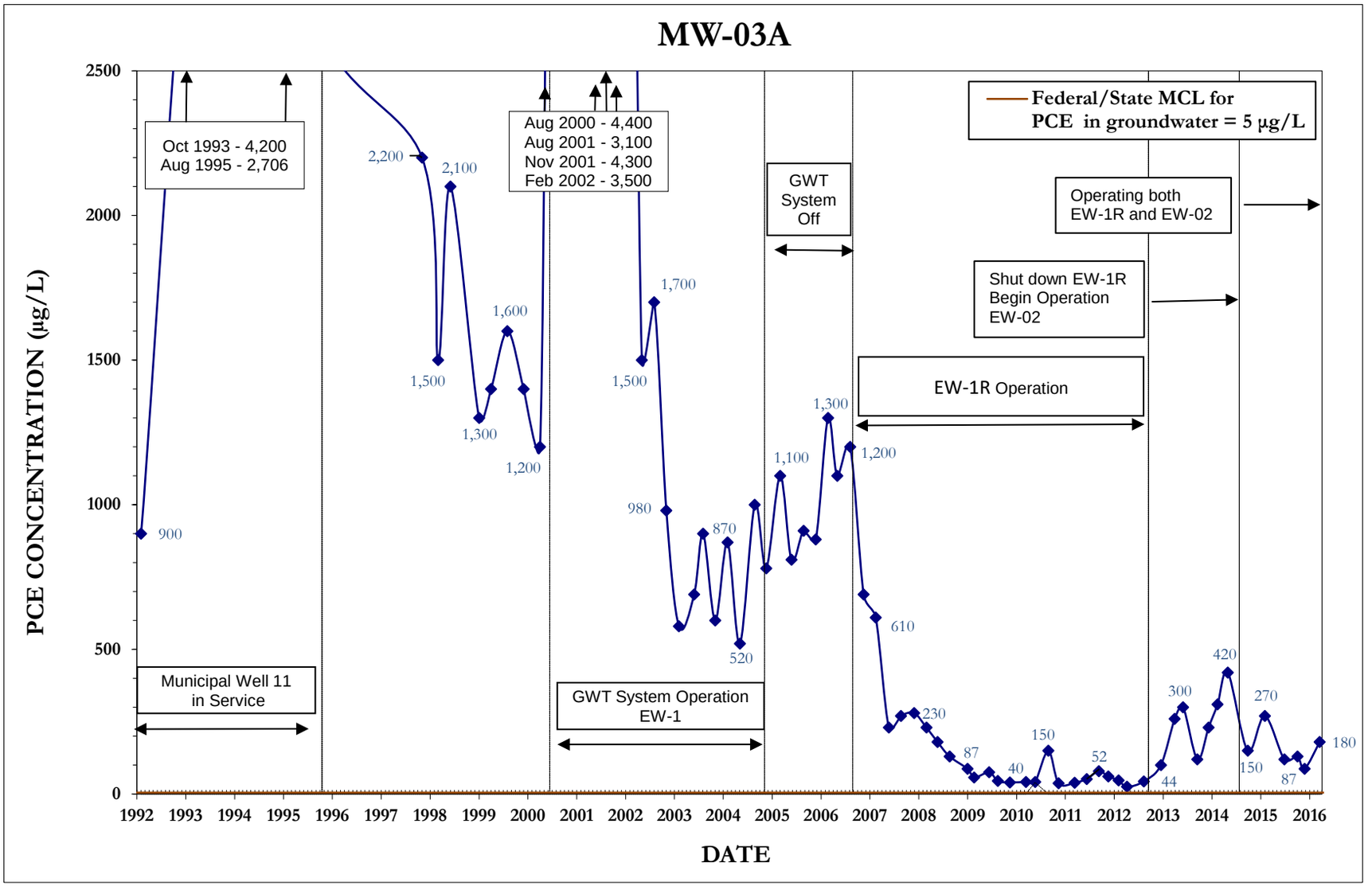

FIGURE F-3(d)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

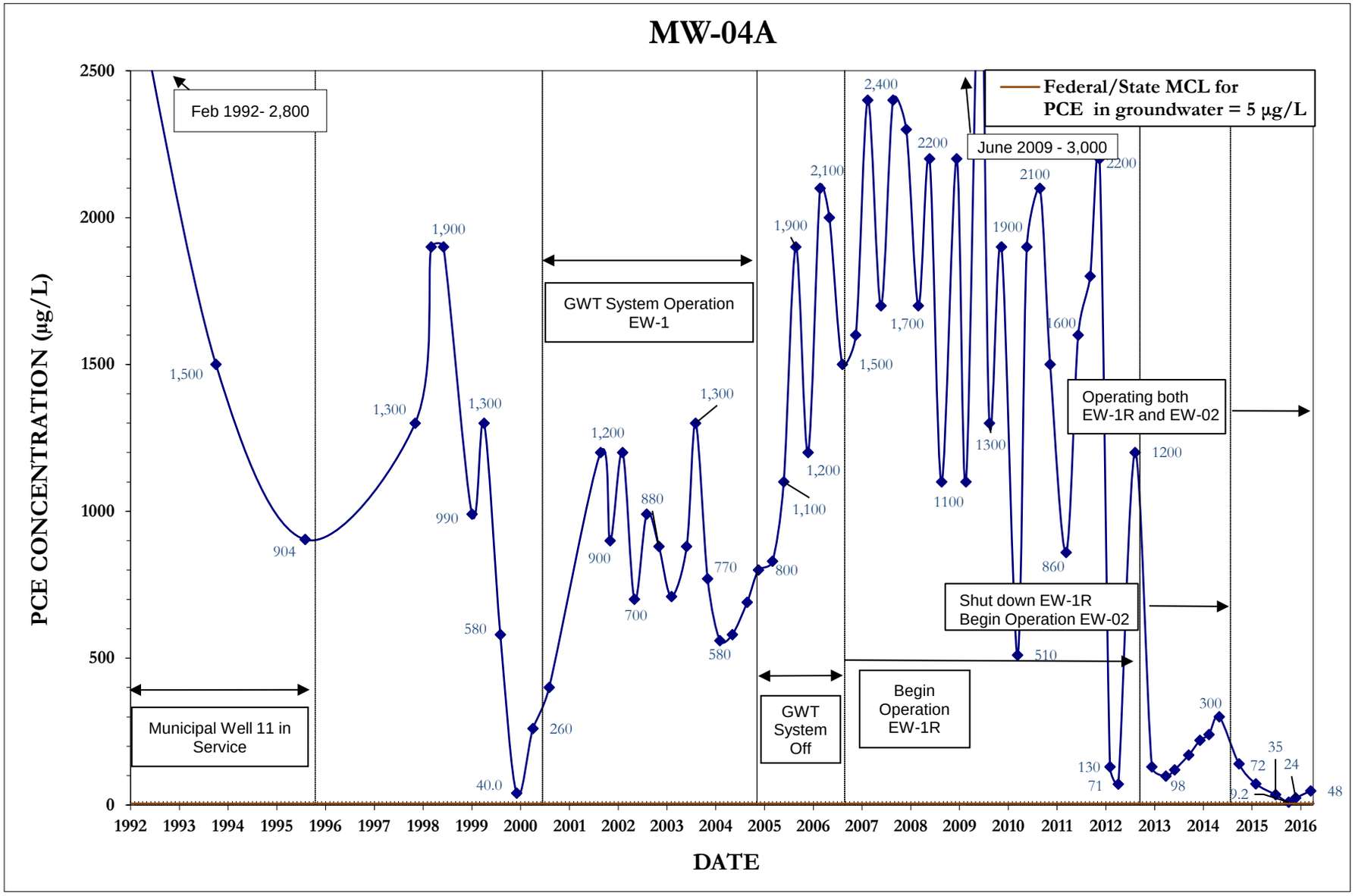

FIGURE F-3(g)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

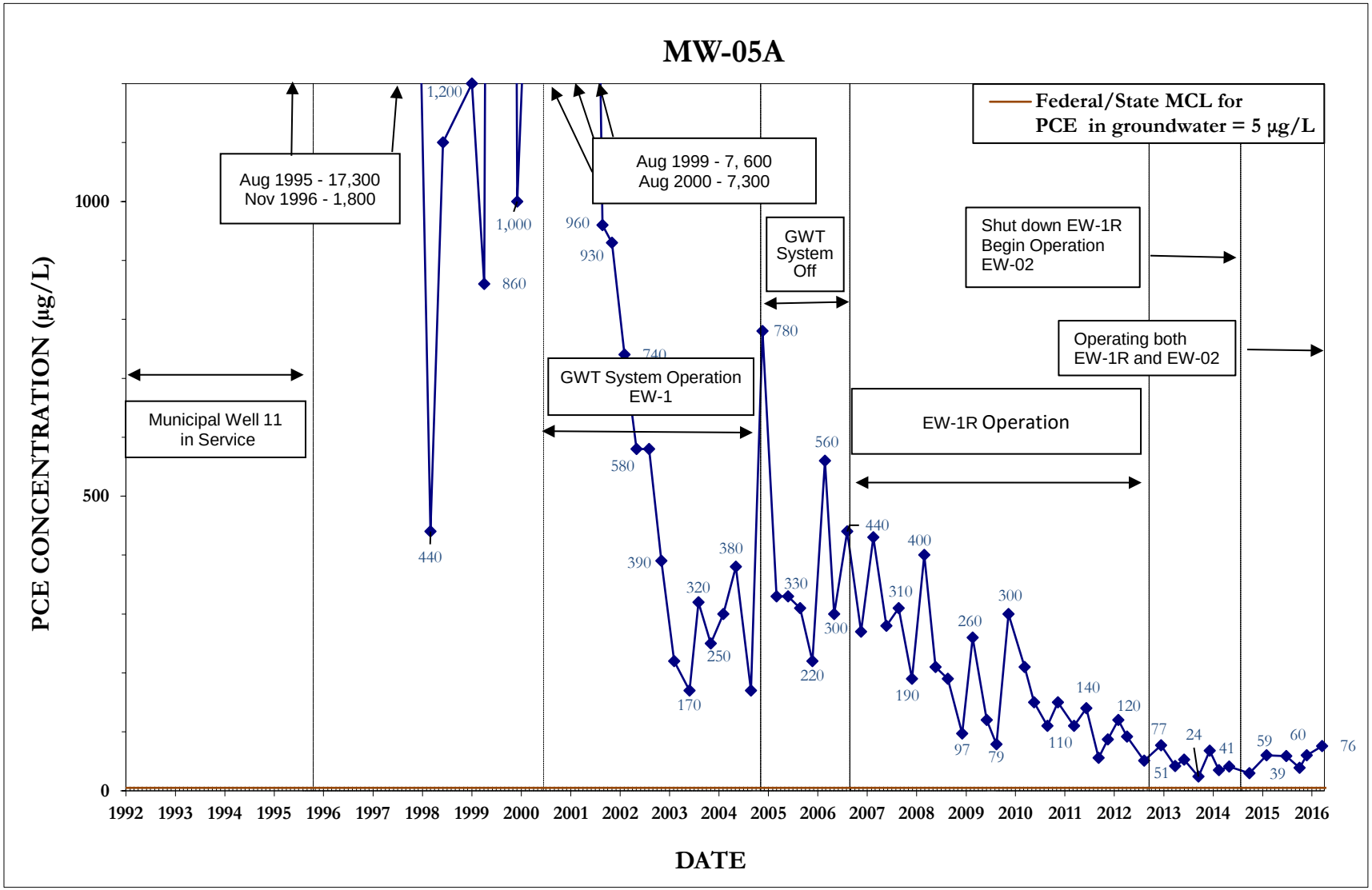

FIGURE F-3(h)

HISTORICAL PCE CONCENTRATION IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

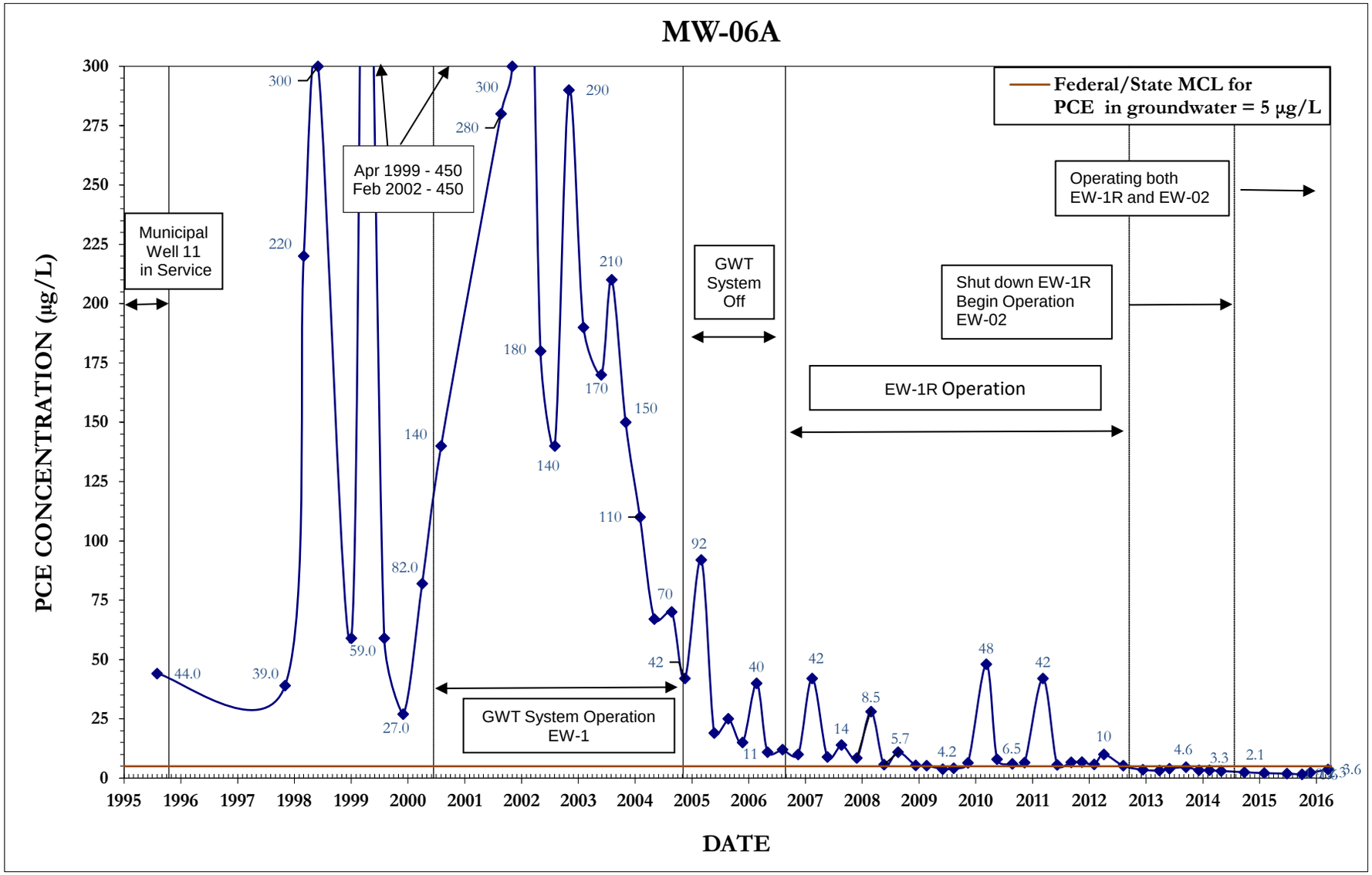

FIGURE F-3(i)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

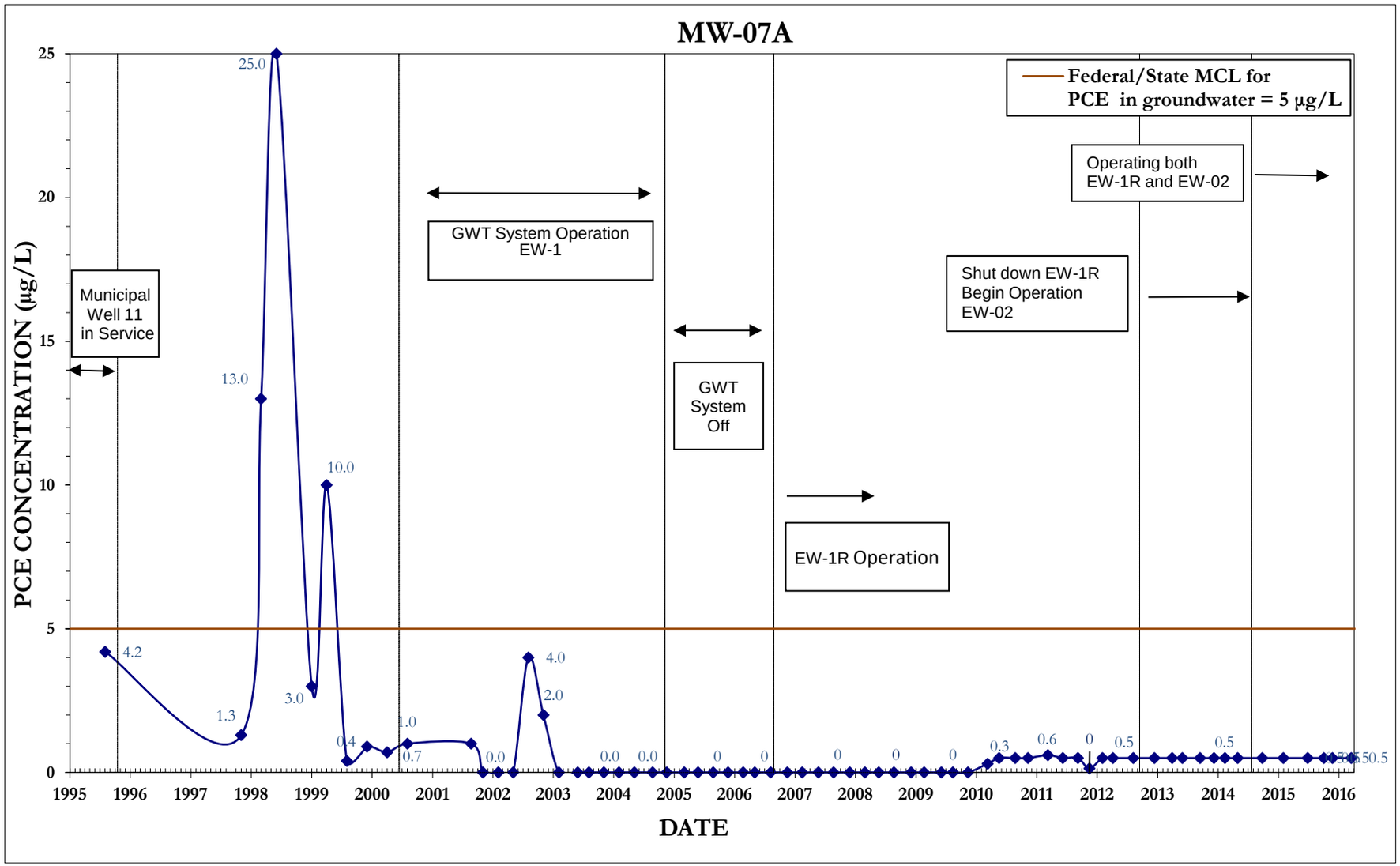

FIGURE F-3(j)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

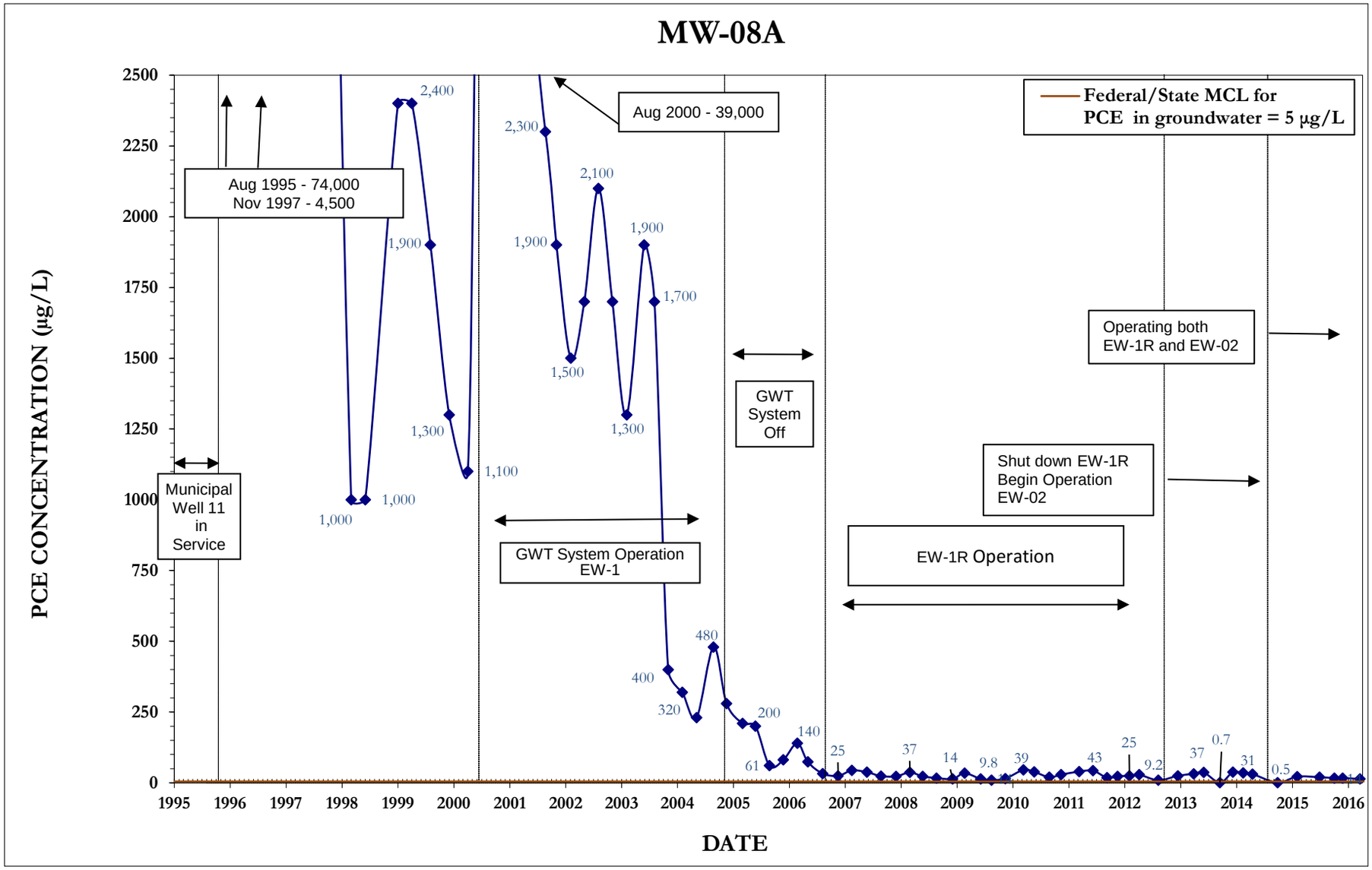

FIGURE F-3(l)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

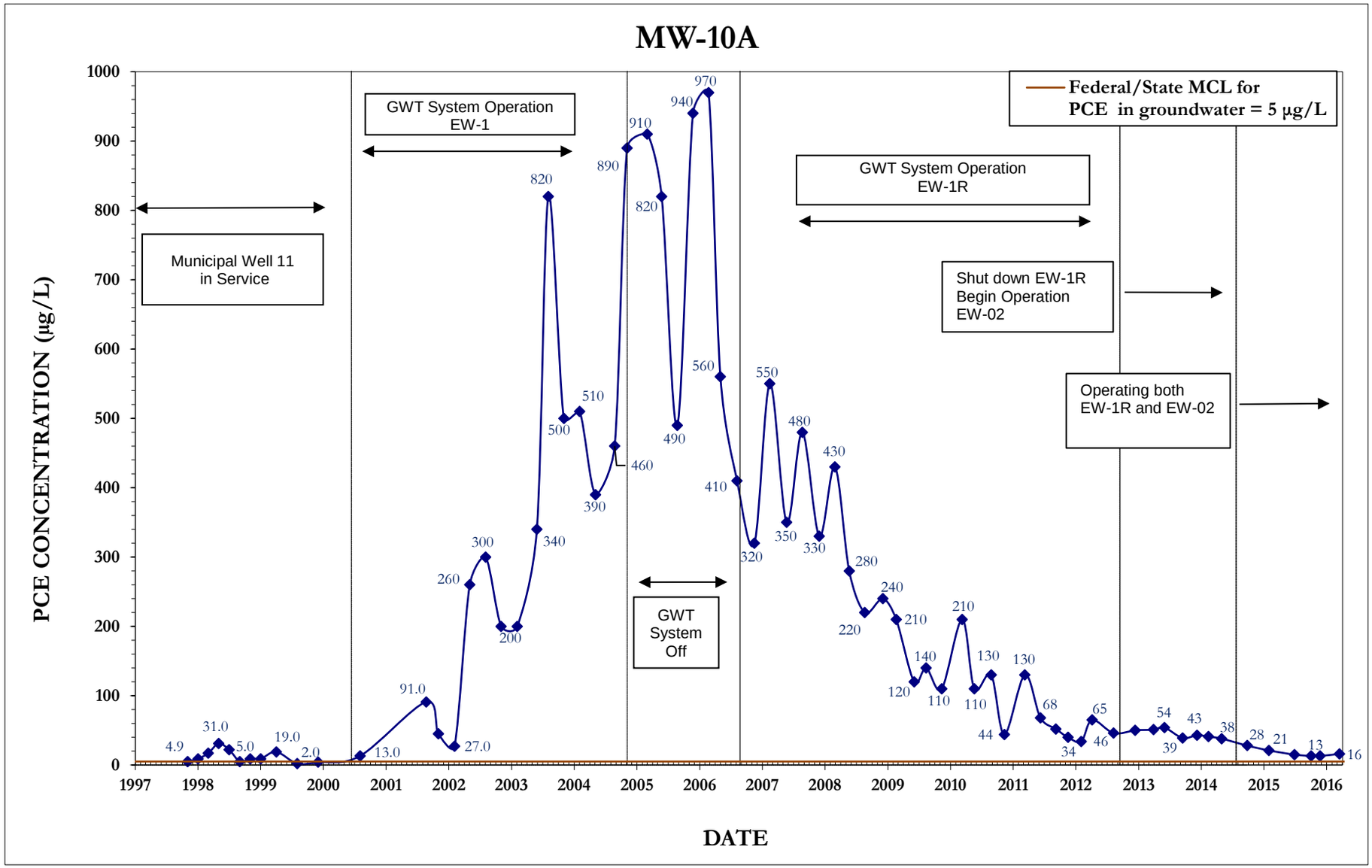

FIGURE F-3(o)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

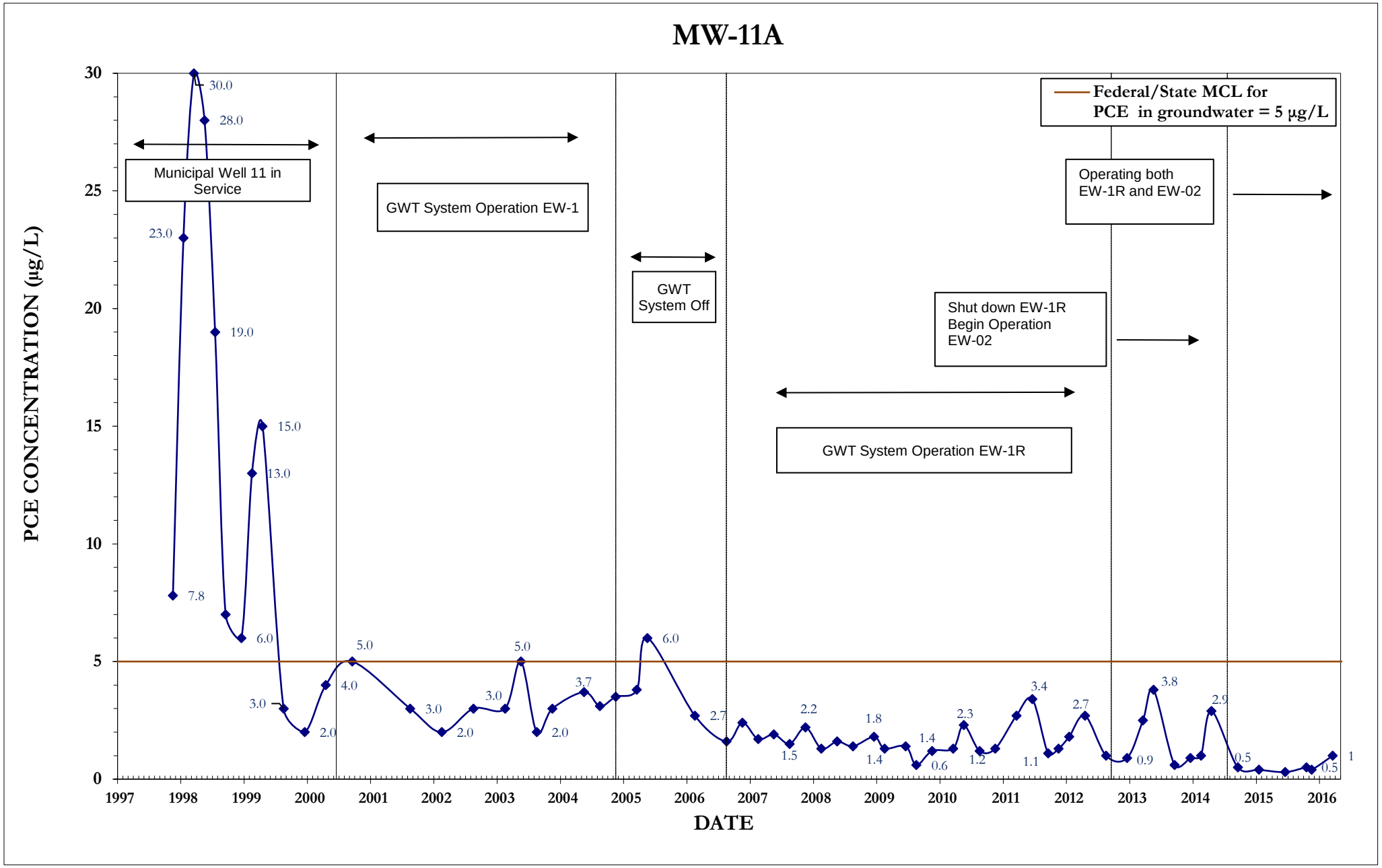

FIGURE F-3(p)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

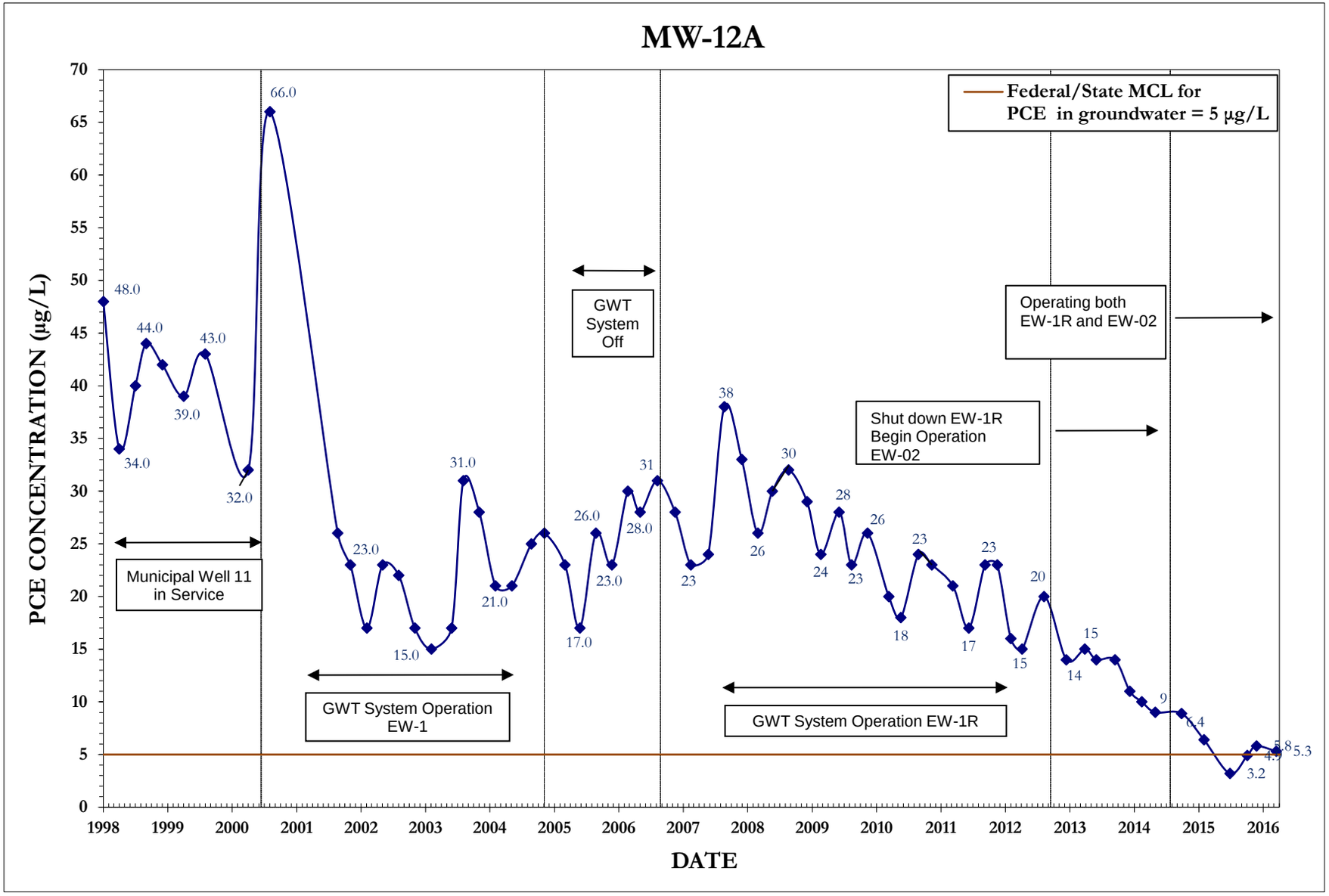

FIGURE F-3(q)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

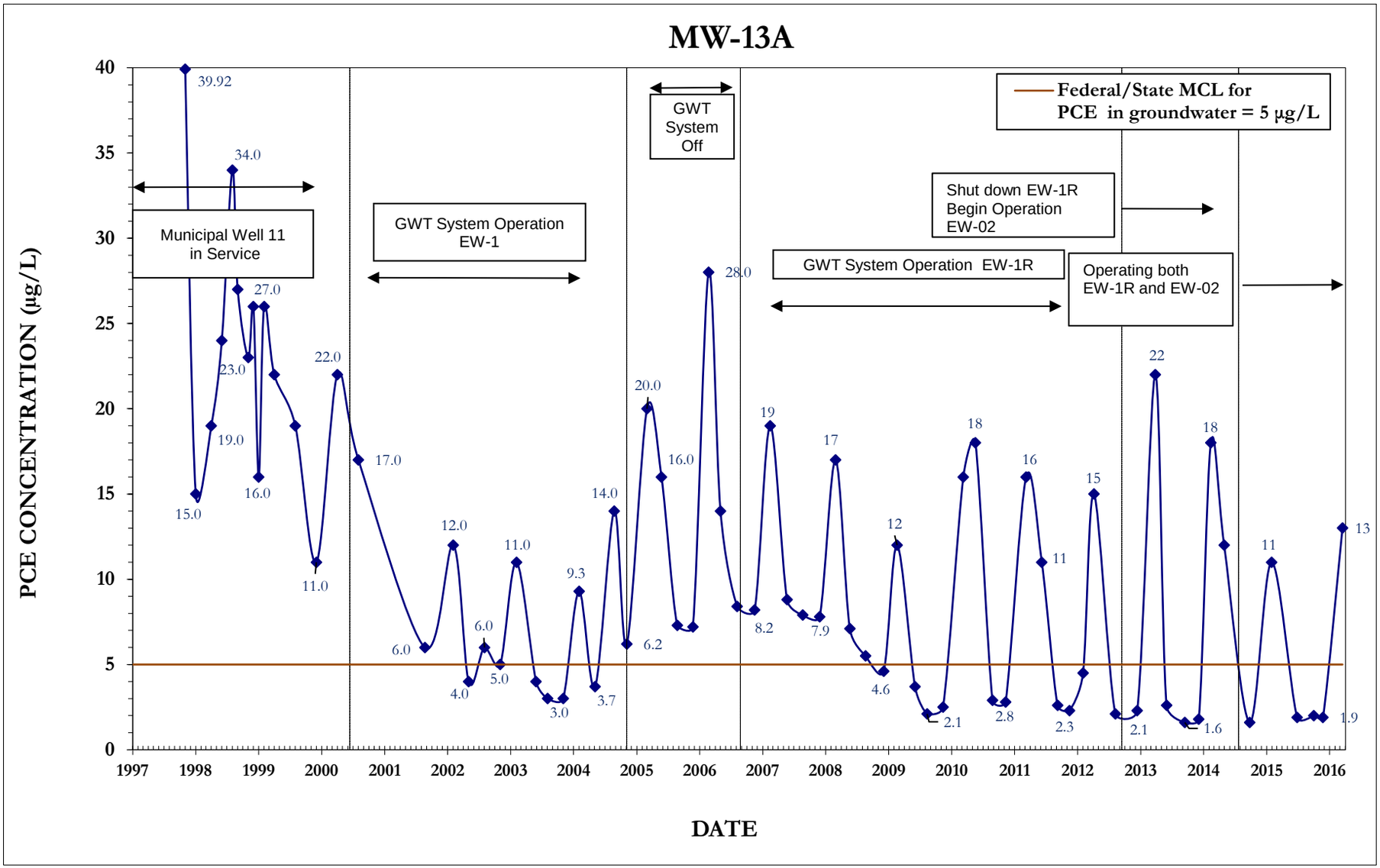

FIGURE F-3(r)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

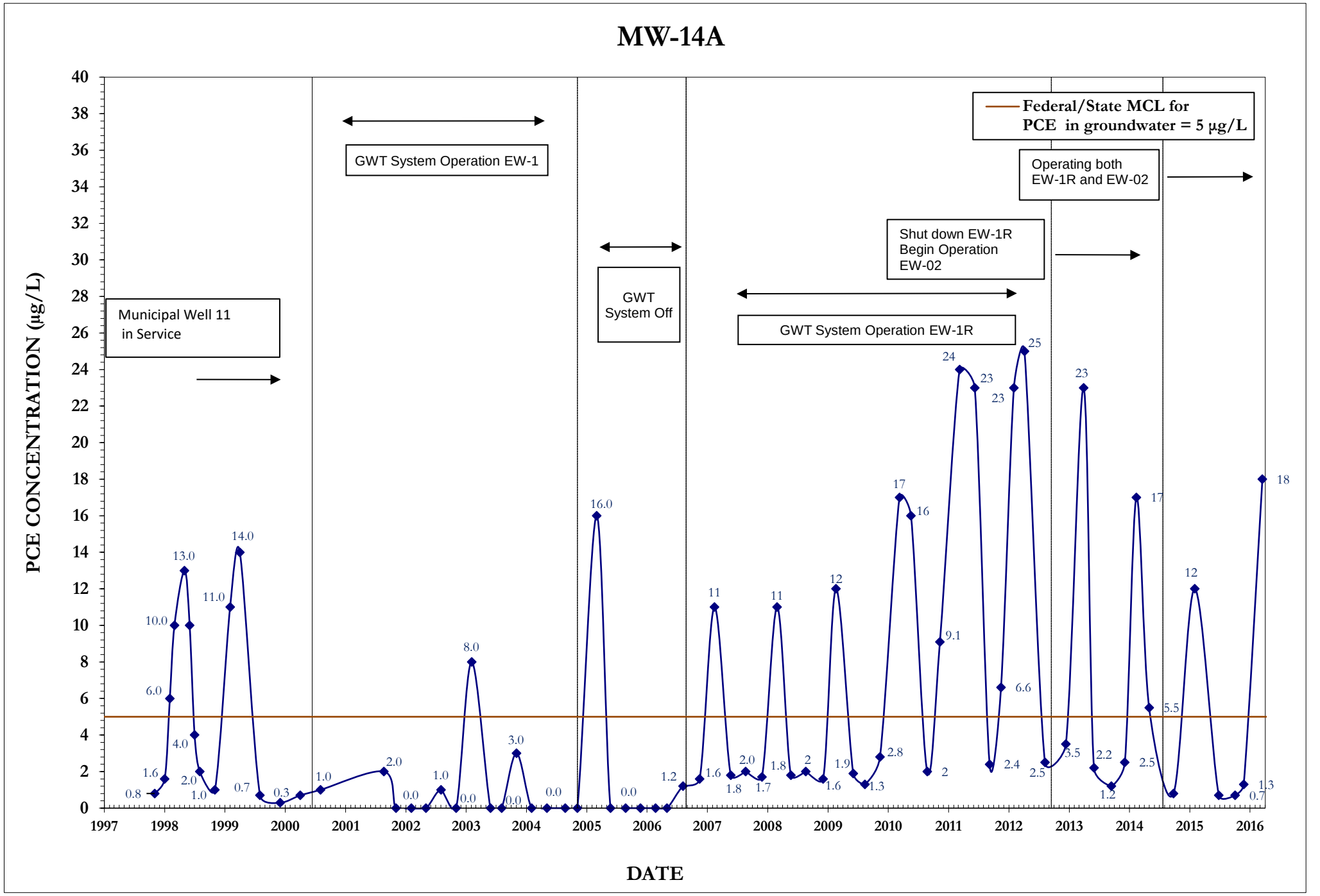

FIGURE F-3(s)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

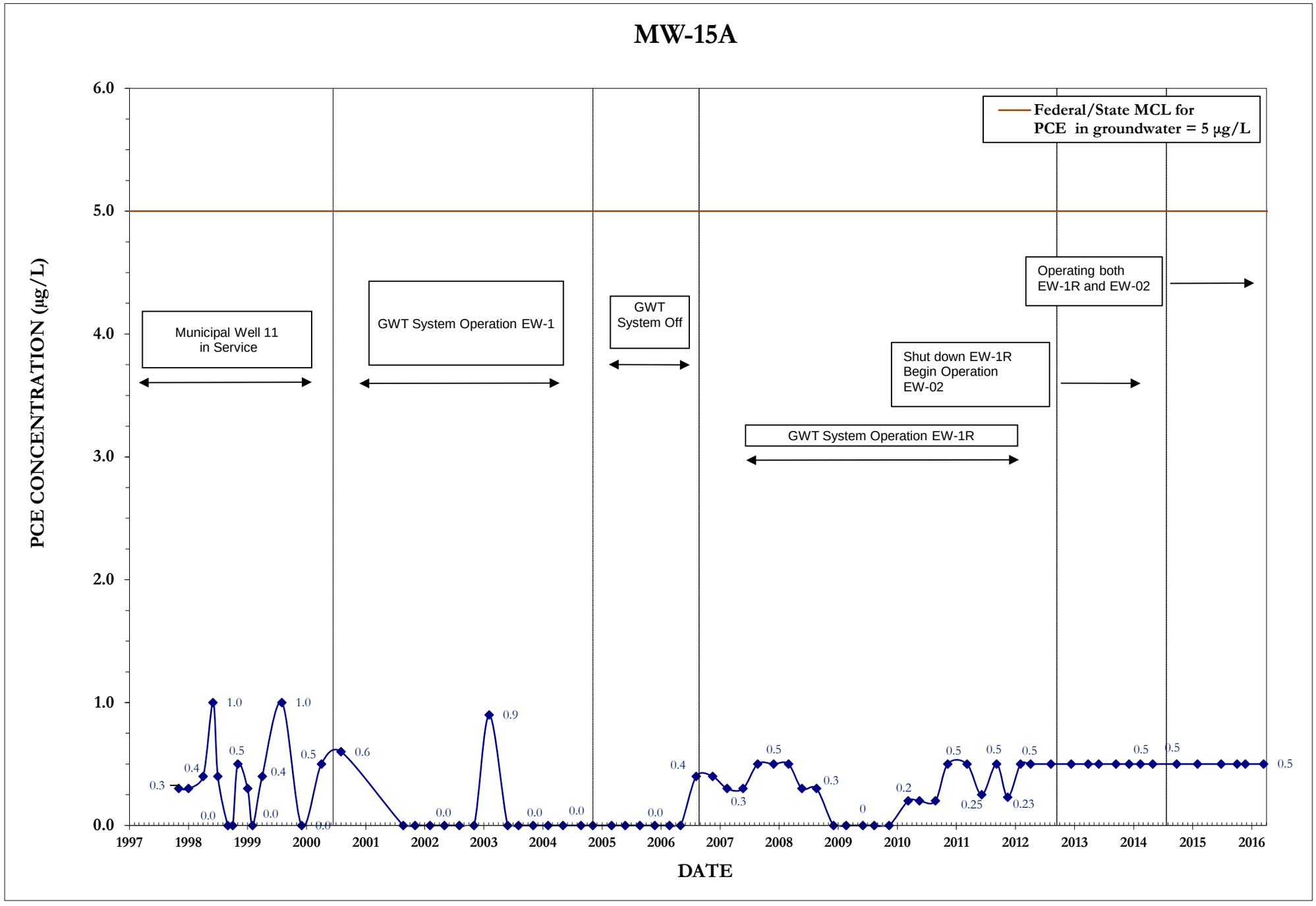

FIGURE F-3(t)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

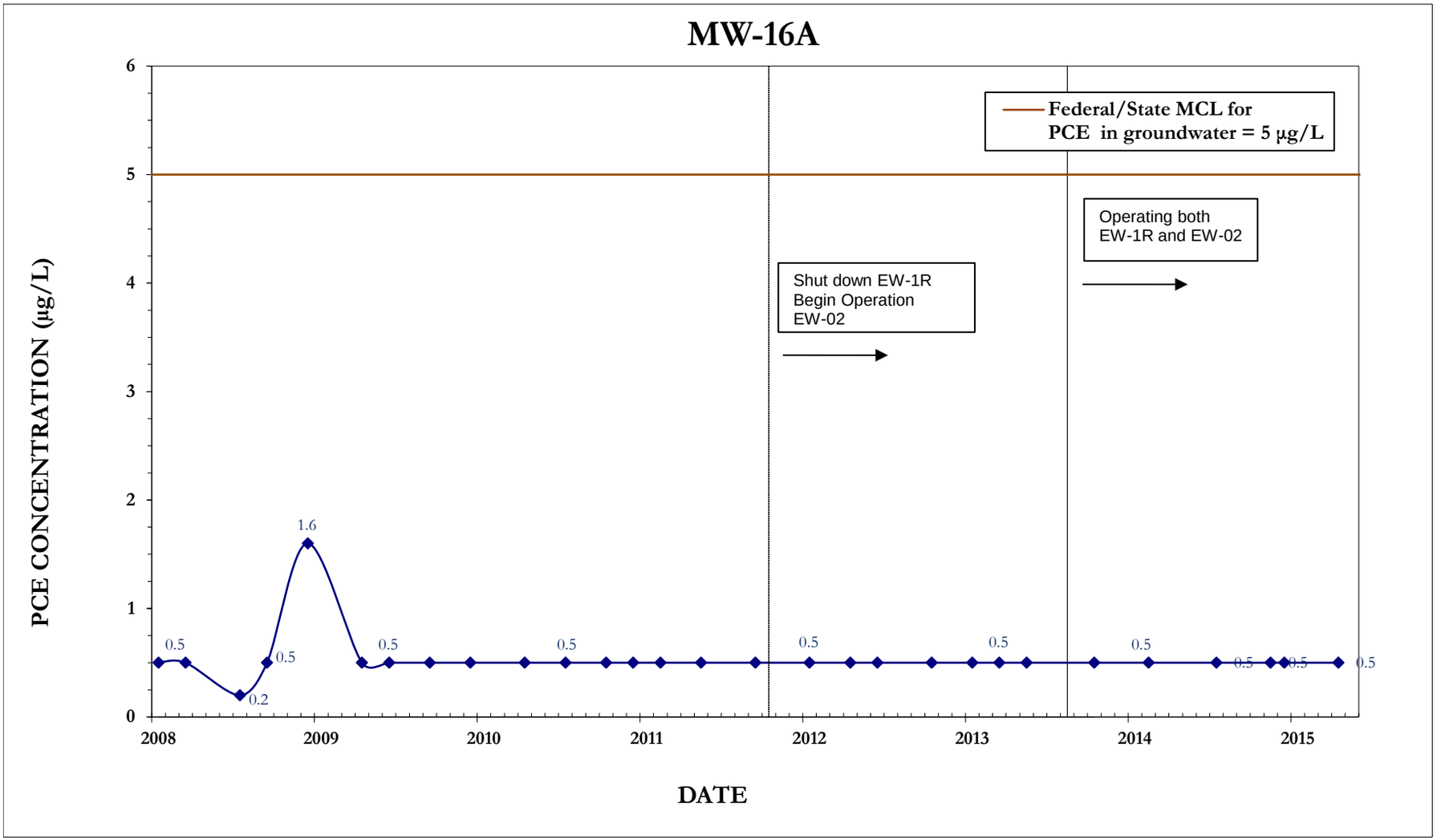

FIGURE F-3(w)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

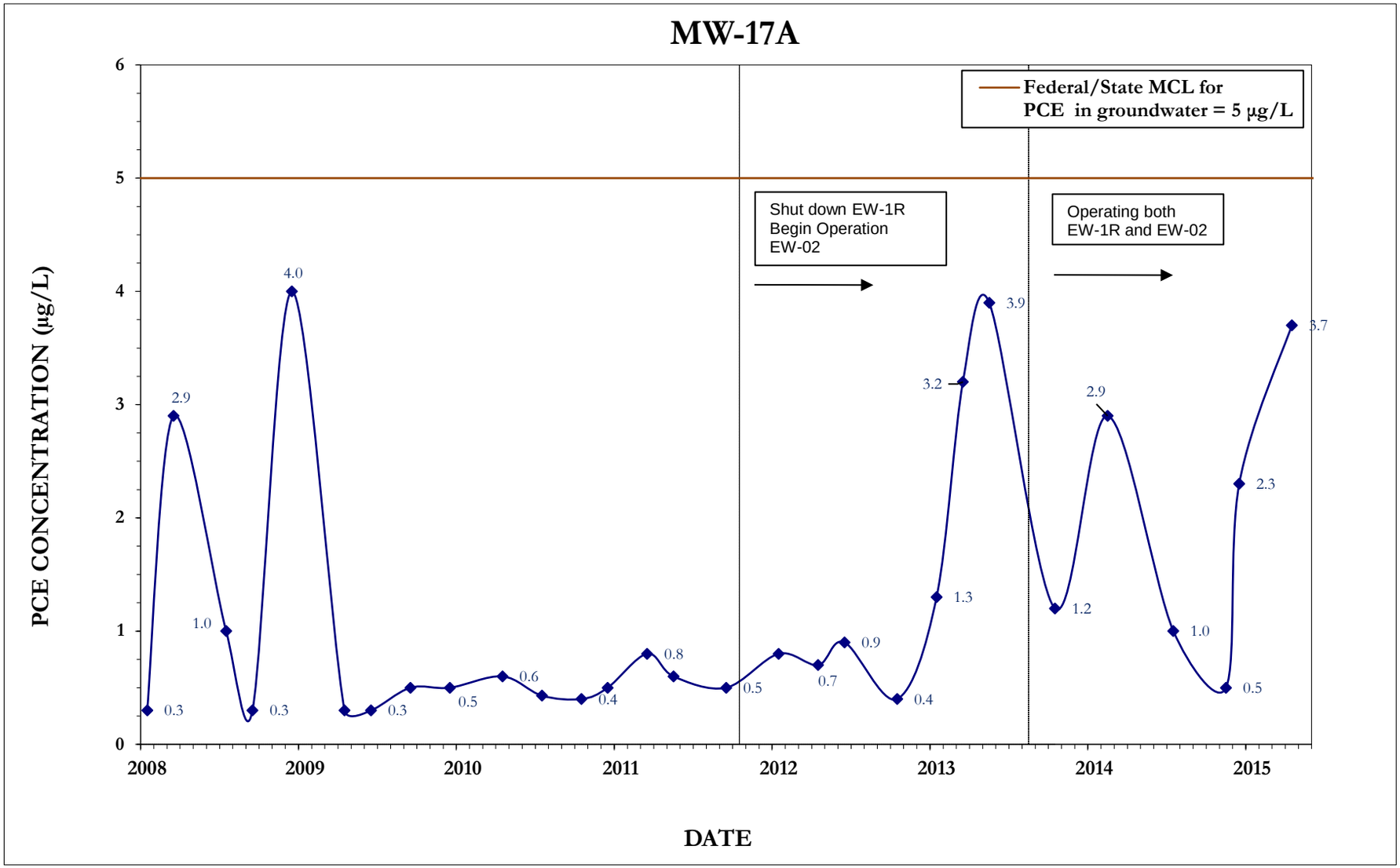

FIGURE F-3(z)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

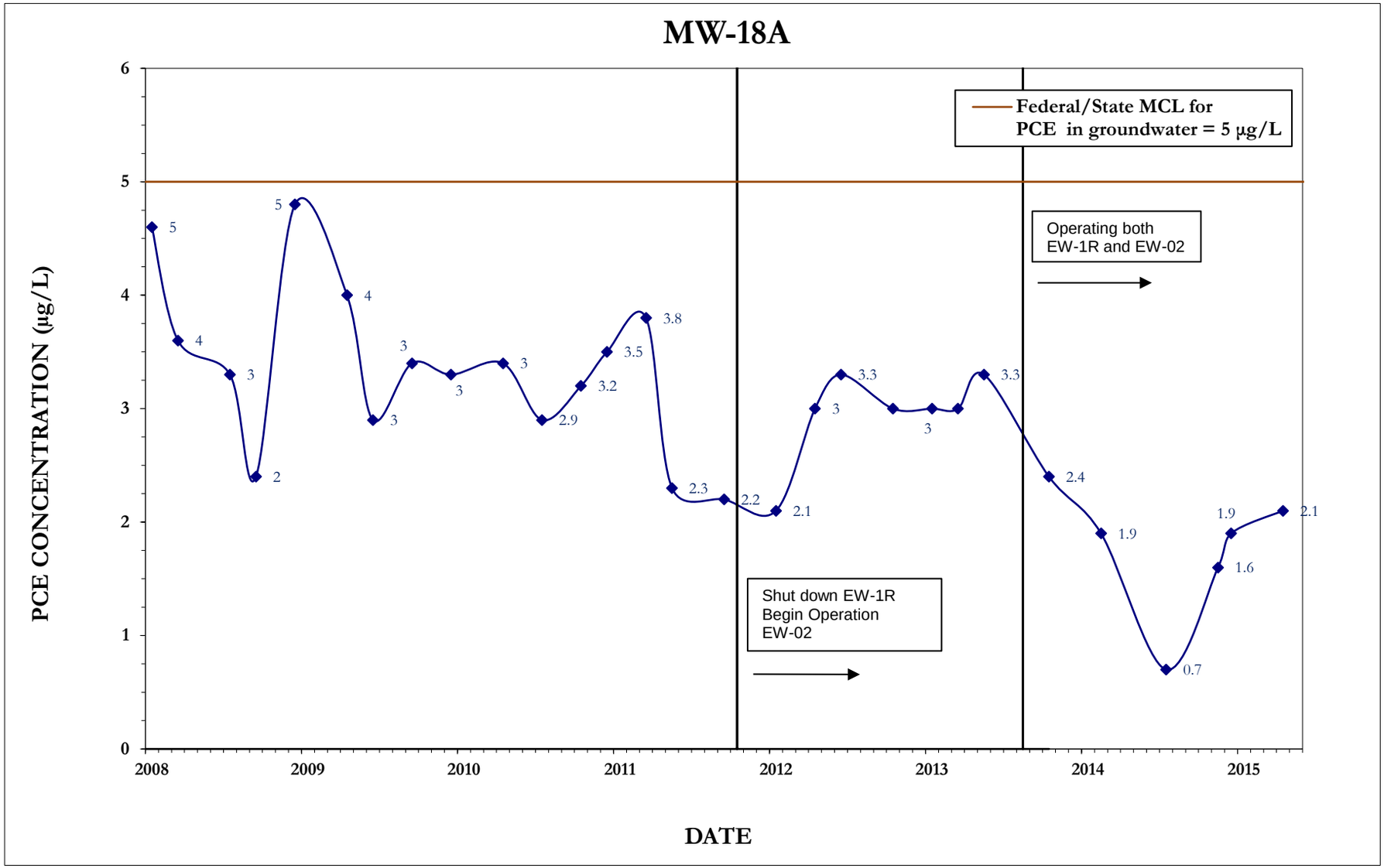

FIGURE F-3(aa)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

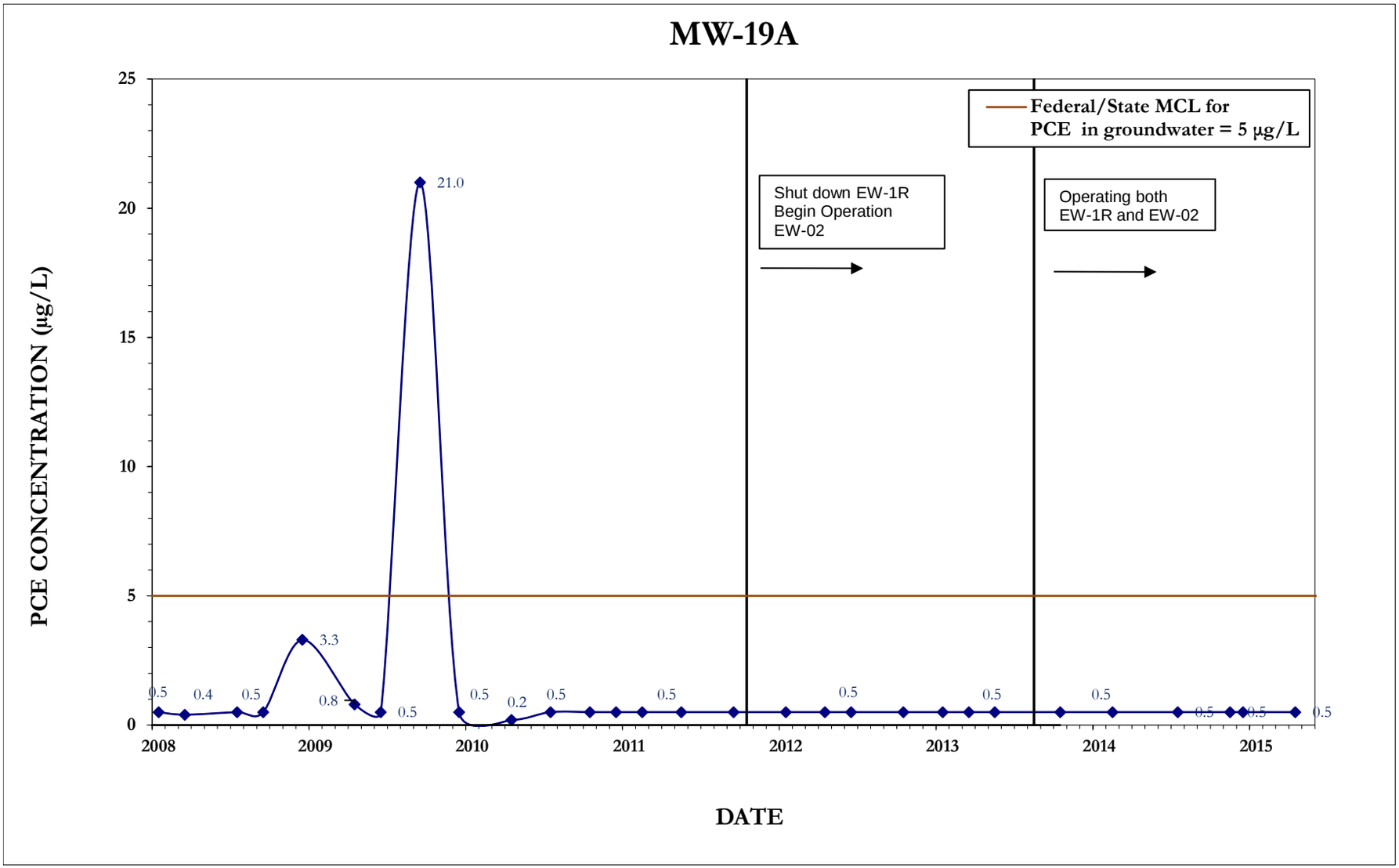

FIGURE F-3(ac)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

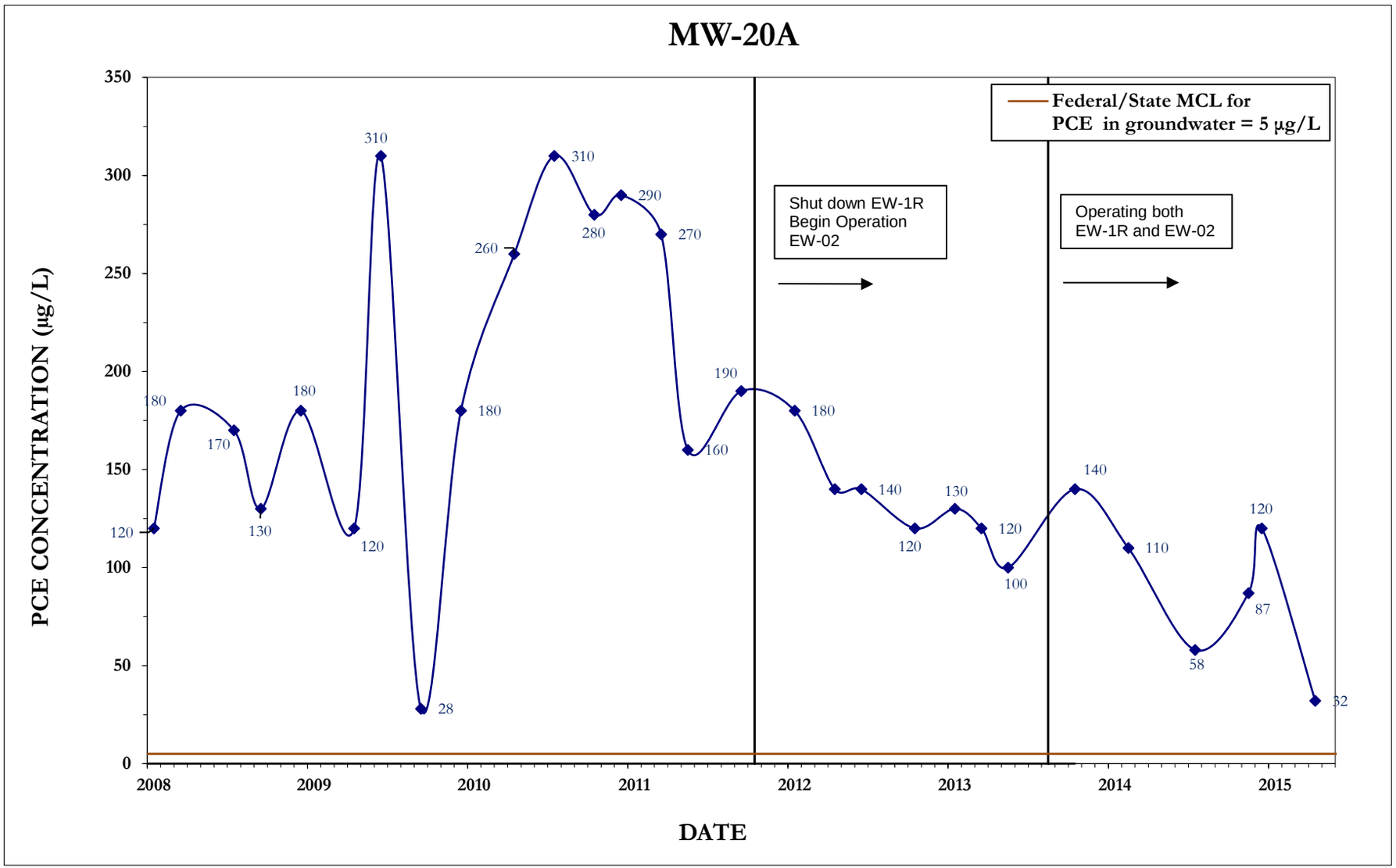

FIGURE F-3(af)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

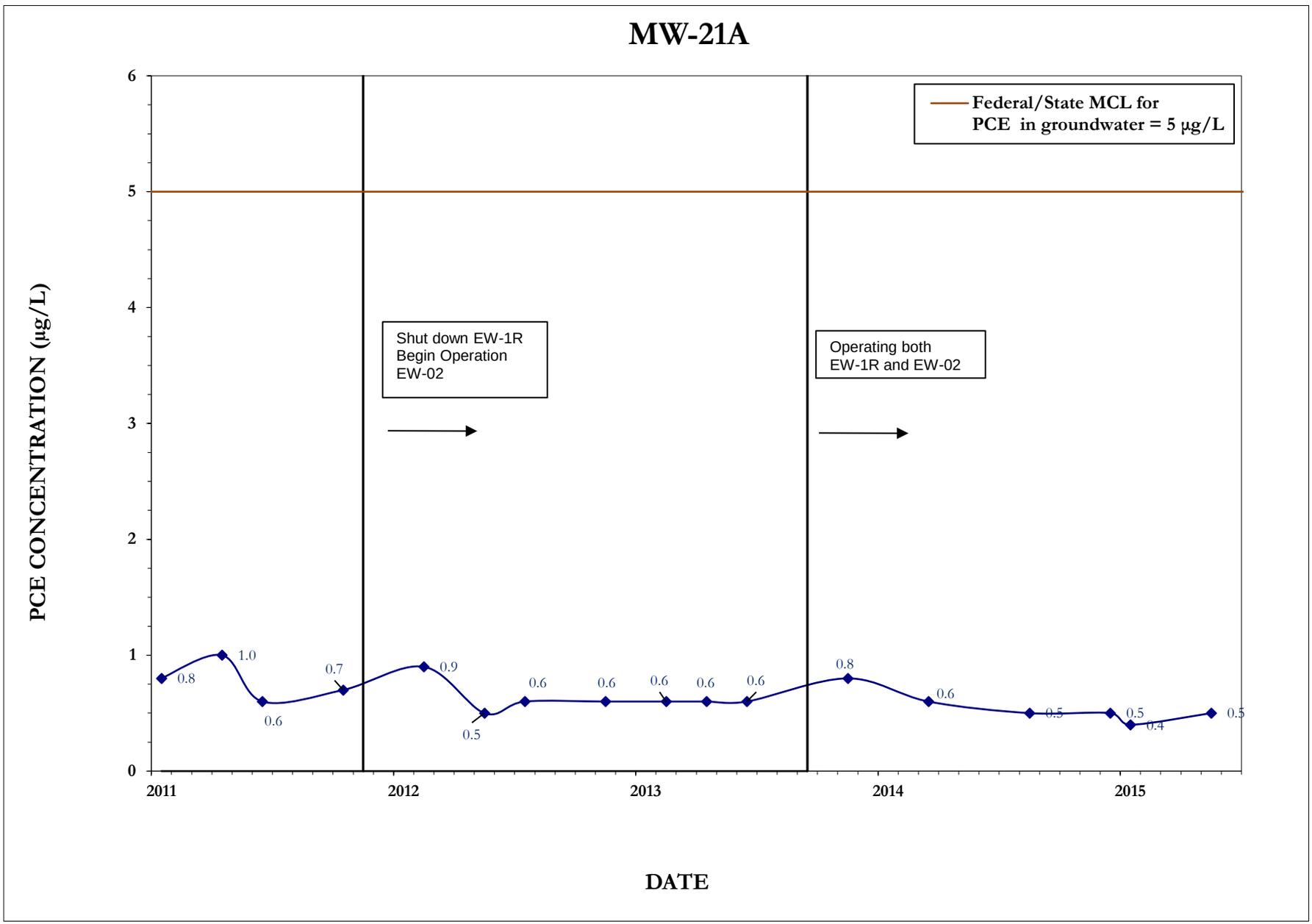

FIGURE F-3(ag)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

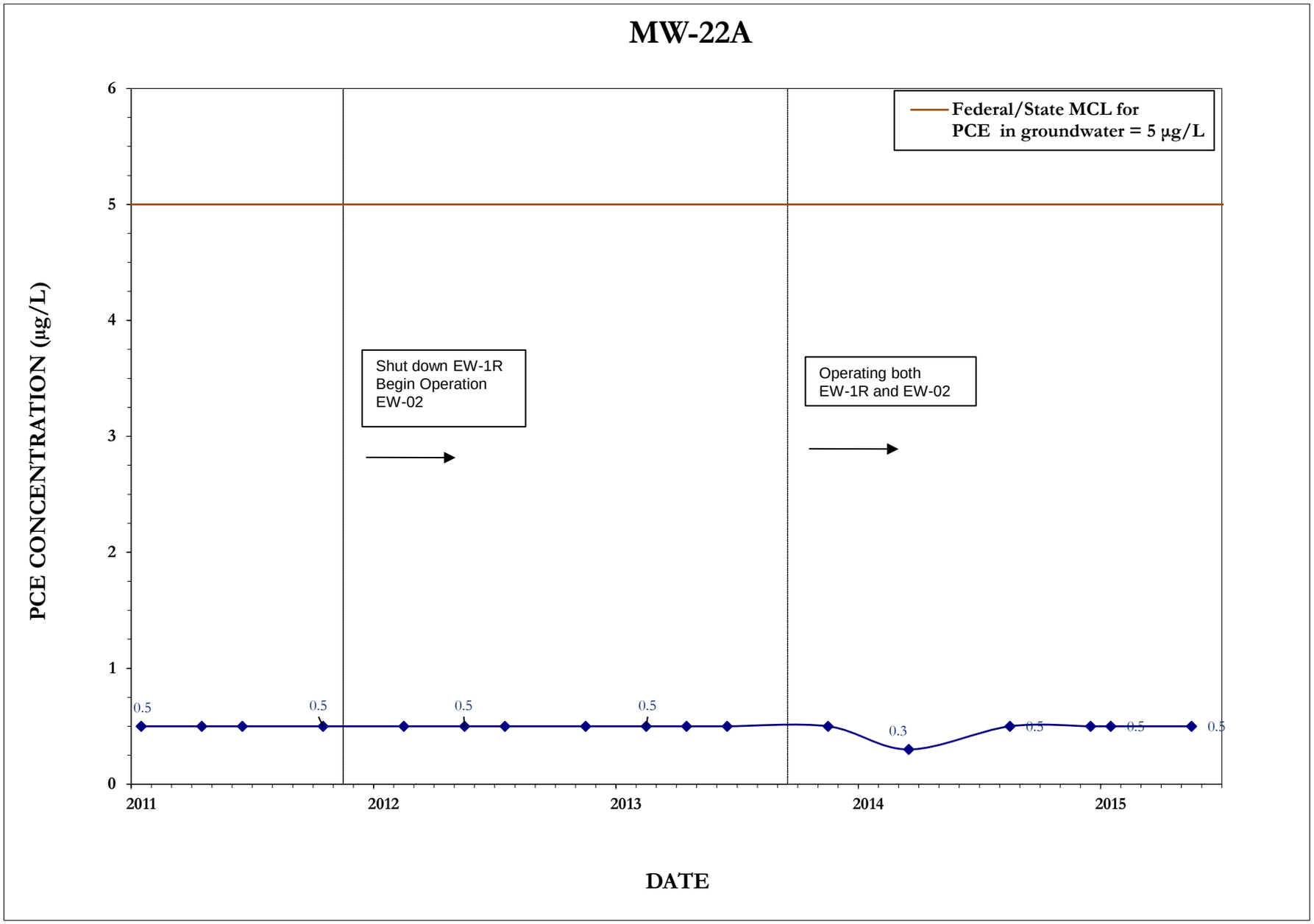

FIGURE F-3(ah)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

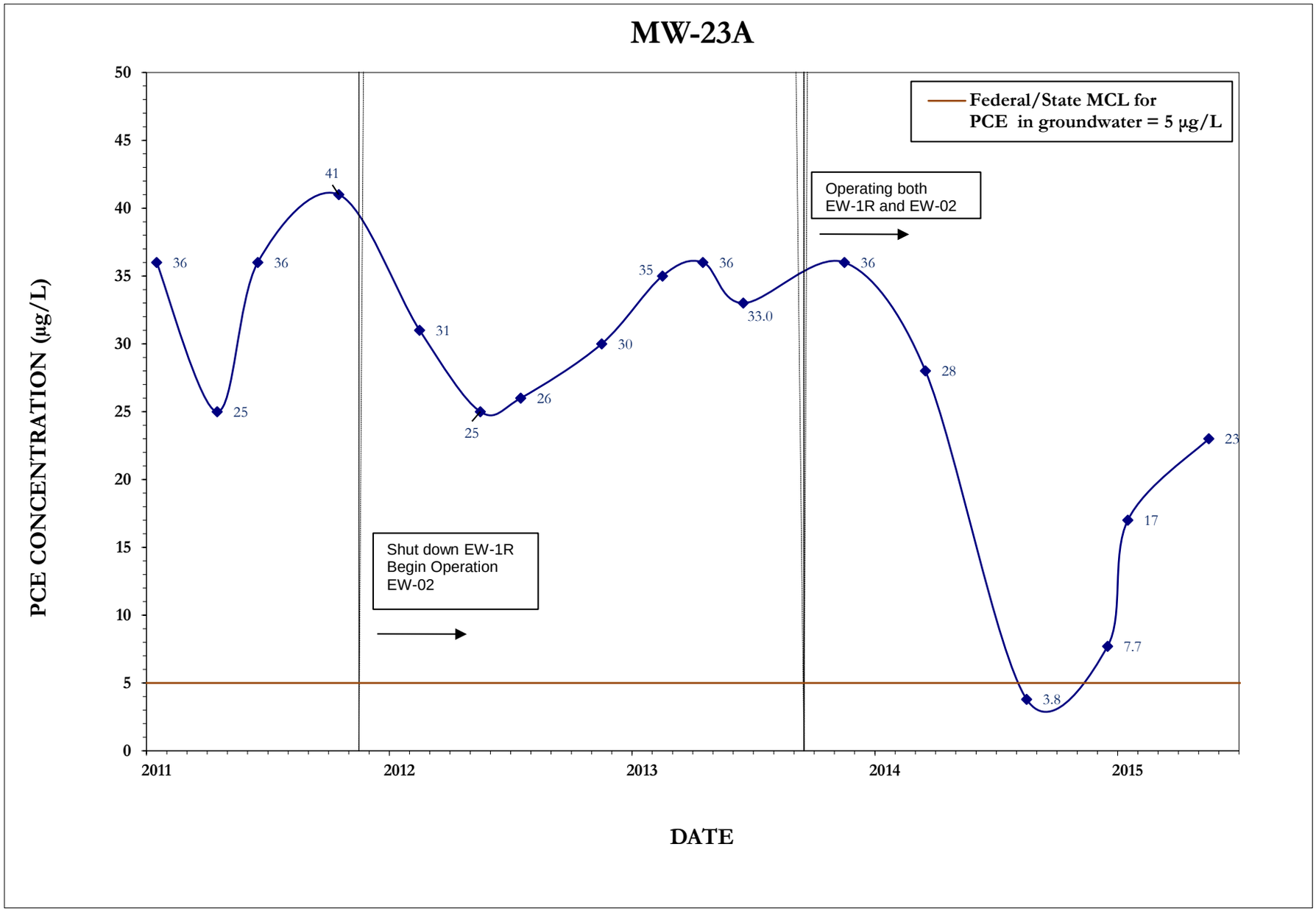

FIGURE F-3(ao)
HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

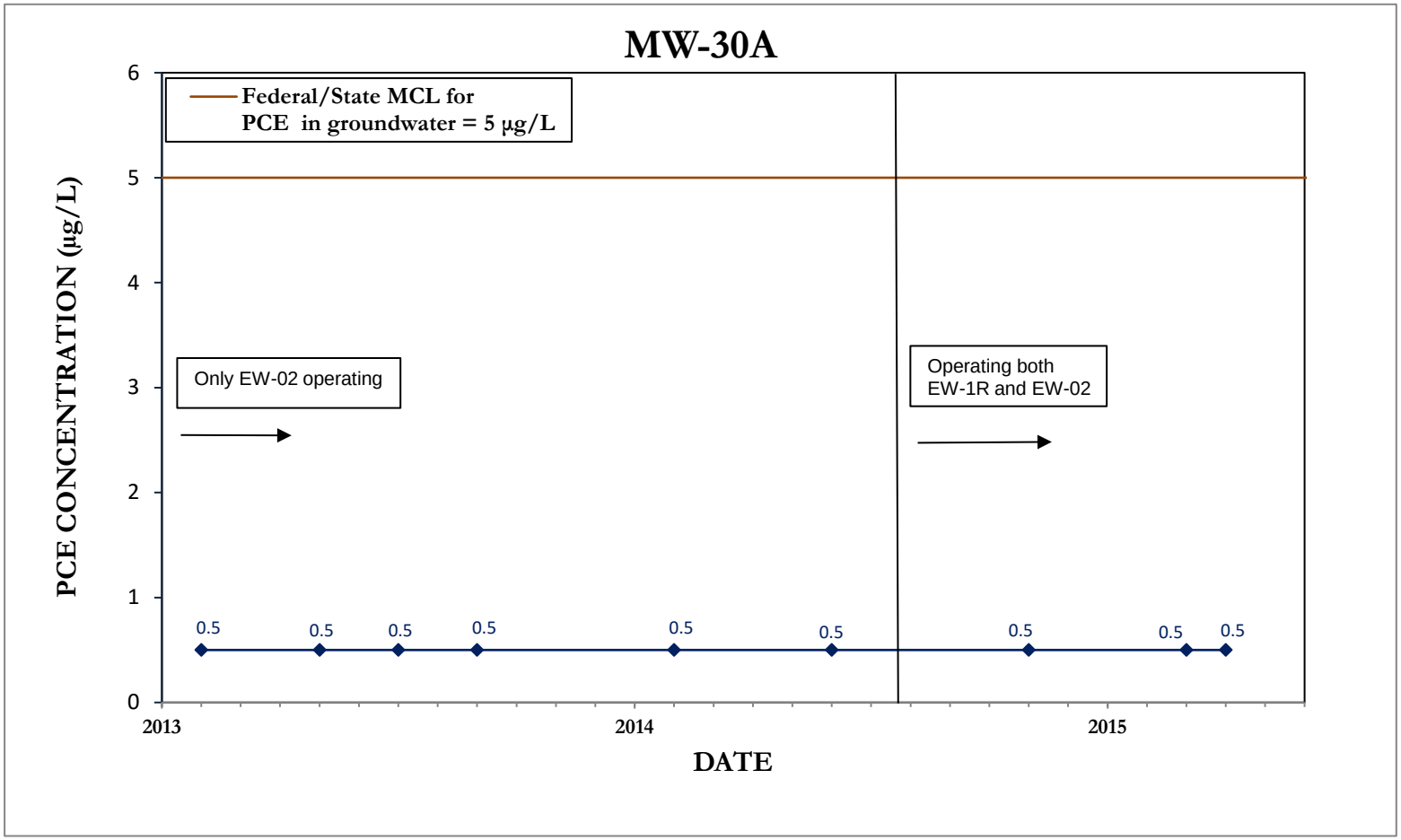

FIGURE F-3(aq)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

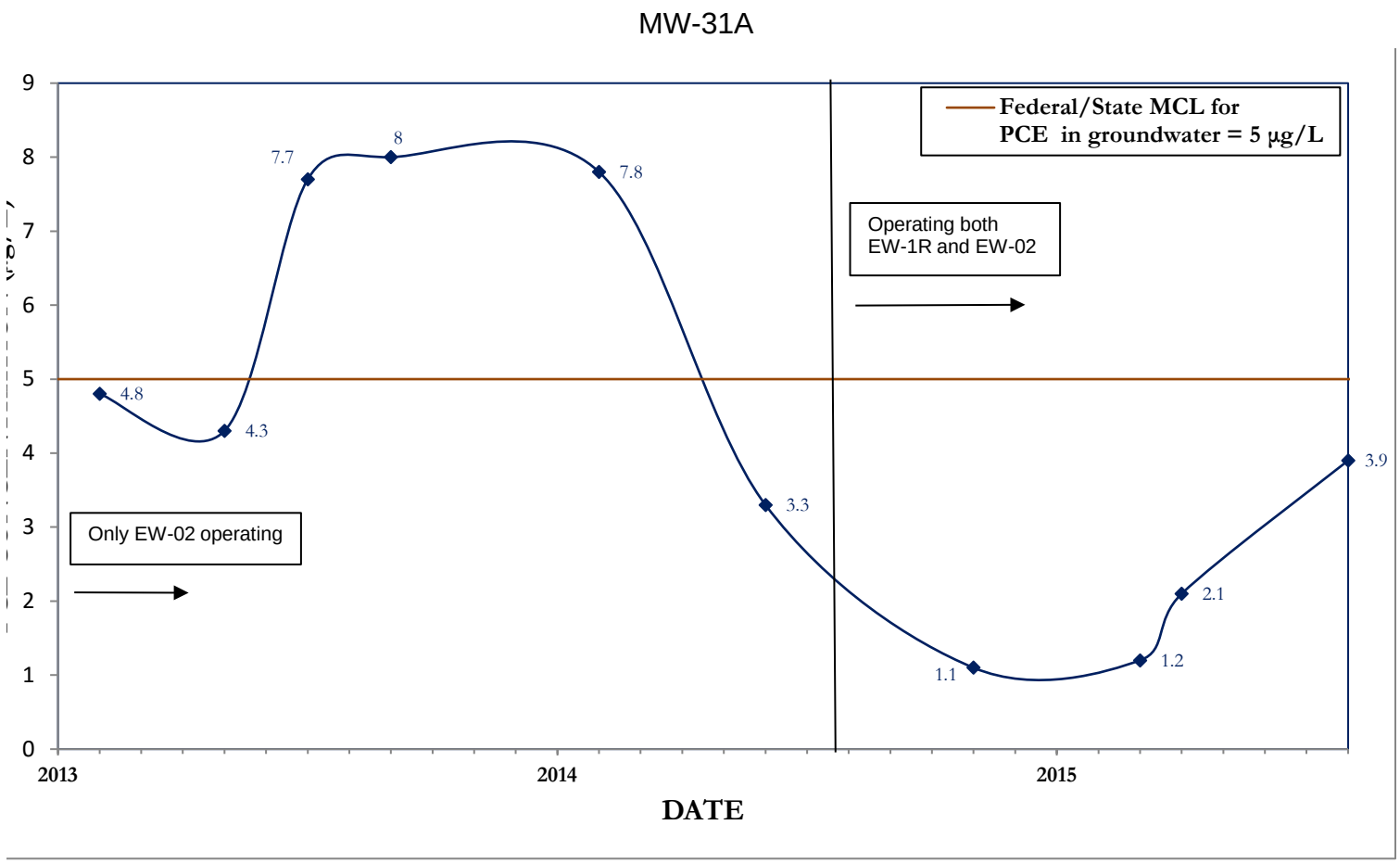

FIGURE F-3(e)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

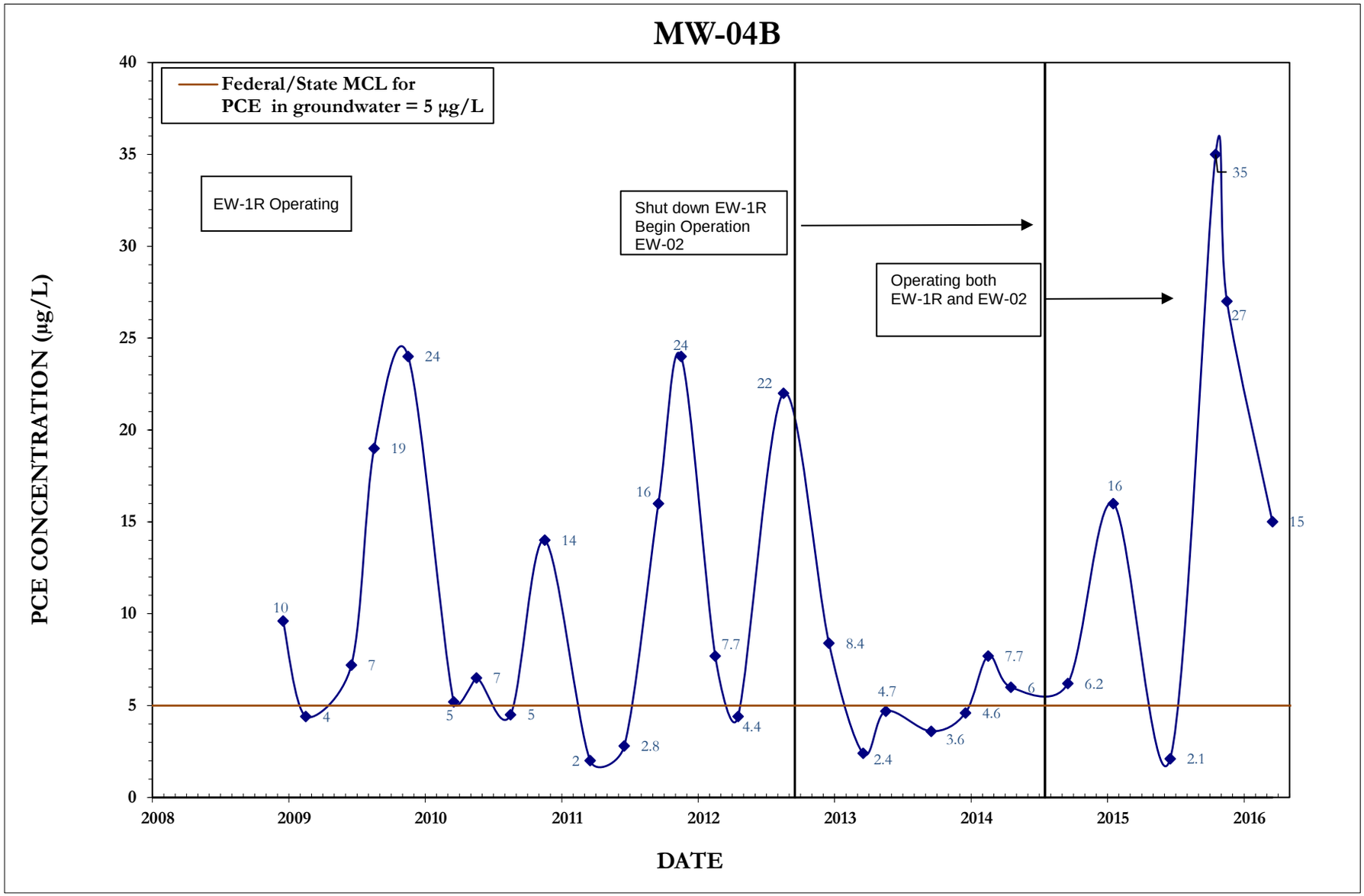

FIGURE F-3(k)

HISTORICAL PCE CONCENTRATIONS IN GROUDNWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

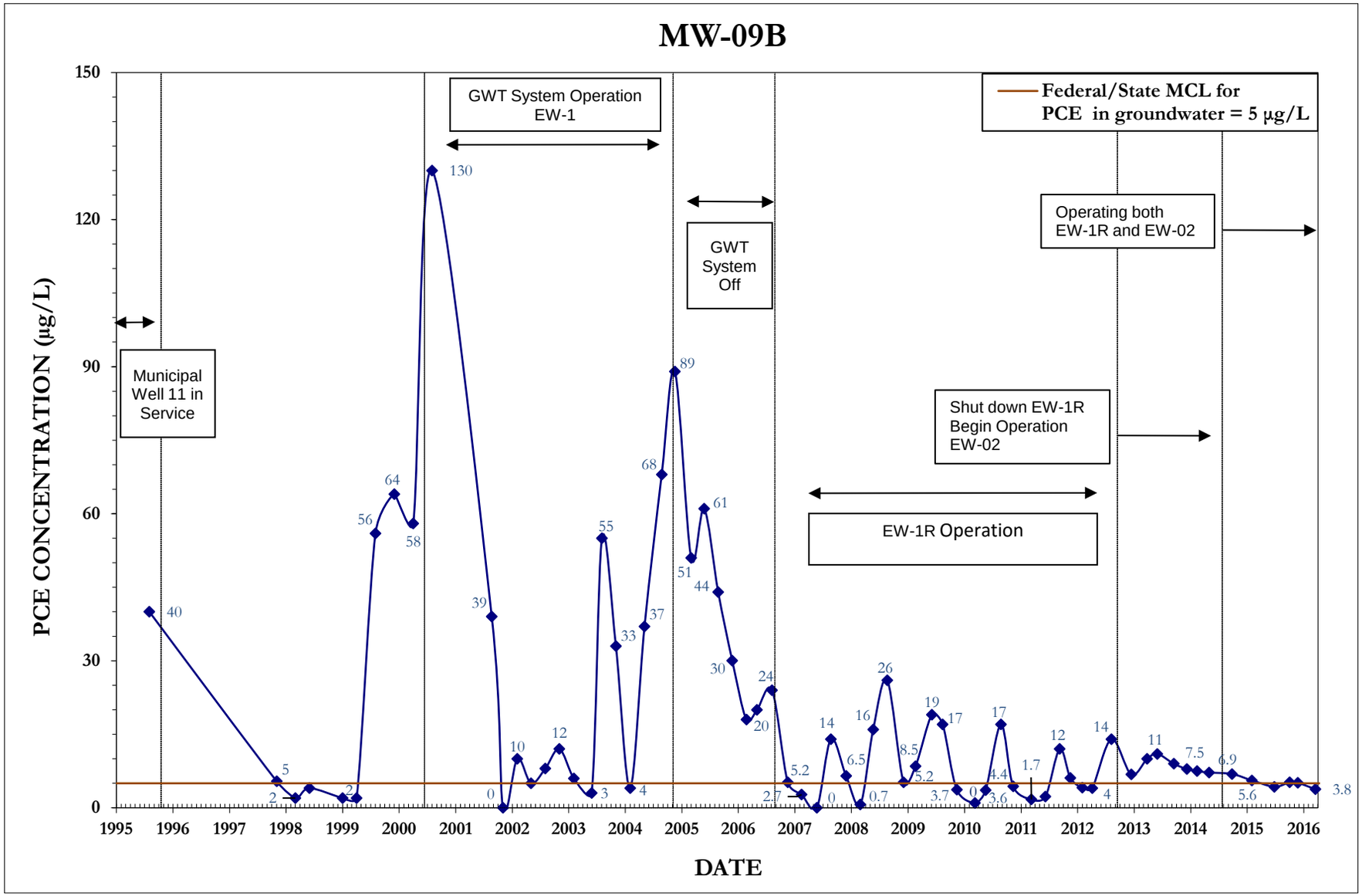

FIGURE F-3(m)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

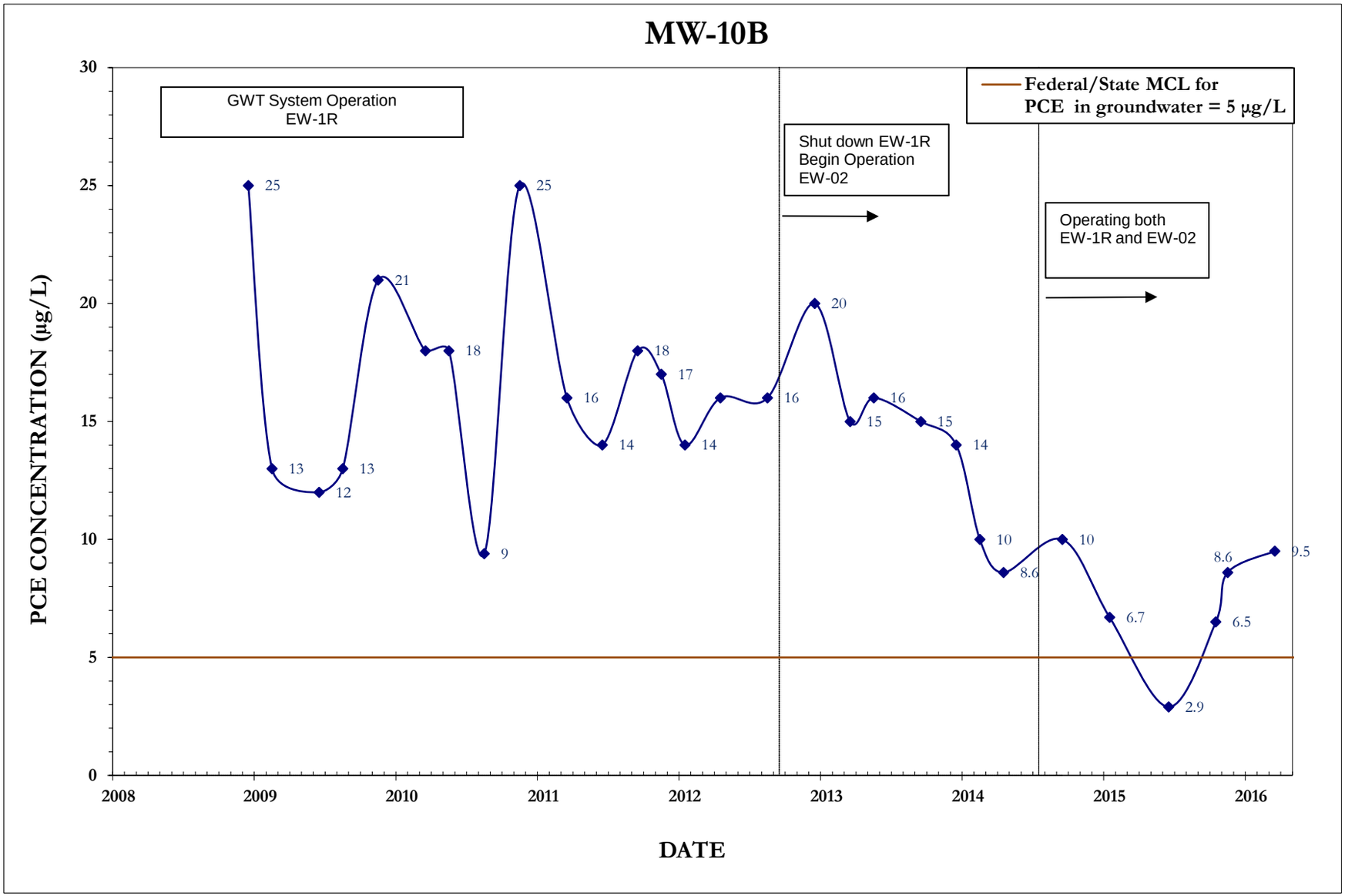

FIGURE F-3(u)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

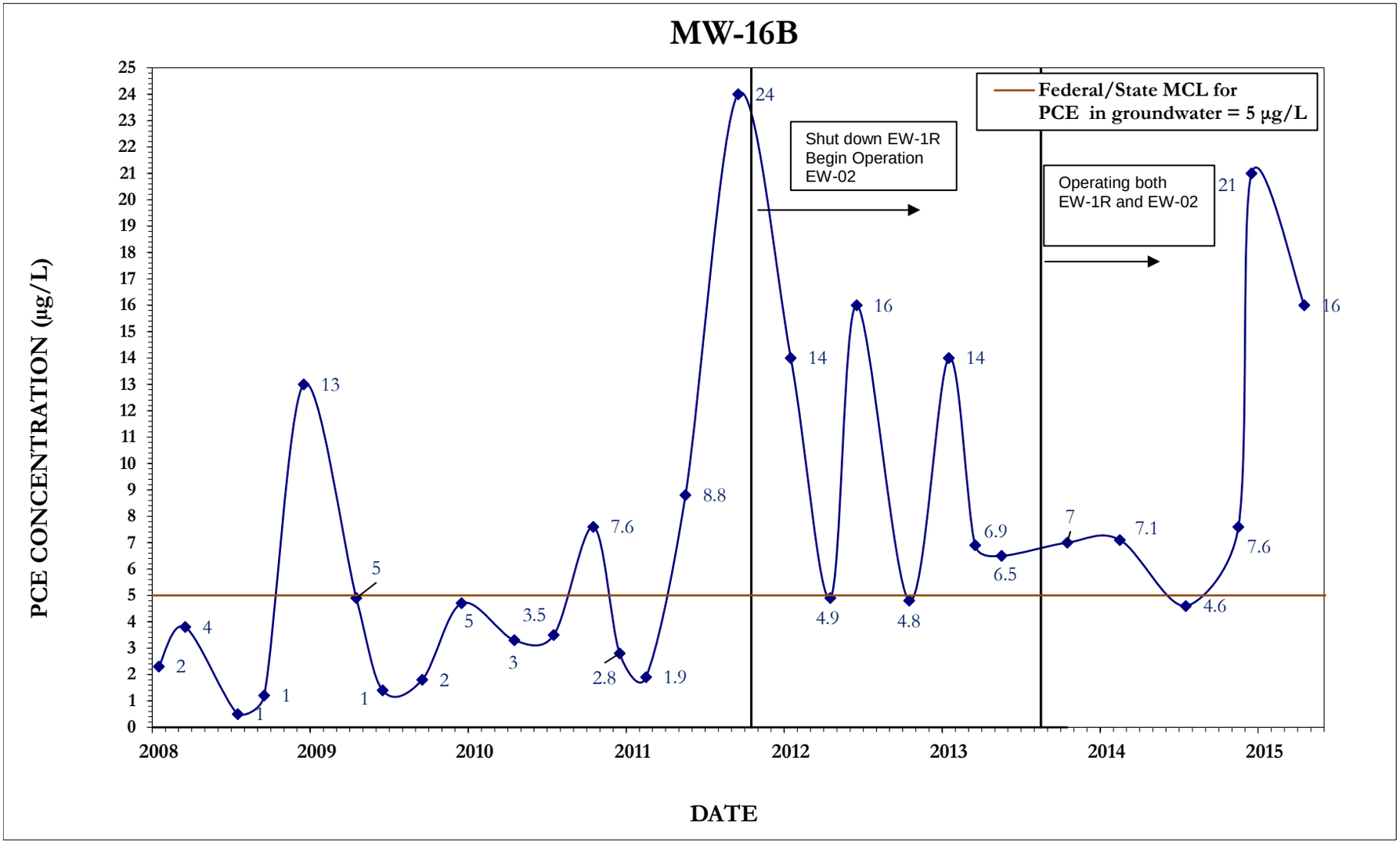

FIGURE F-3(x)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

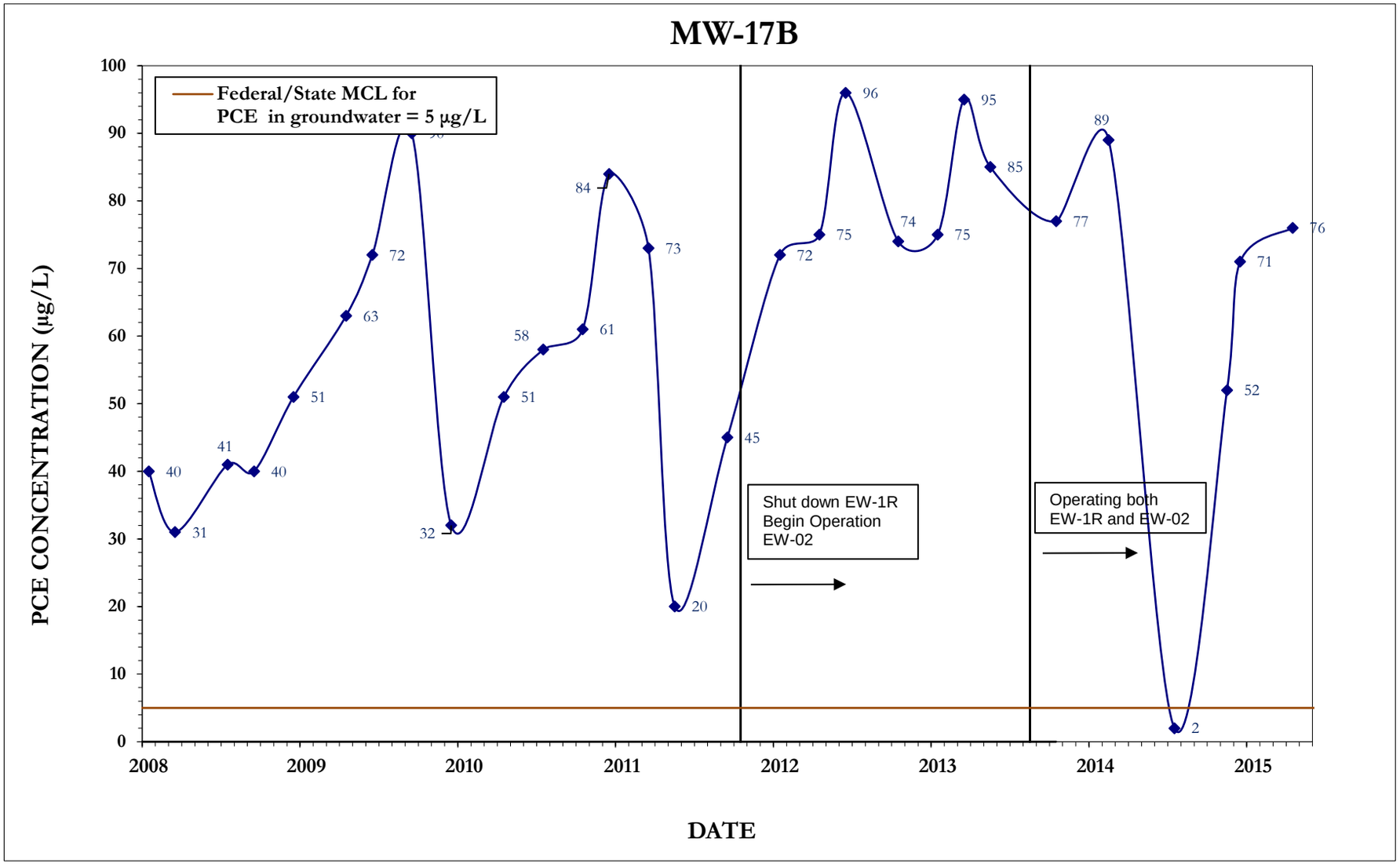

FIGURE F-3(ab)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

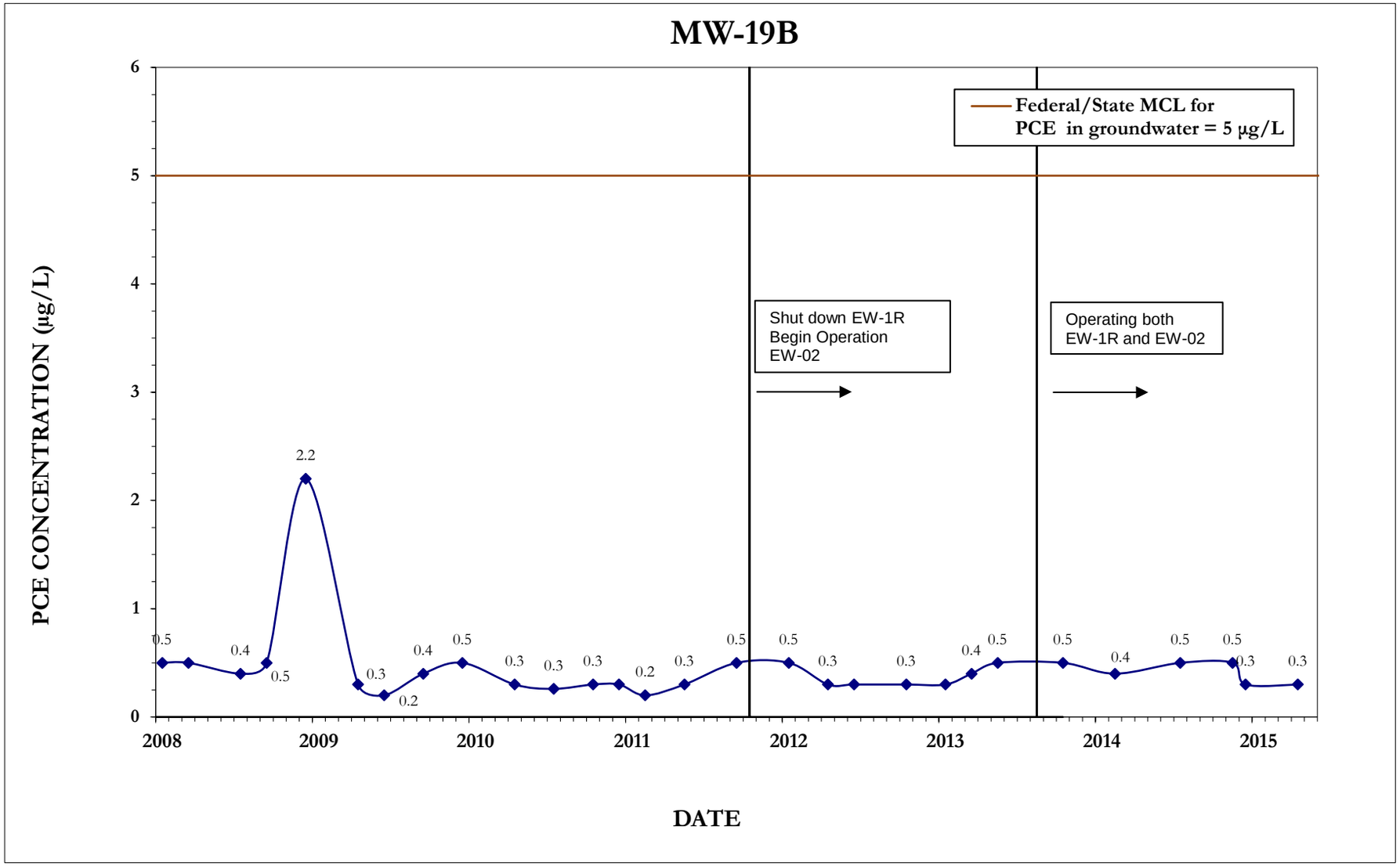

FIGURE F-3(ad)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

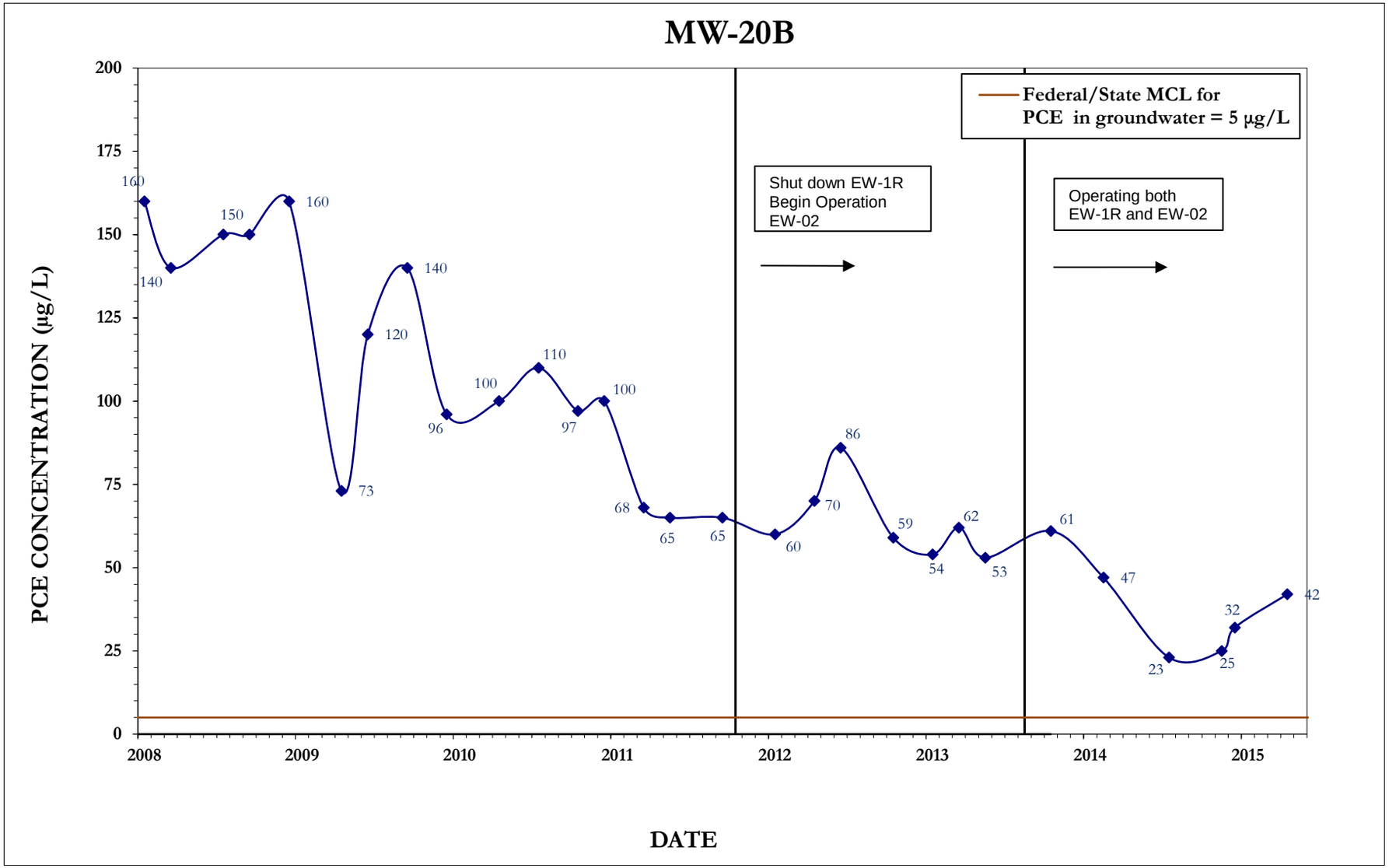

FIGURE F-3(ai)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

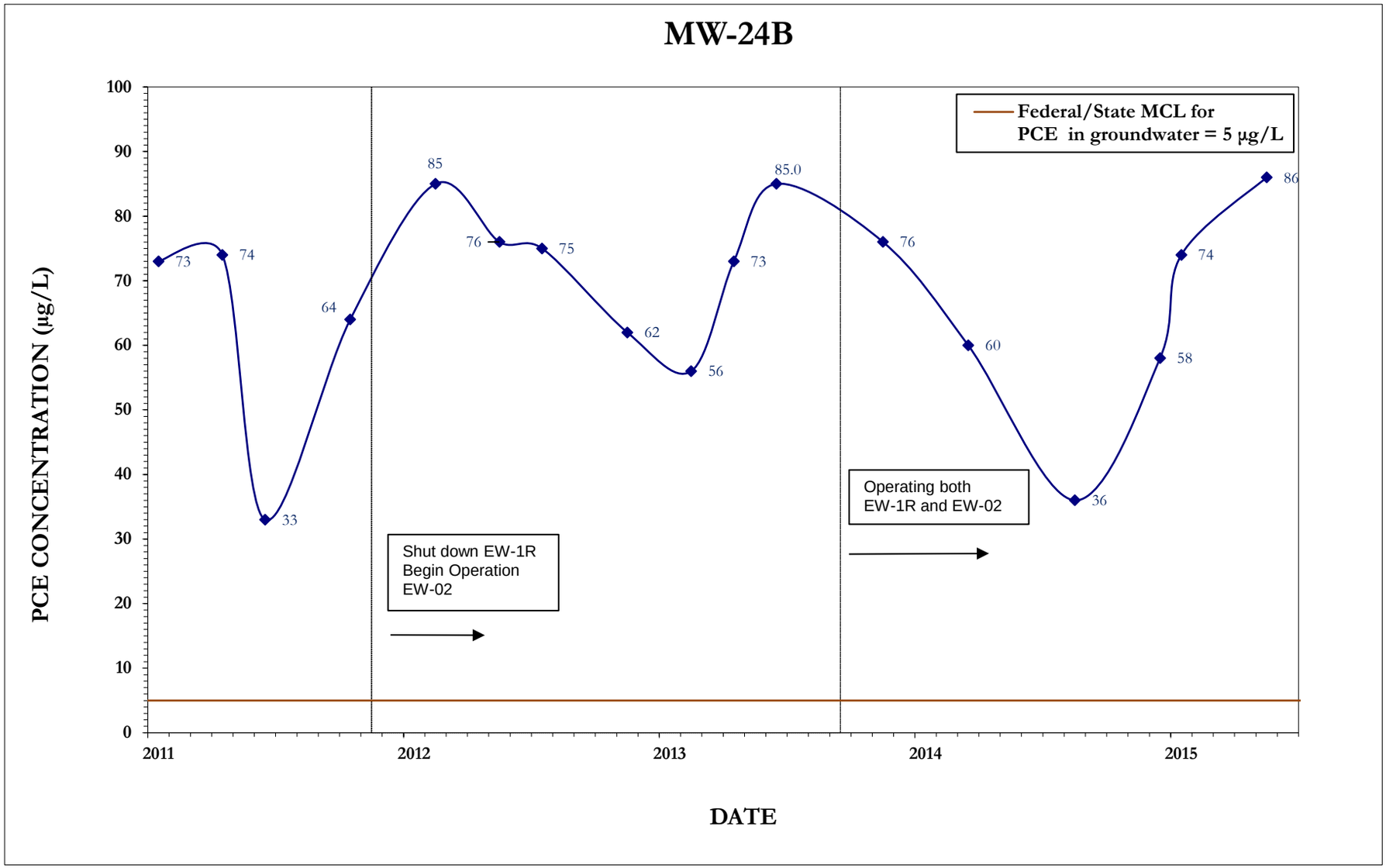

FIGURE F-3(aj)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

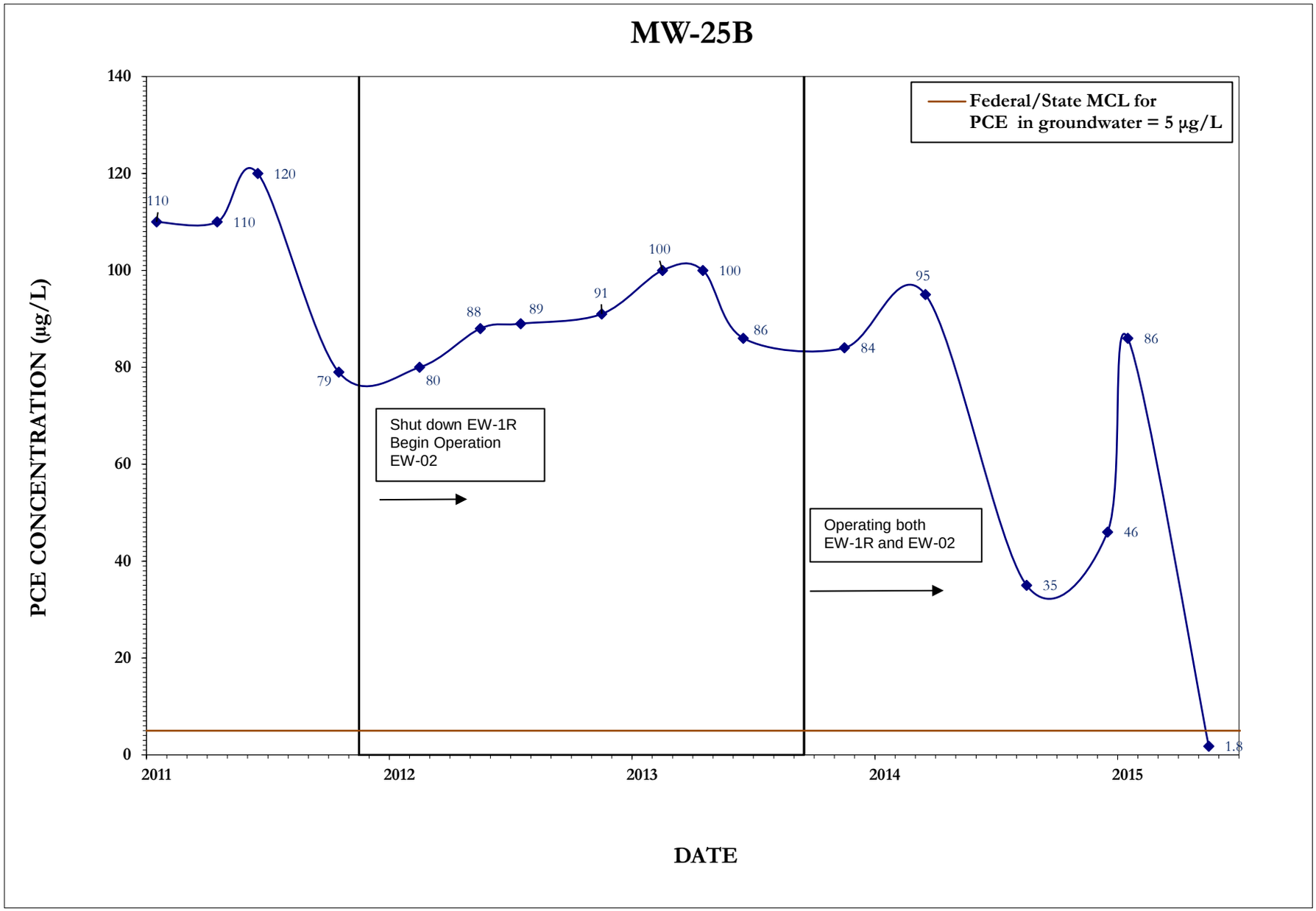

FIGURE F-3(ak)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

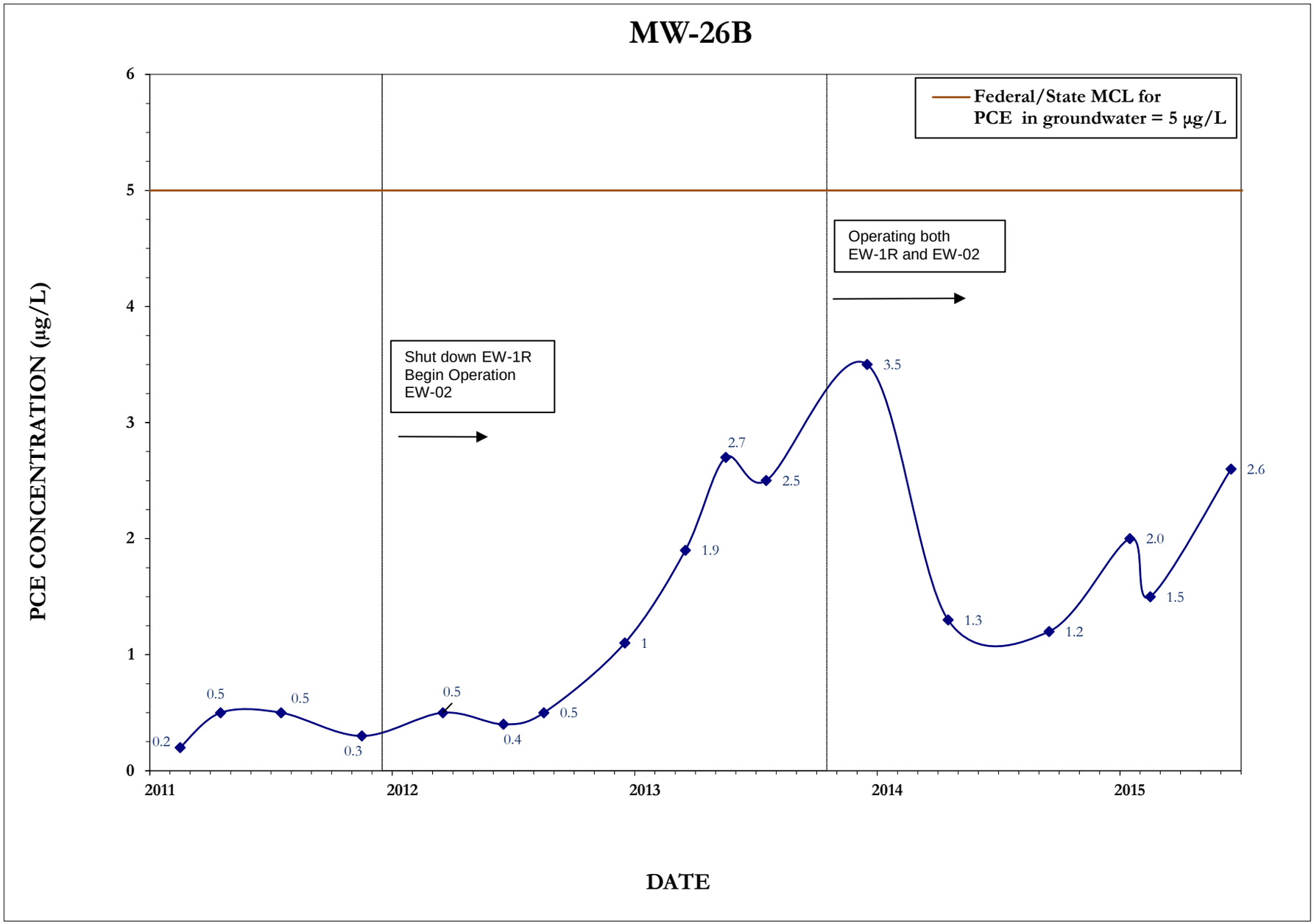

FIGURE F-3(al)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

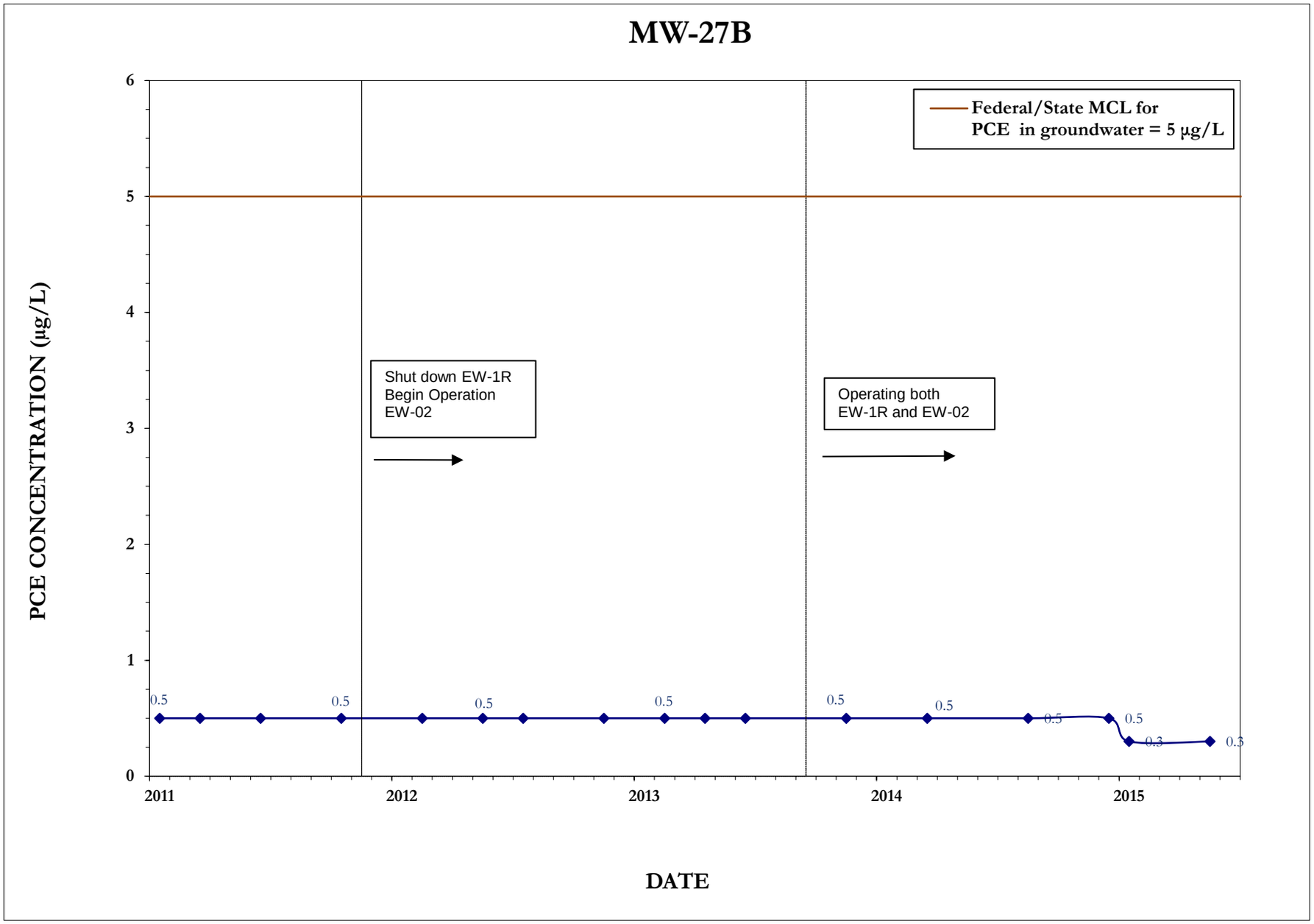

FIGURE F-3(am)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

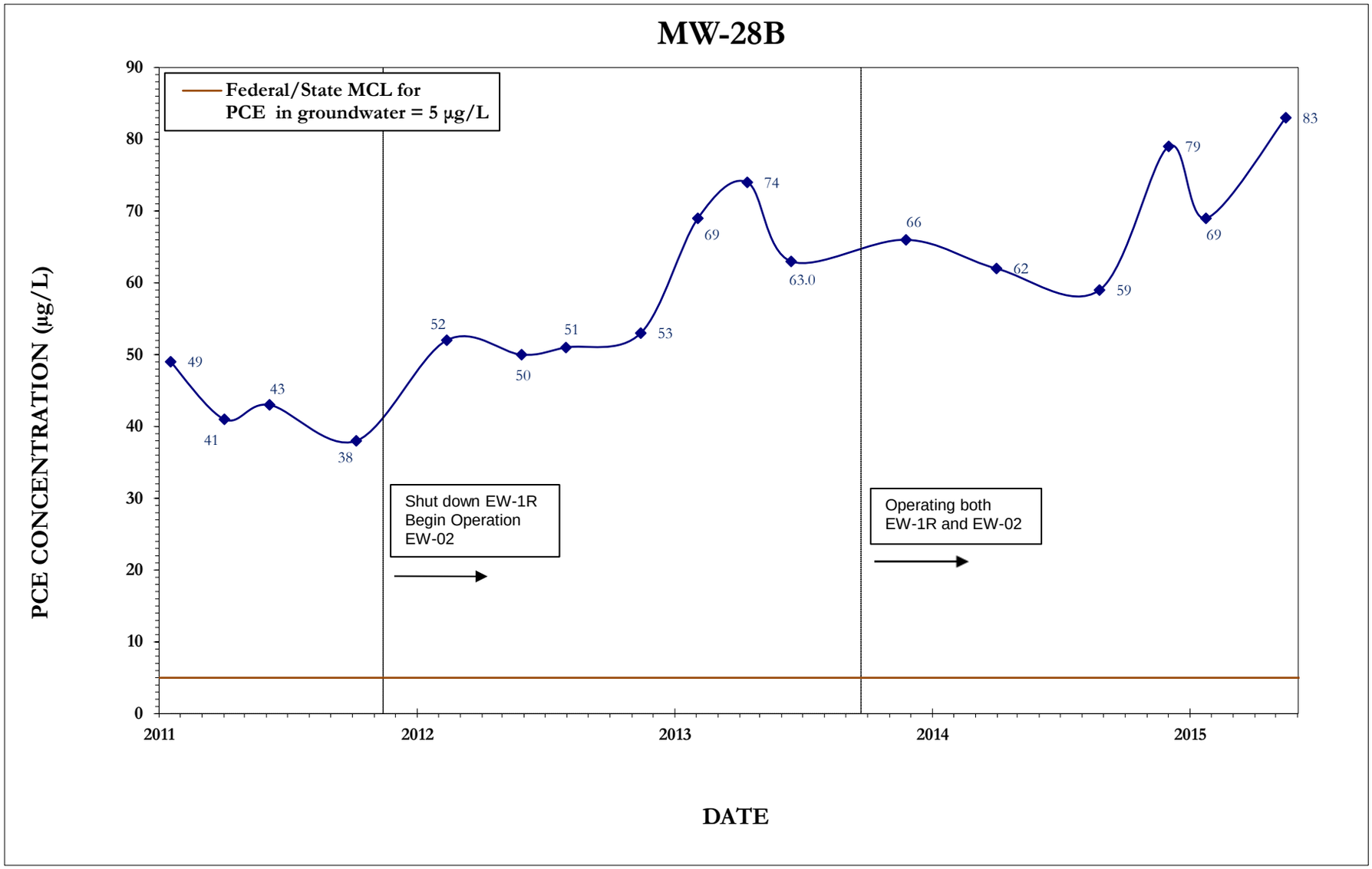

FIGURE F-3(an)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

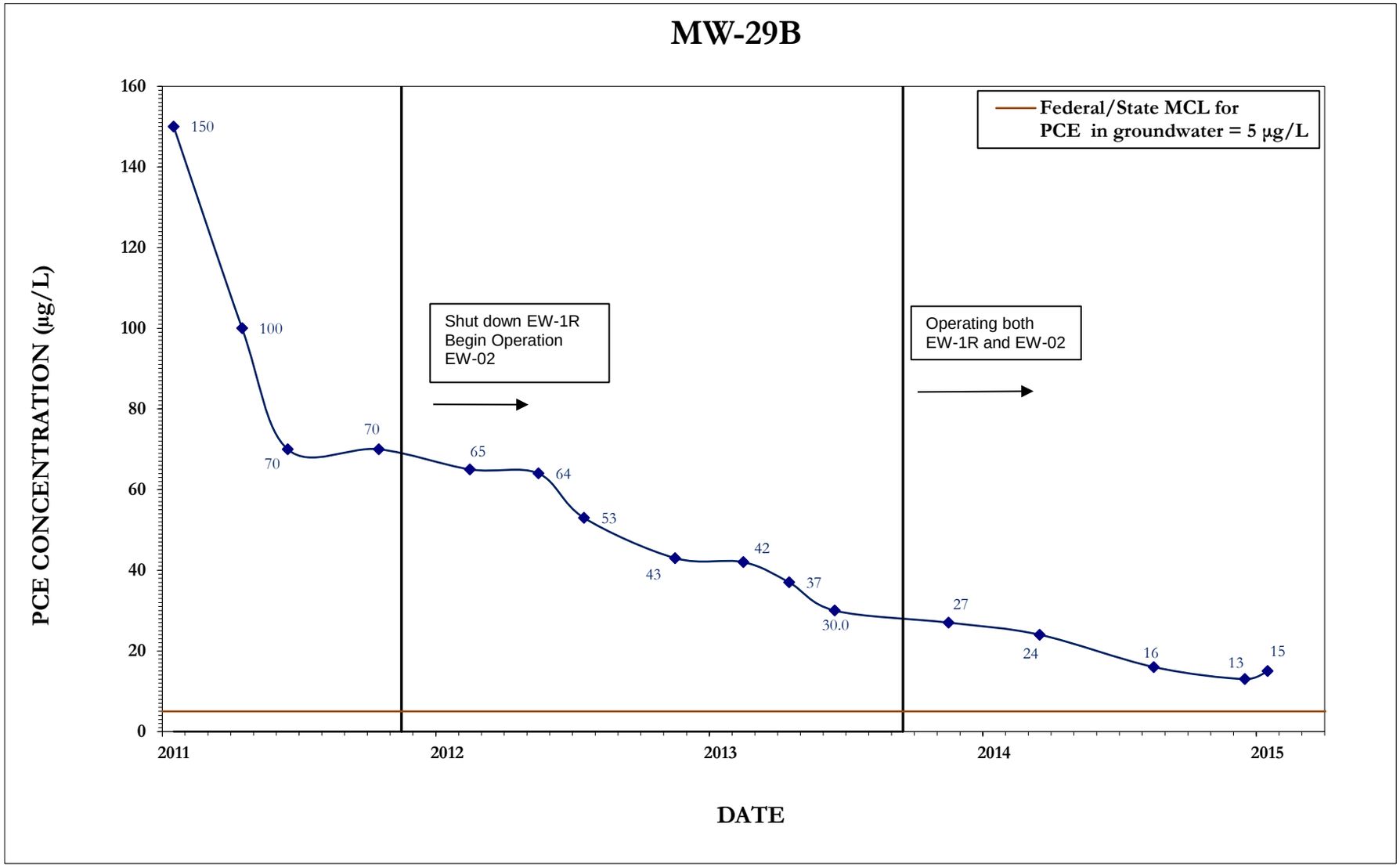

FIGURE F-3(ap)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

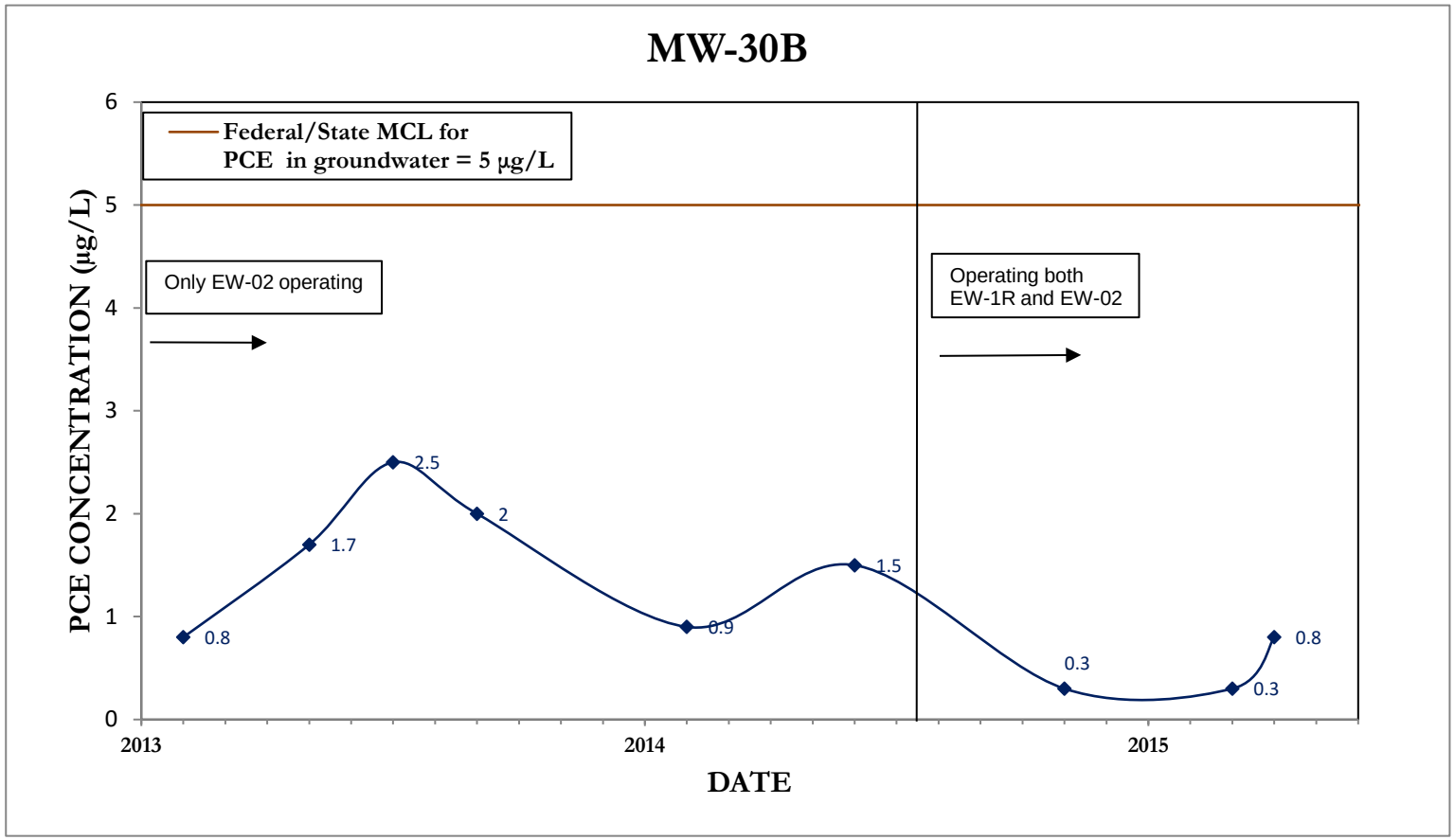

FIGURE F-3(ar)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

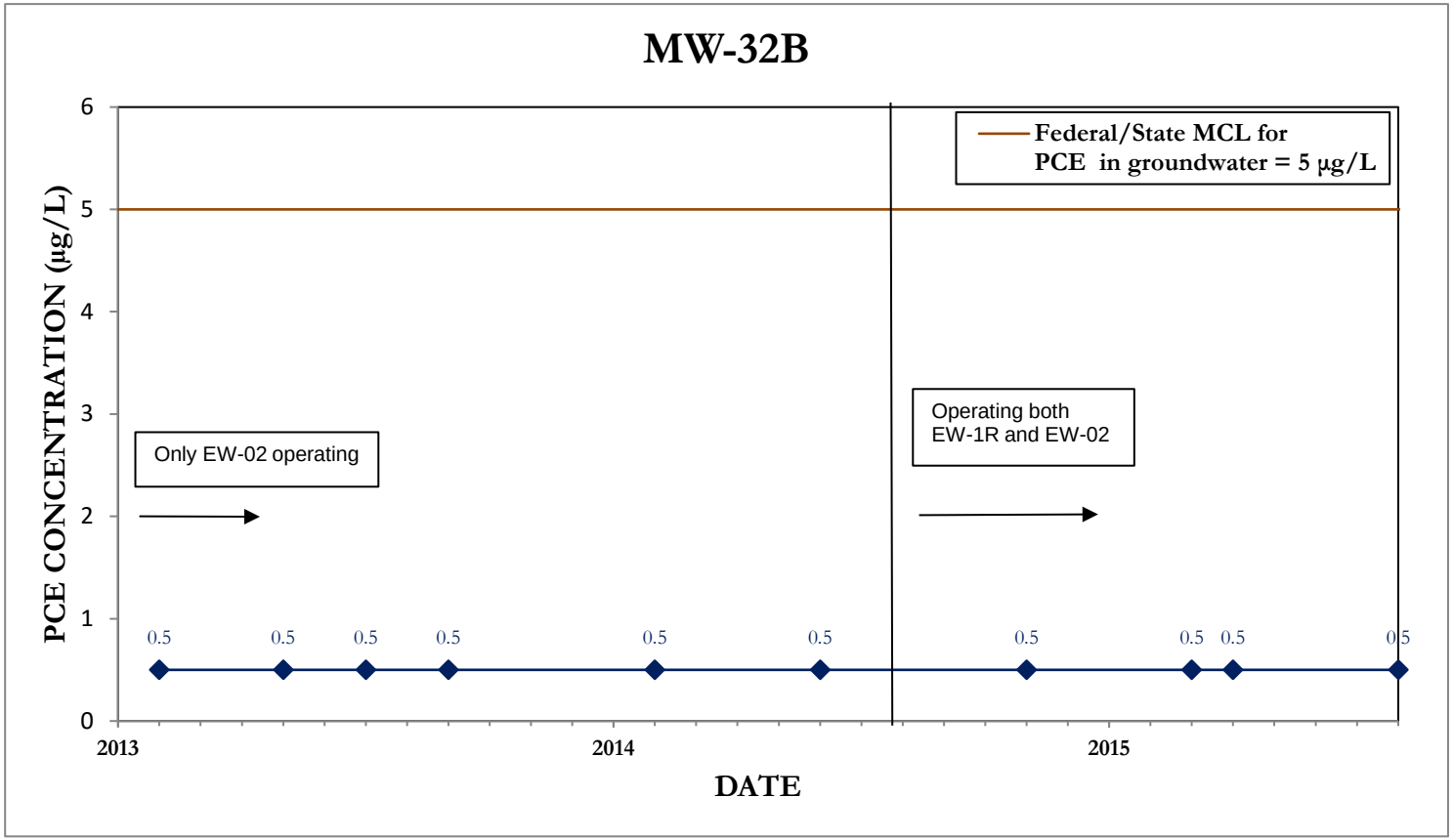

FIGURE F-3(at)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

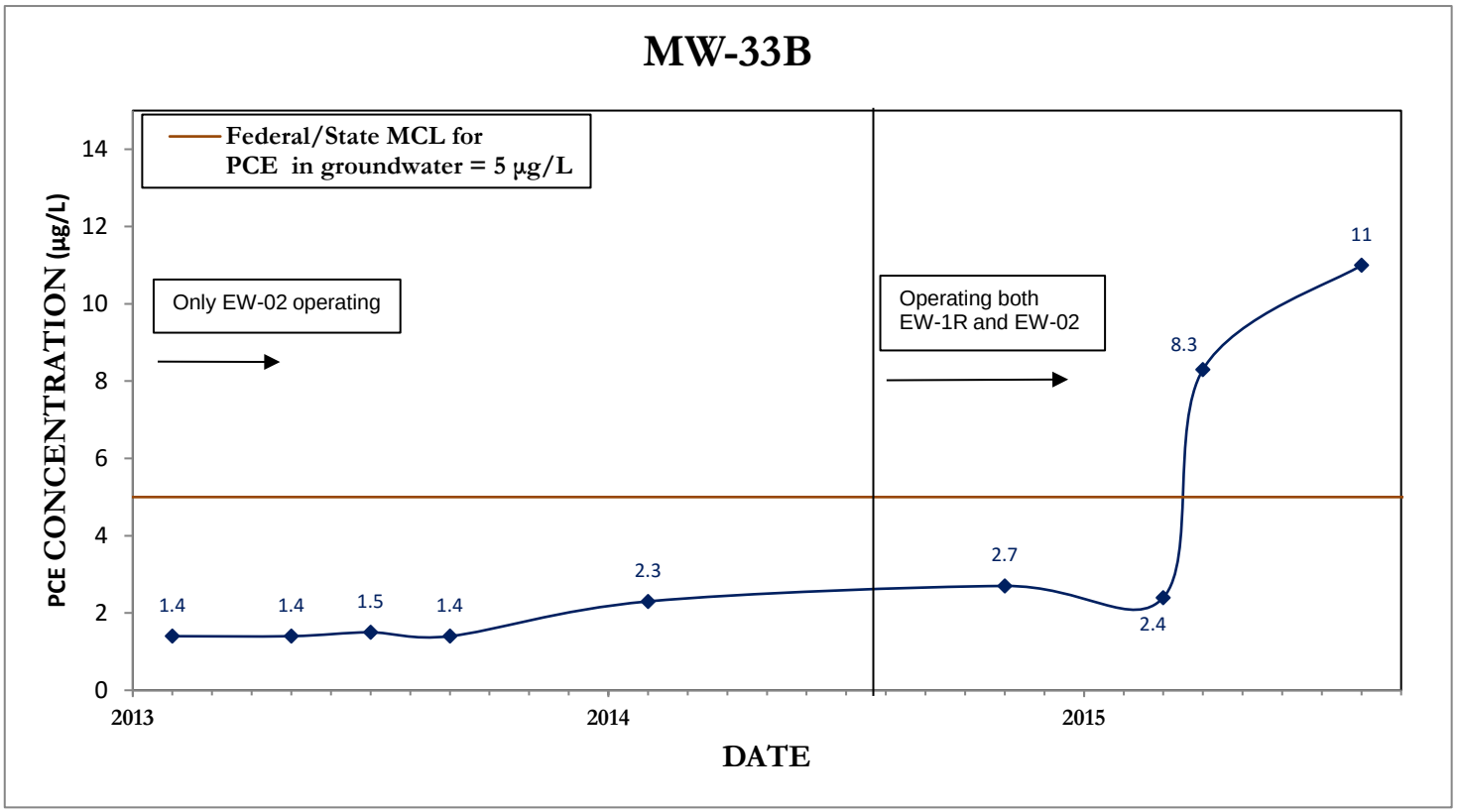

FIGURE F-3(au)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

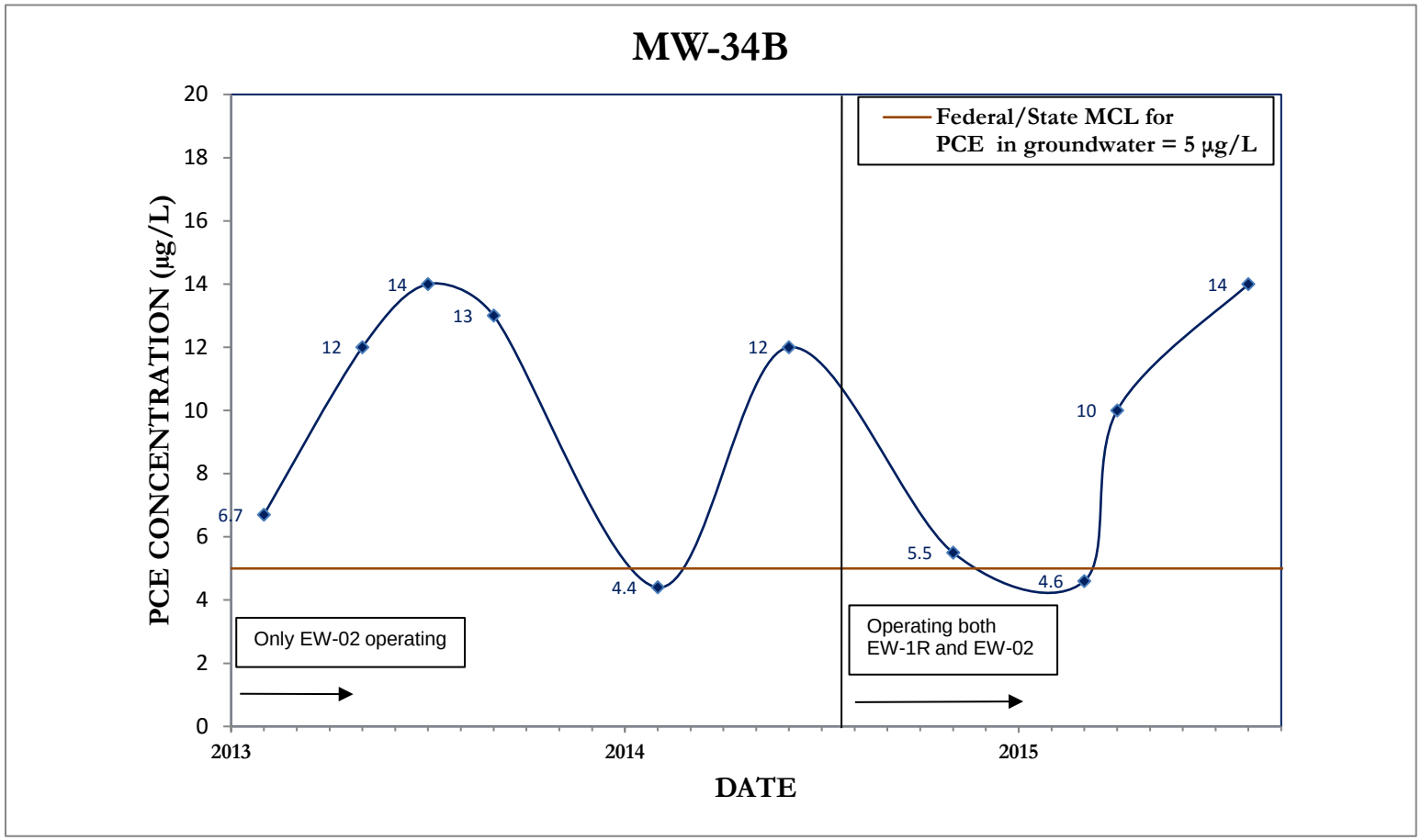

FIGURE F-3(av)

HISTORICAL PCE CONCENTRATIONS IN
GROUNDWATER MONITORING WELLS
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA

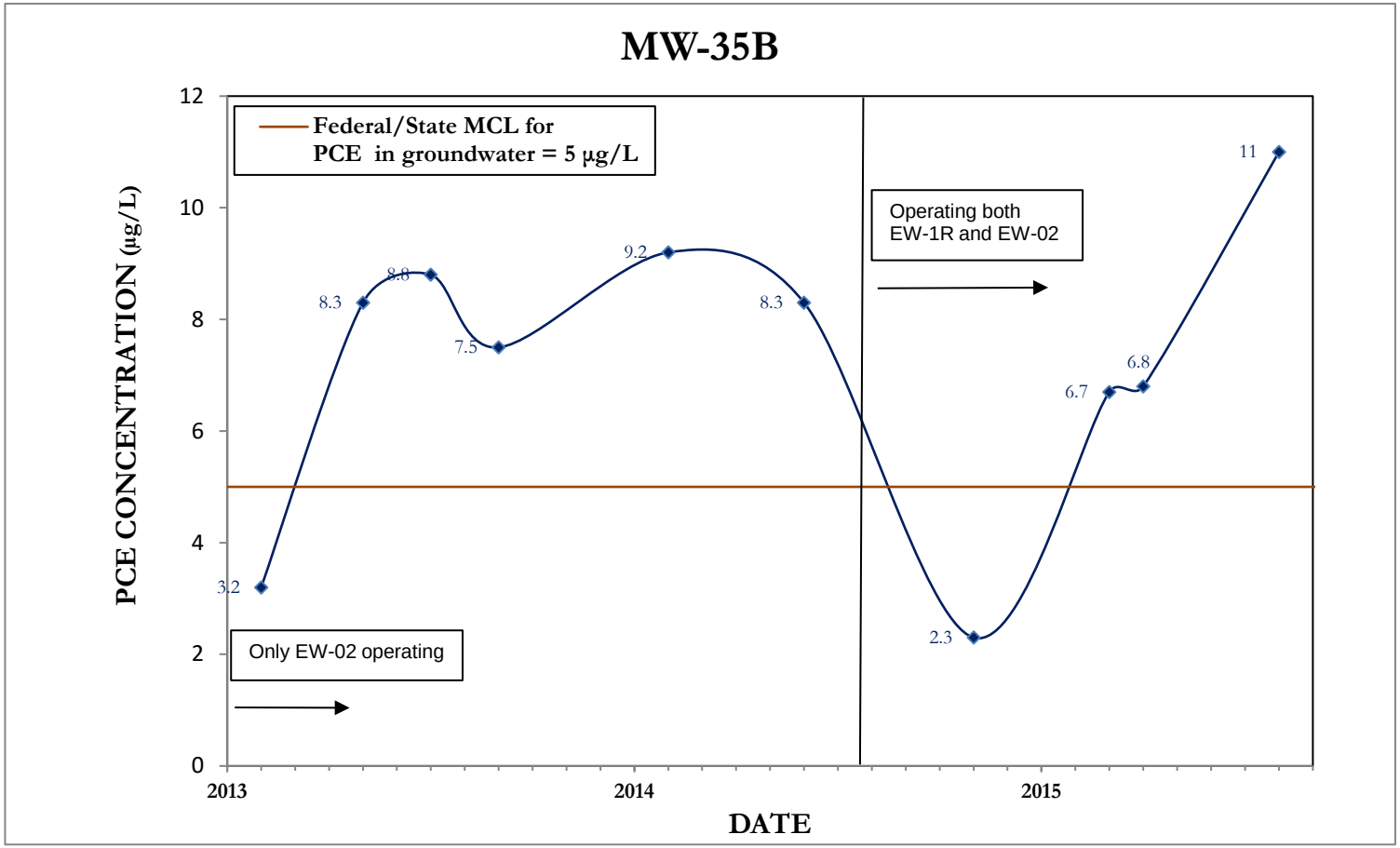

FIGURE F-3(f)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

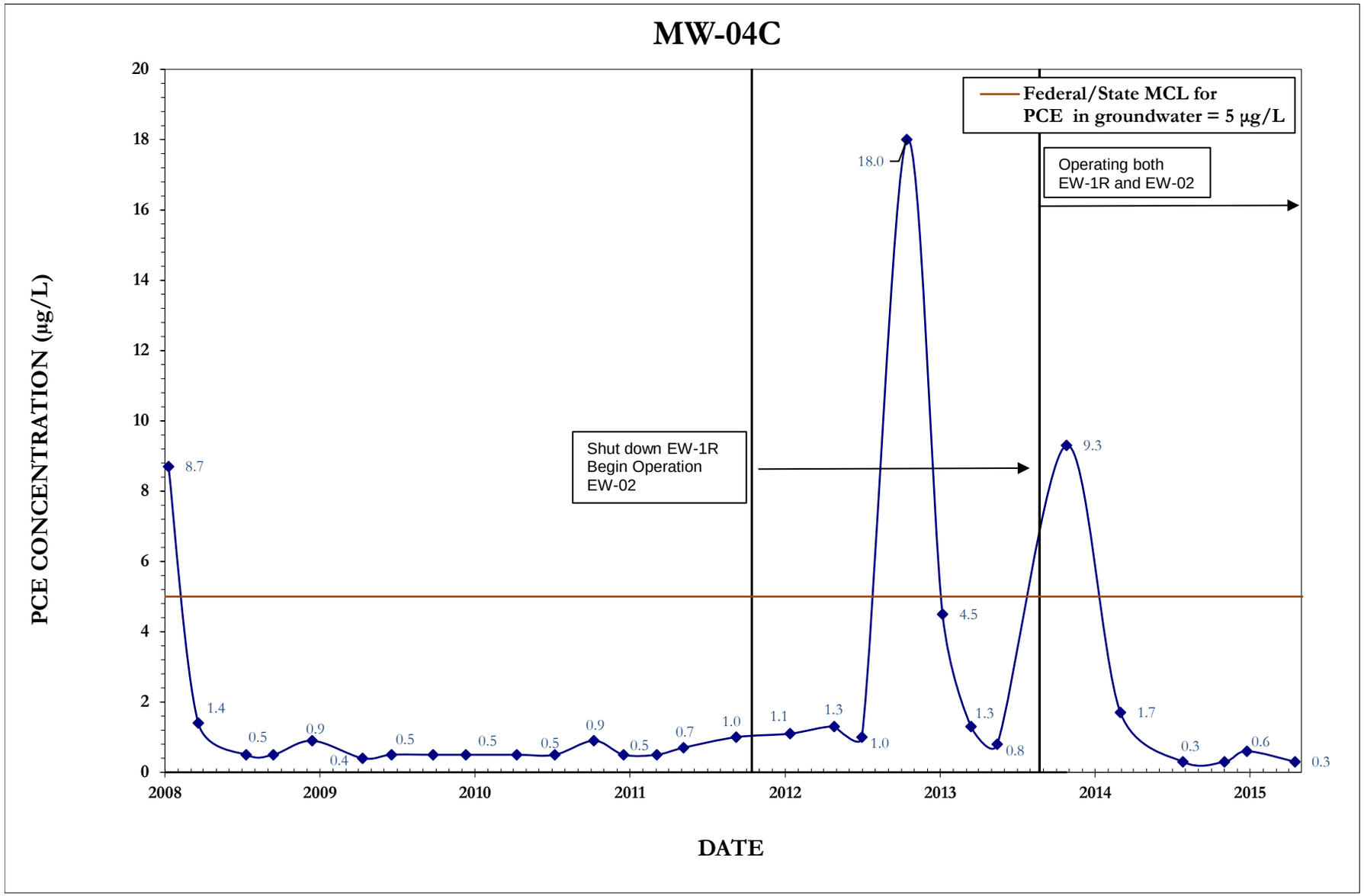

FIGURE F-3(n)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

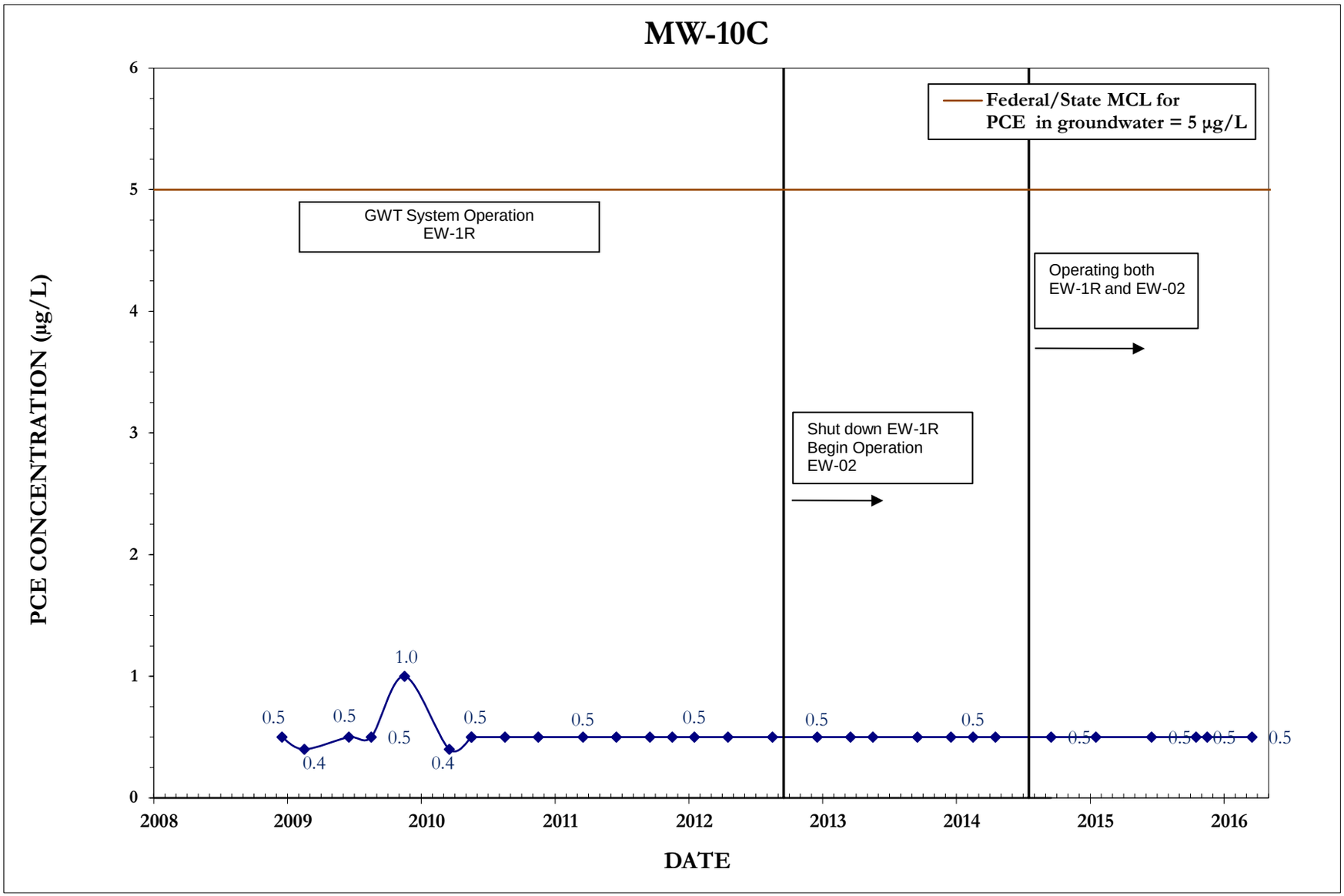

FIGURE F-3(v)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

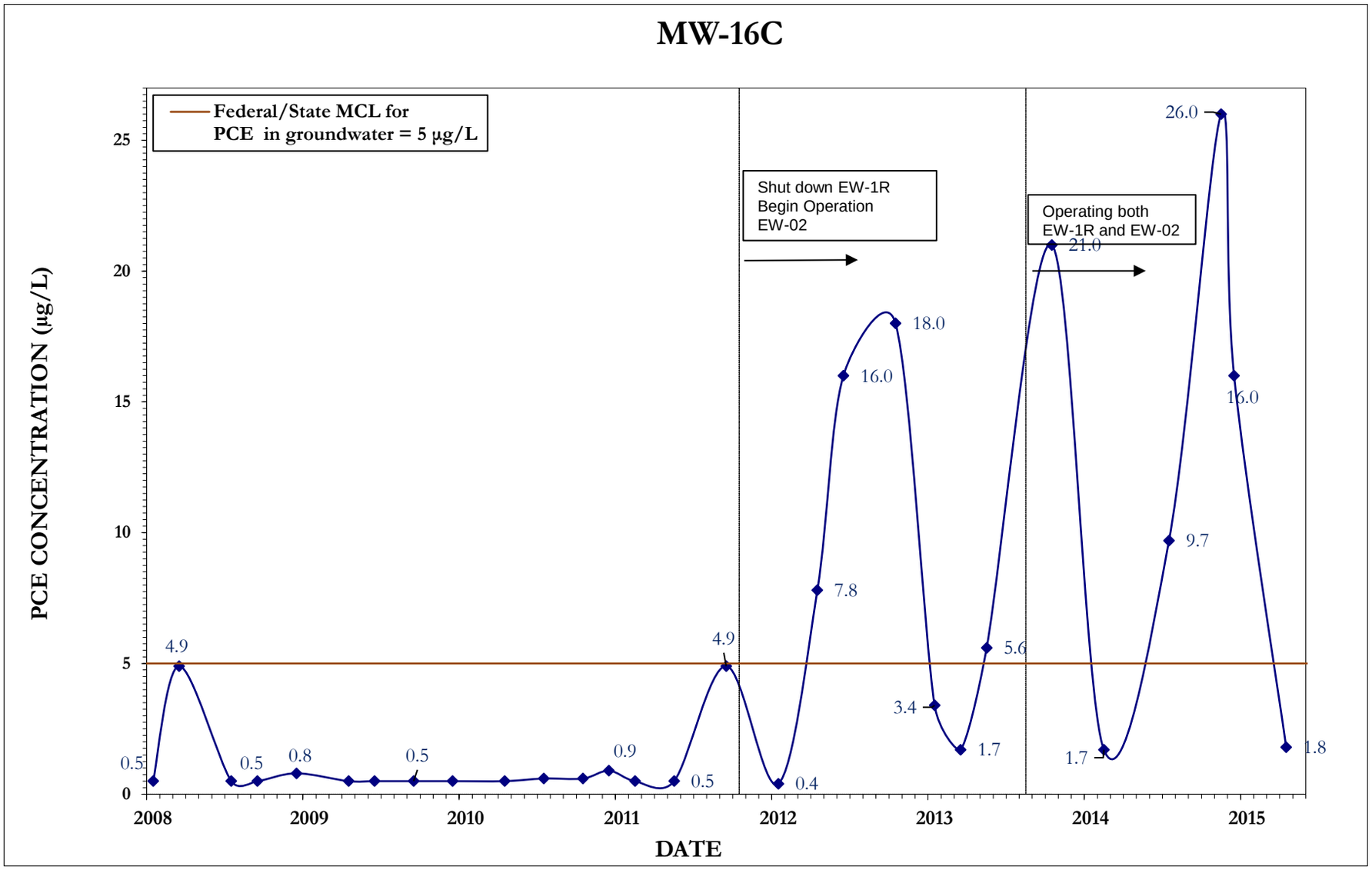

FIGURE F-3(y)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

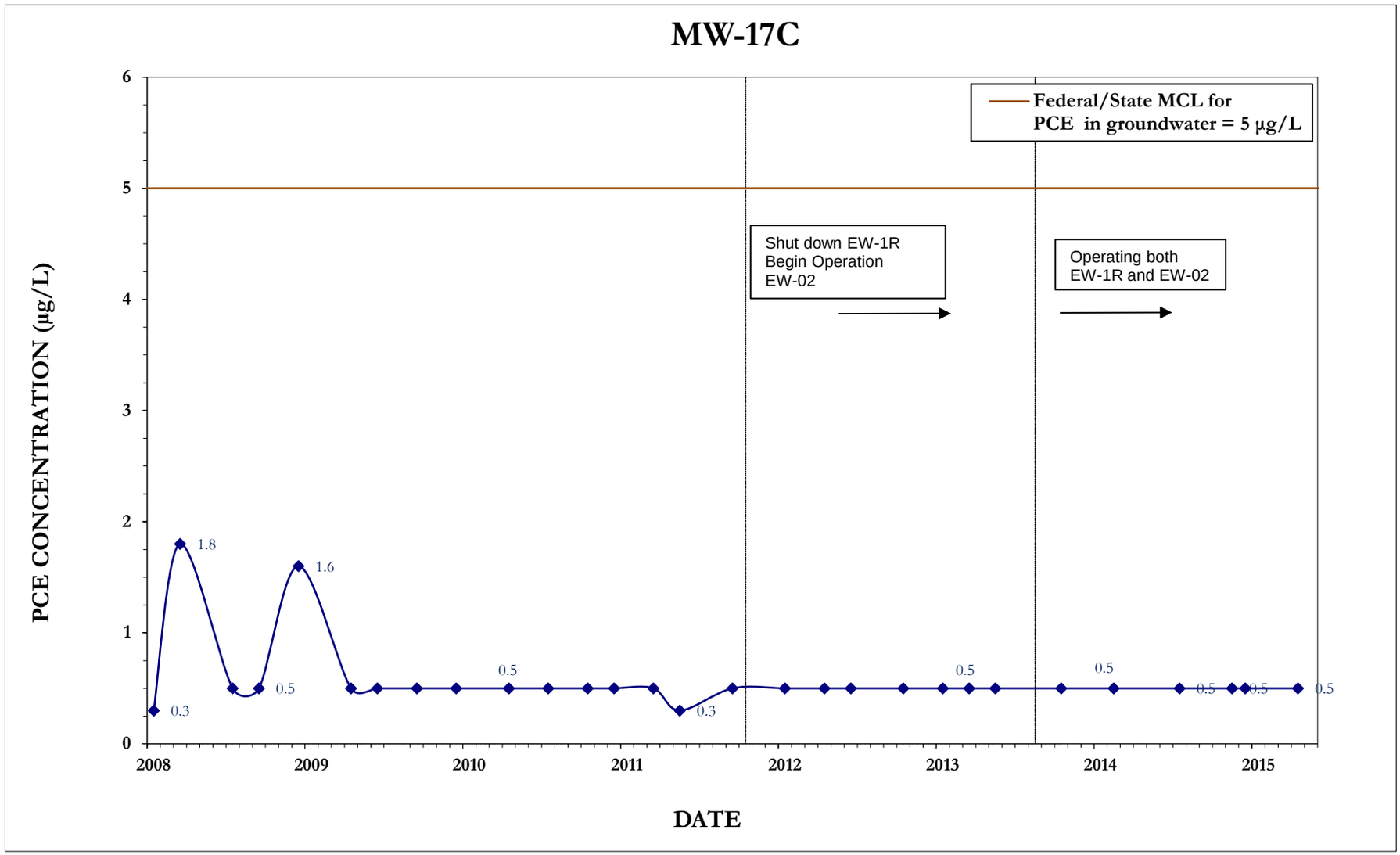

FIGURE F-3(ae)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

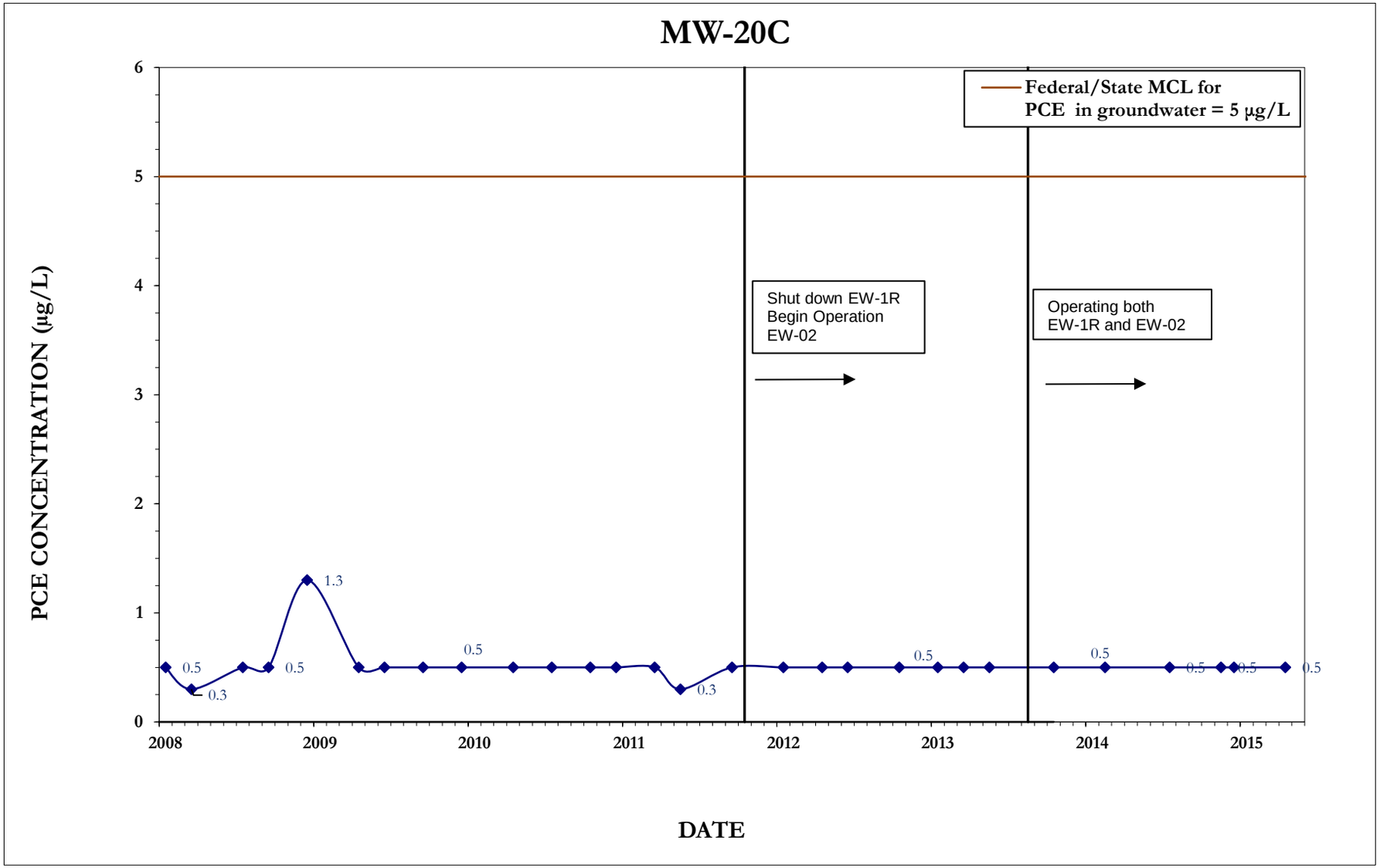

FIGURE F-3(as)

HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER MONITORING WELLS MODESTO SUPERFUND SITE MODESTO, CALIFORNIA

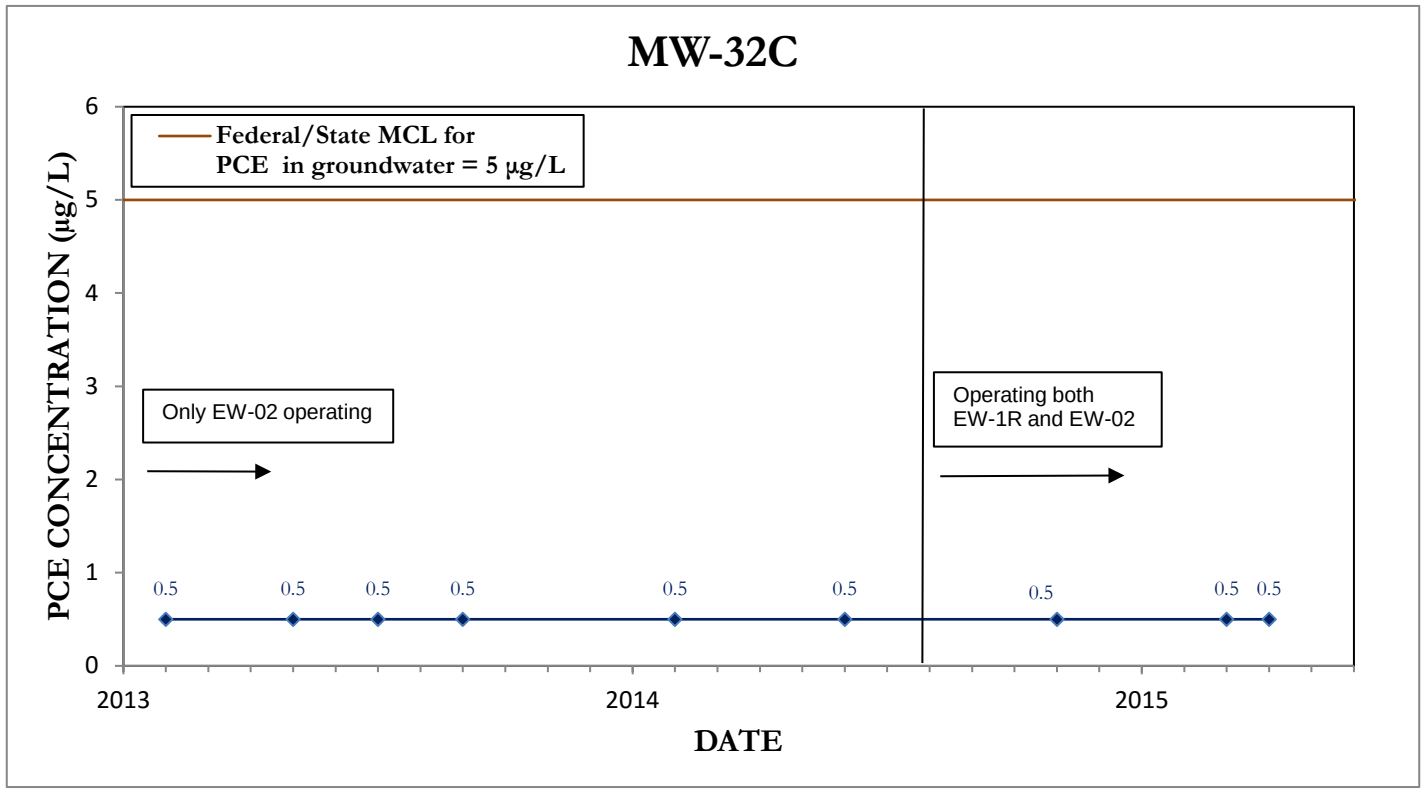

TABLE F-4 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEM MODESTO SUPERFUND SITE MODESTO, CALIFORNIA
(Page 1 of 4)

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 F-4 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEM MODESTO SUPERFUND SITE MODESTO, CALIFORNIA
(Page 2 of 4)

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 F-4 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEM MODESTO SUPERFUND SITE MODESTO, CALIFORNIA
(Page 3 of 4)

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
23-Dec-15	1,925,600	274,950,833	89	1.61	676.38
7-Jan-16	2,221,800	277,172,633	92	1.54	678.09
11-Feb-16	1,417,600	278,590,233	80	1.11	679.04
3-Mar-16	2,225,800	278,816,033	76	1.57	679.18

Notes:
µg/L - micrograms per liter

TABLE F-4 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEM MODESTO SUPERFUND SITE MODESTO, CALIFORNIA
(Page 4 of 4)

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)

lbs - pounds
PCE - Tetrachloroethene

Appendix G

PCE Soil Vapor Concentration Trends in Indoor Air, Sub-slab, and Soil Vapor Monitoring Wells

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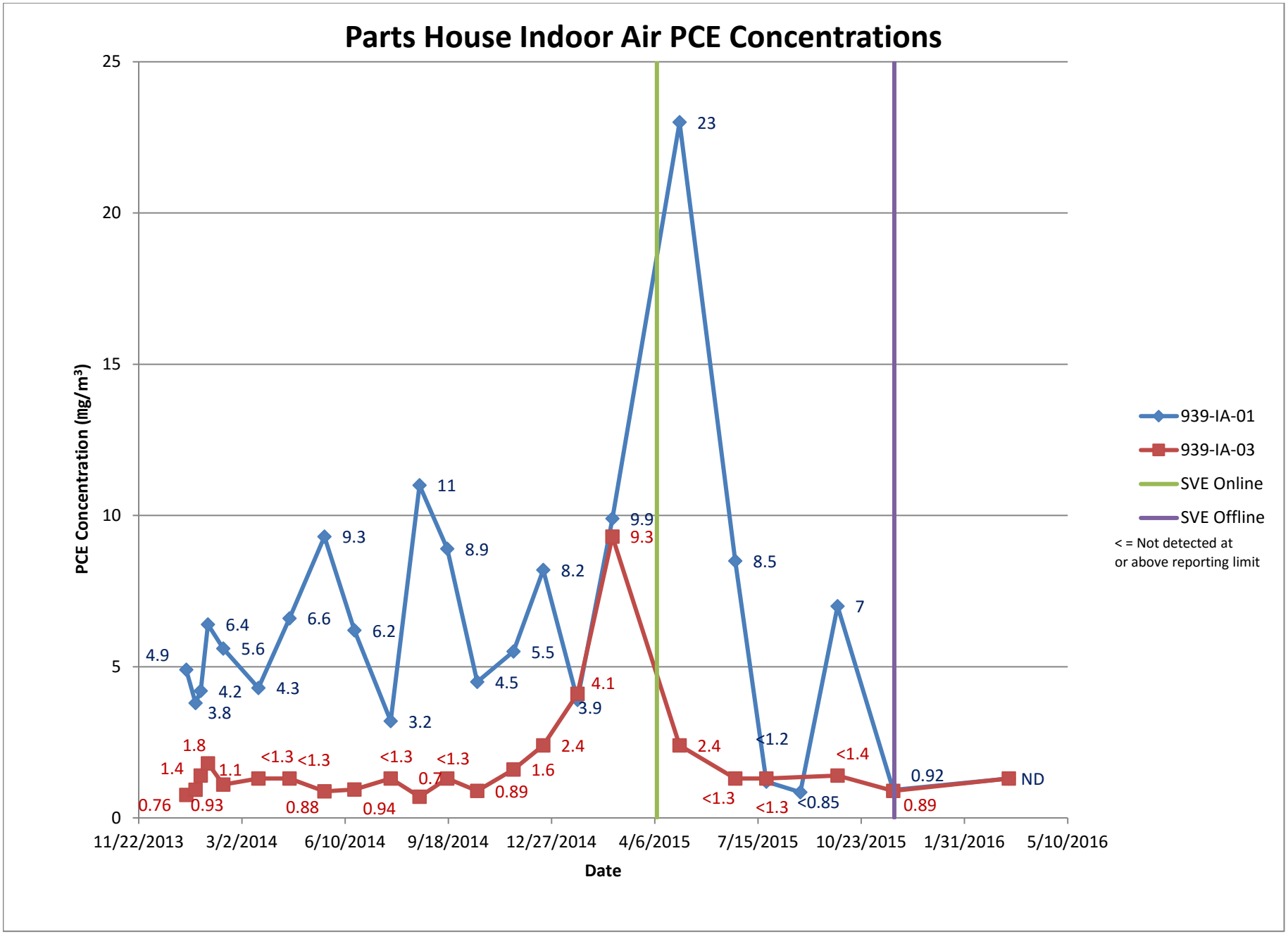
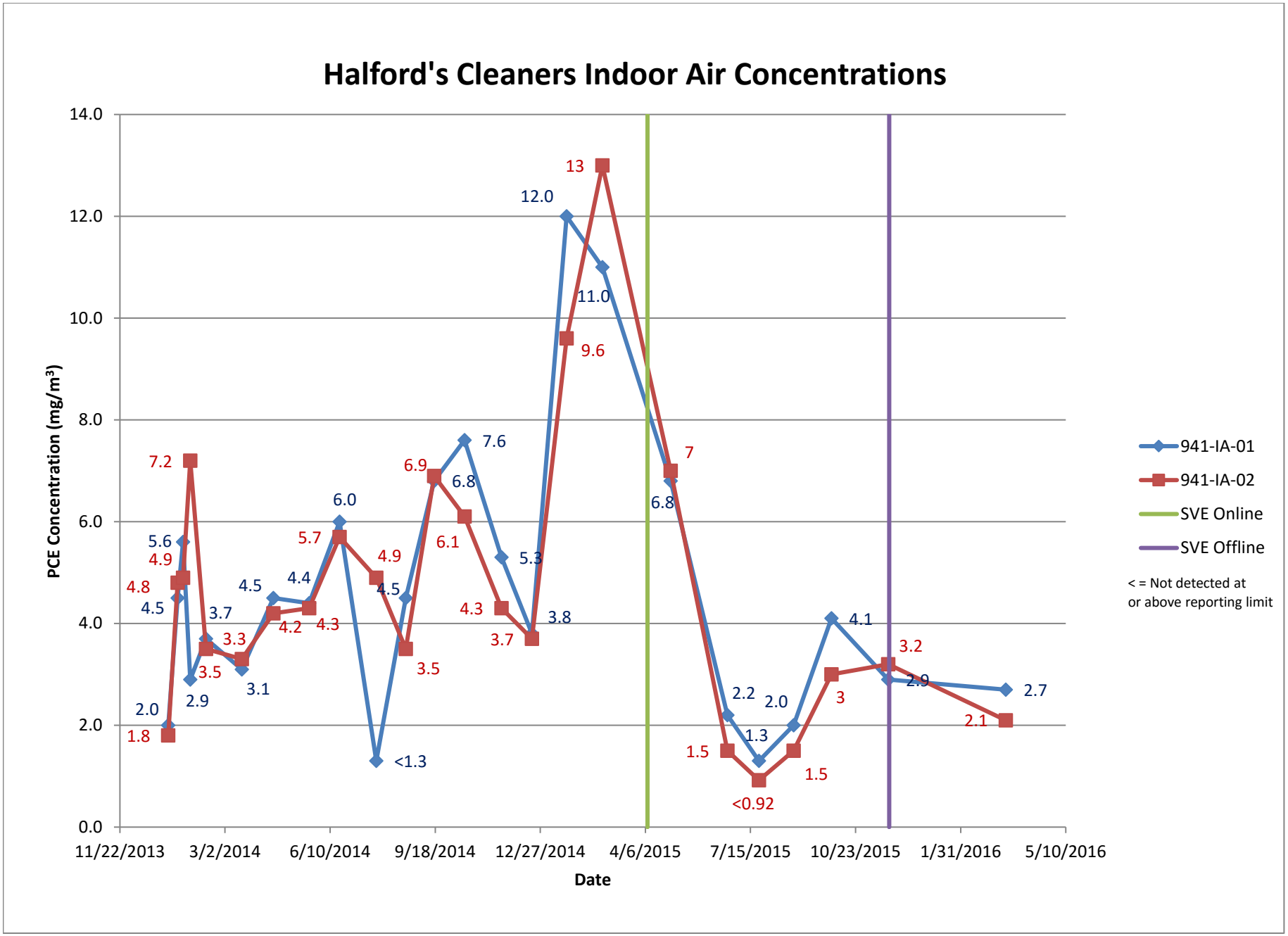
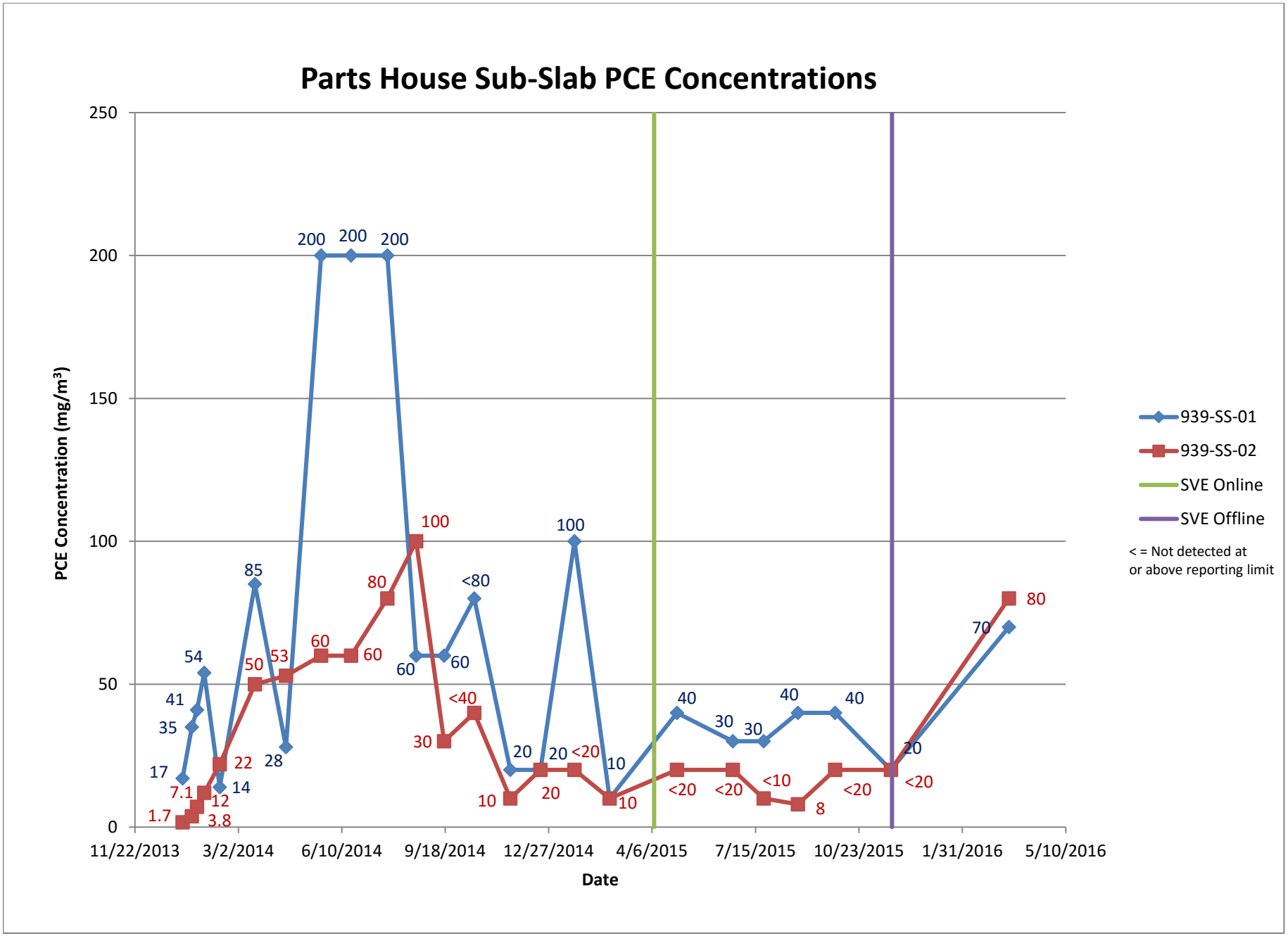
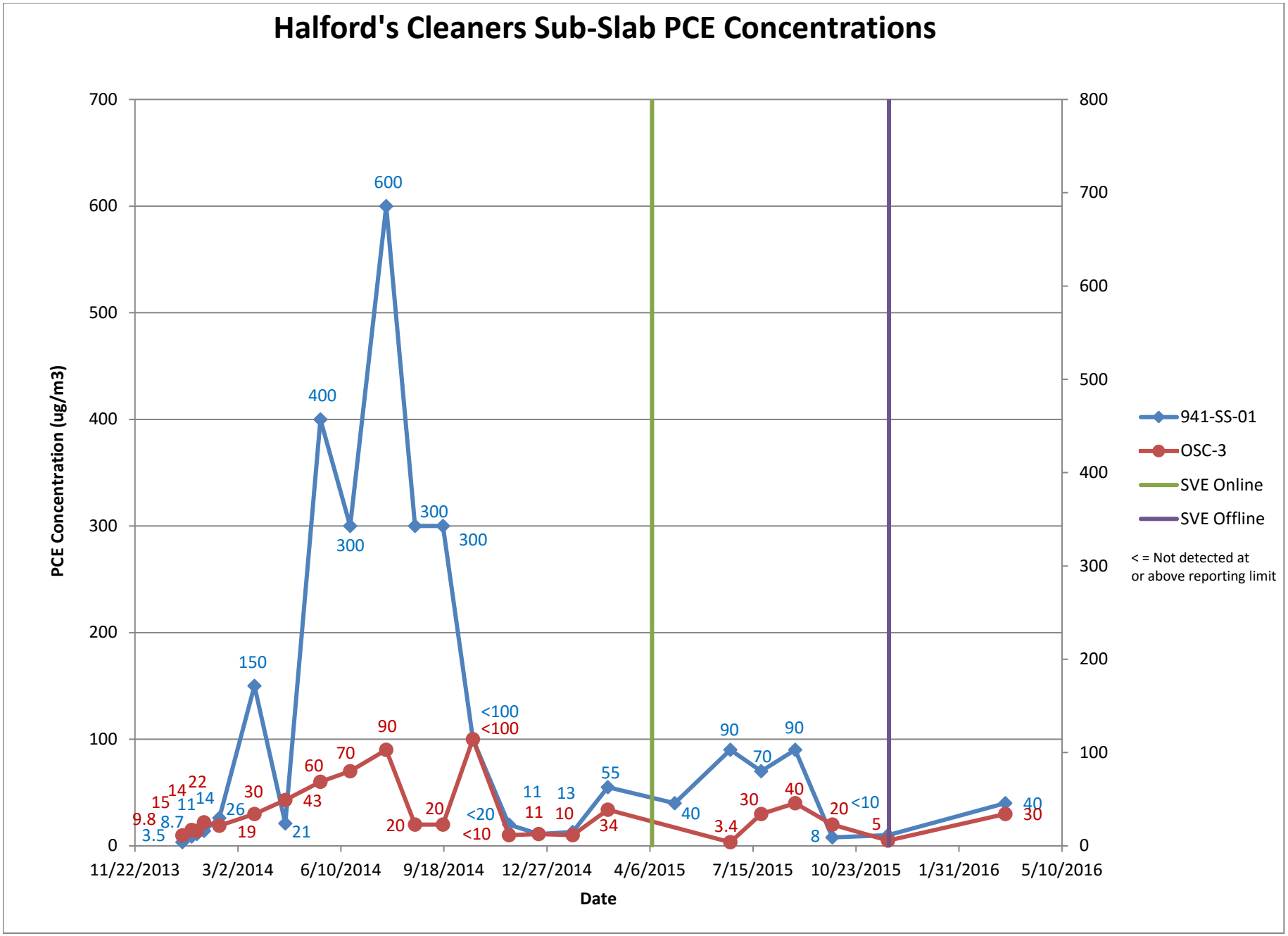
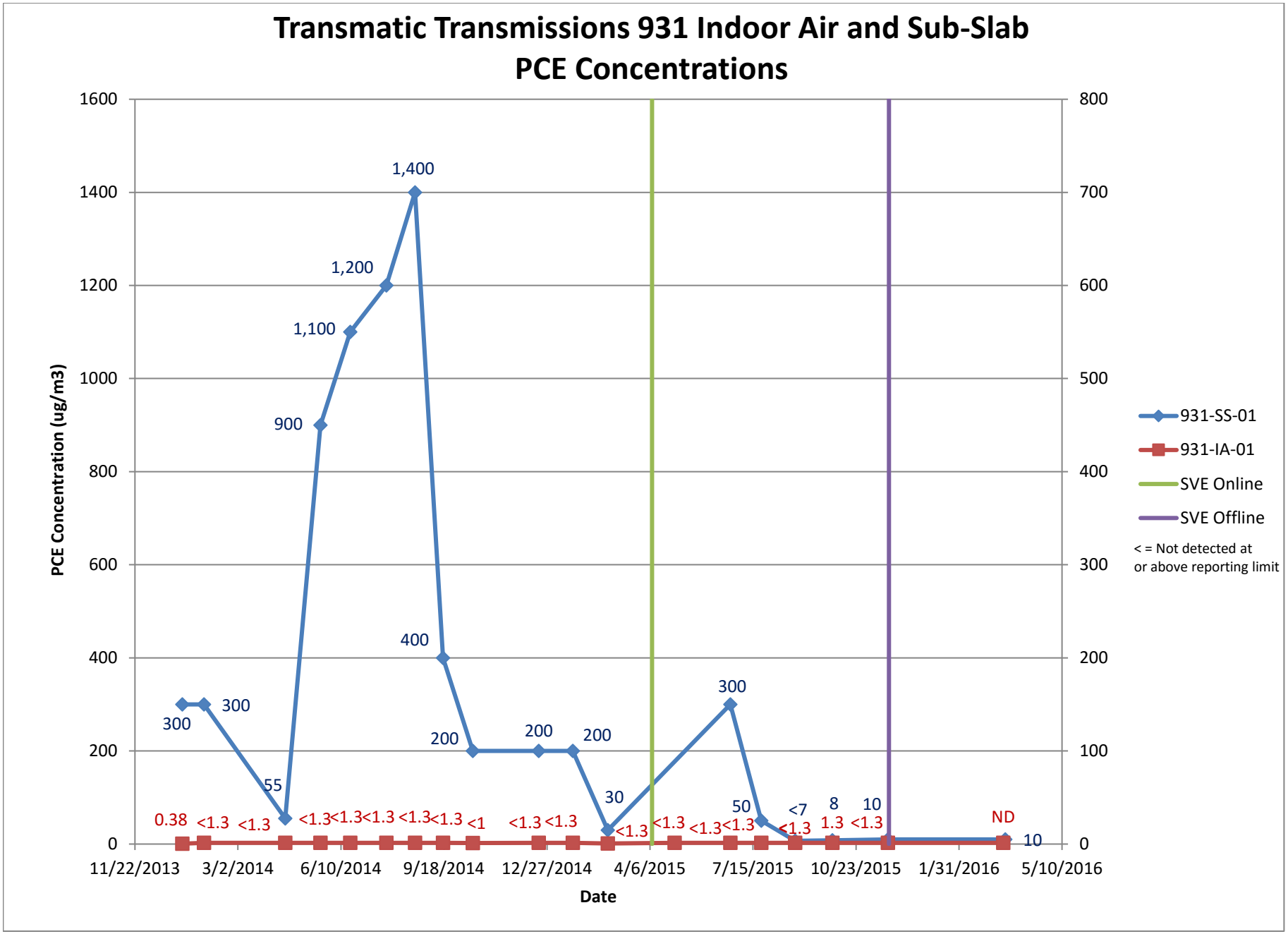
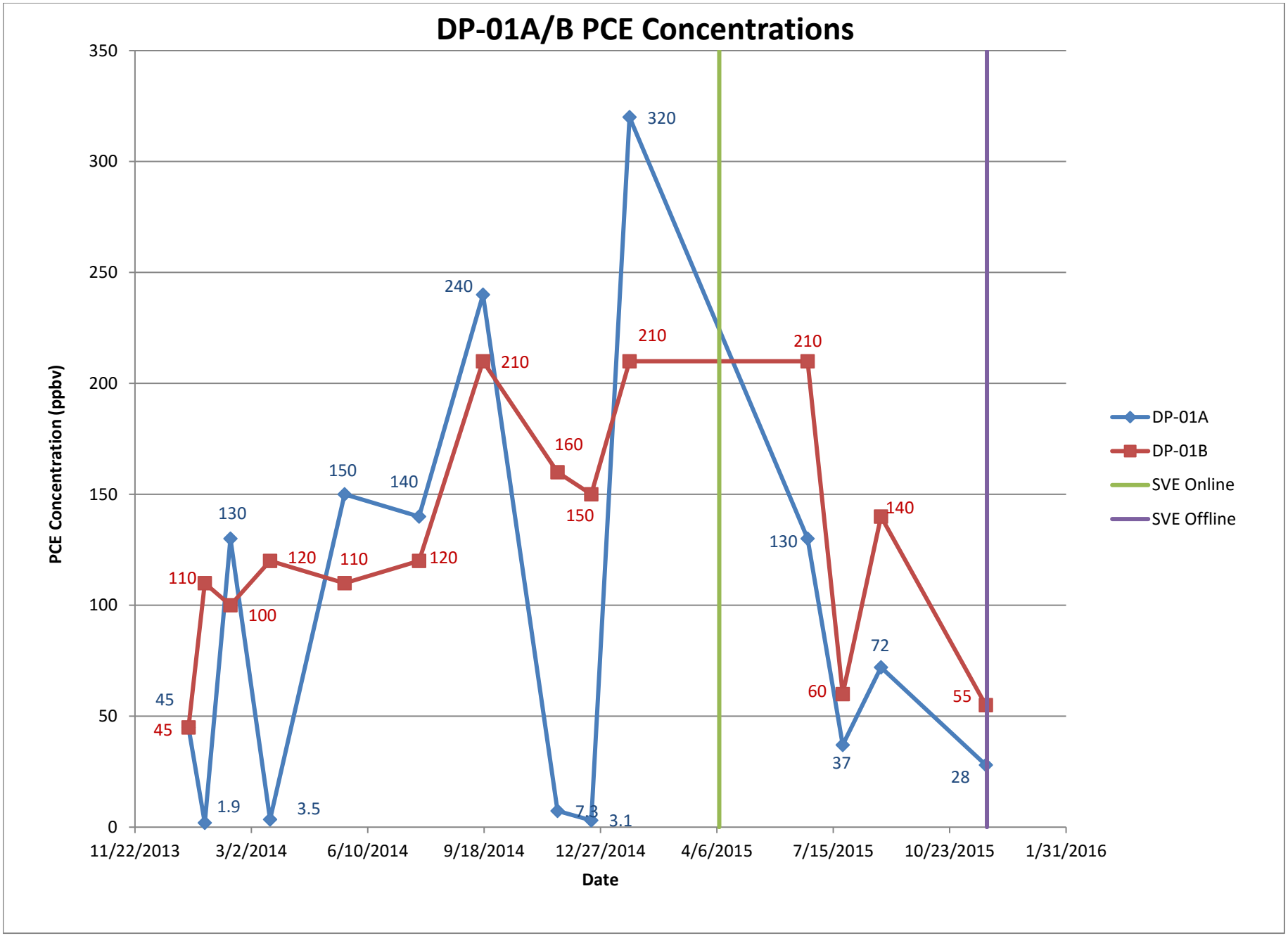

Parts House Indoor Air PCE Concentrations
PCE Concentration (mg/m³)
25
20
15
10
5
0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
5/10/2016
Date
939-IA-01
939-IA-03
SVE Online
SVE Offline
< = Not detected at
or above reporting limit
4.9
3.8
6.4
5.6
4.2
4.3
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
1.4
1.8
1.1
<1.3
<1.3
<1.3
<1.3
<1.3
2.4
2.4
<1.3
<1.3
<1.4
ND
0.76
0.93
0.88
0.94
0.7
0.89
1.6
4.1
9.3
0.89

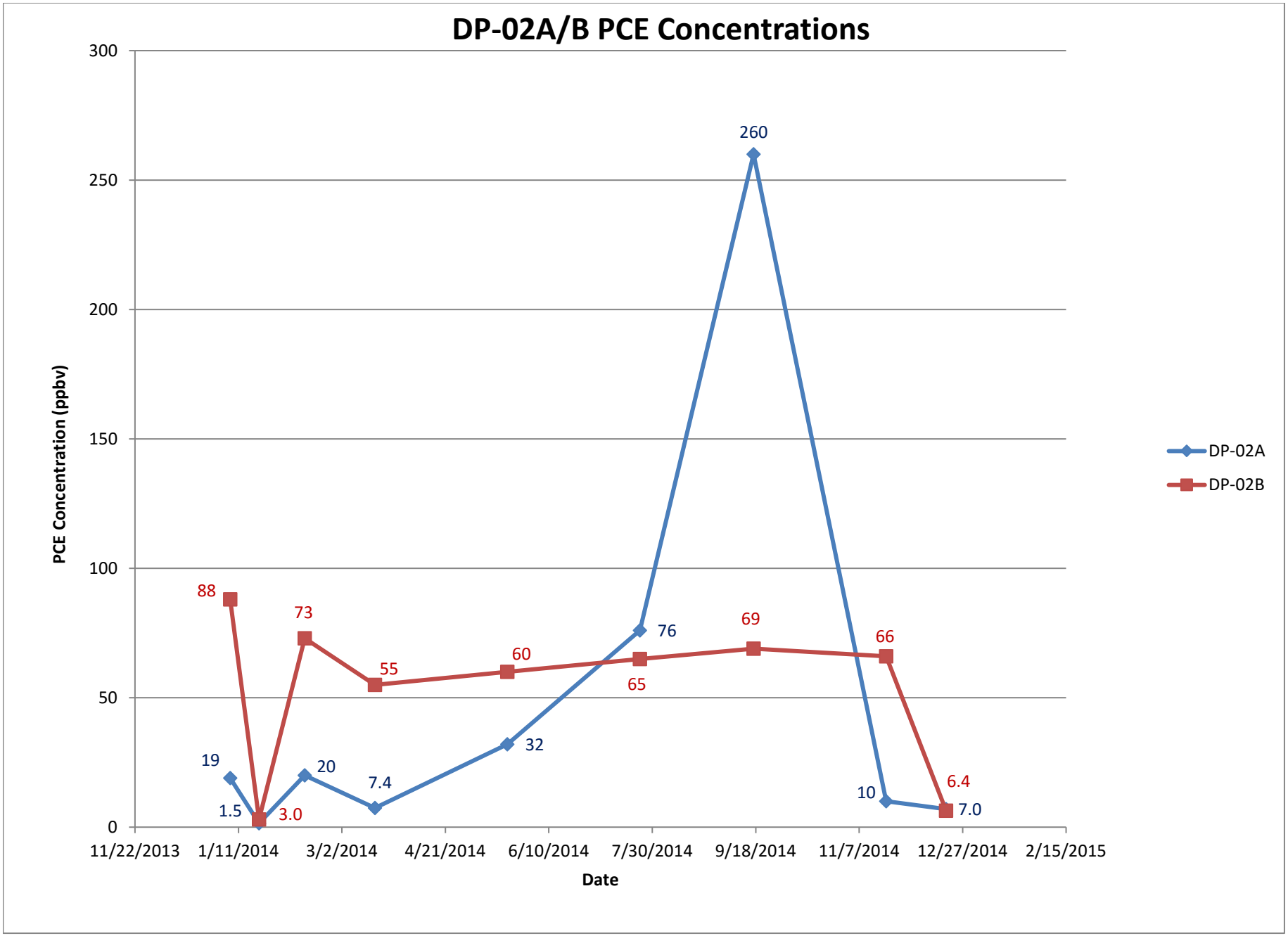

Halford's Cleaners Indoor Air Concentrations
PCE Concentration (mg/m³)
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
5/10/2016
Date
941-IA-01
941-IA-02
SVE Online
SVE Offline
< = Not detected at
or above reporting limit

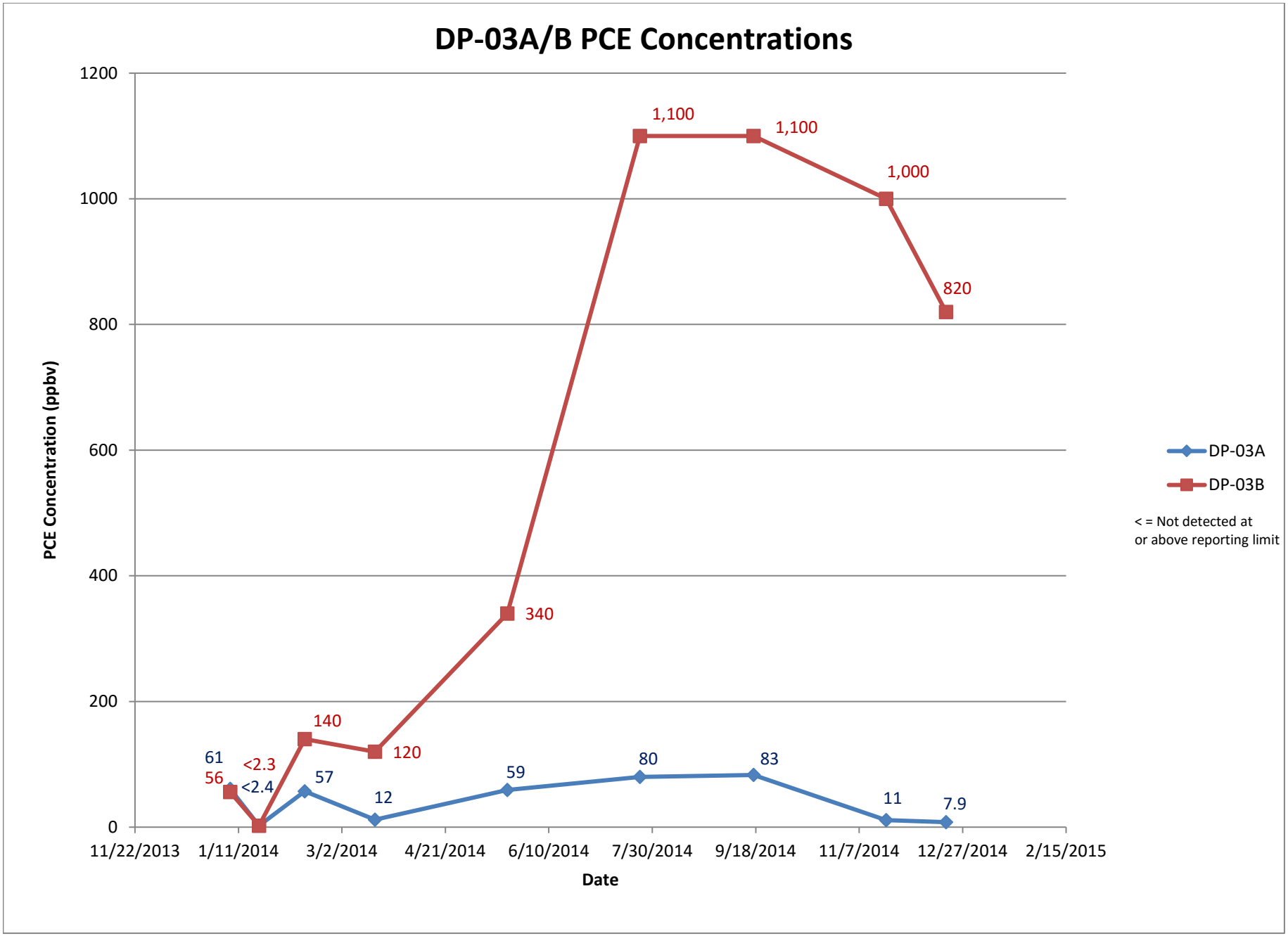

Parts House Sub-Slab PCE Concentrations
PCE Concentration (mg/m³)
250
200
150
100
50
0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
5/10/2016
Date
939-SS-01
939-SS-02
SVE Online
SVE Offline
< = Not detected at
or above reporting limit

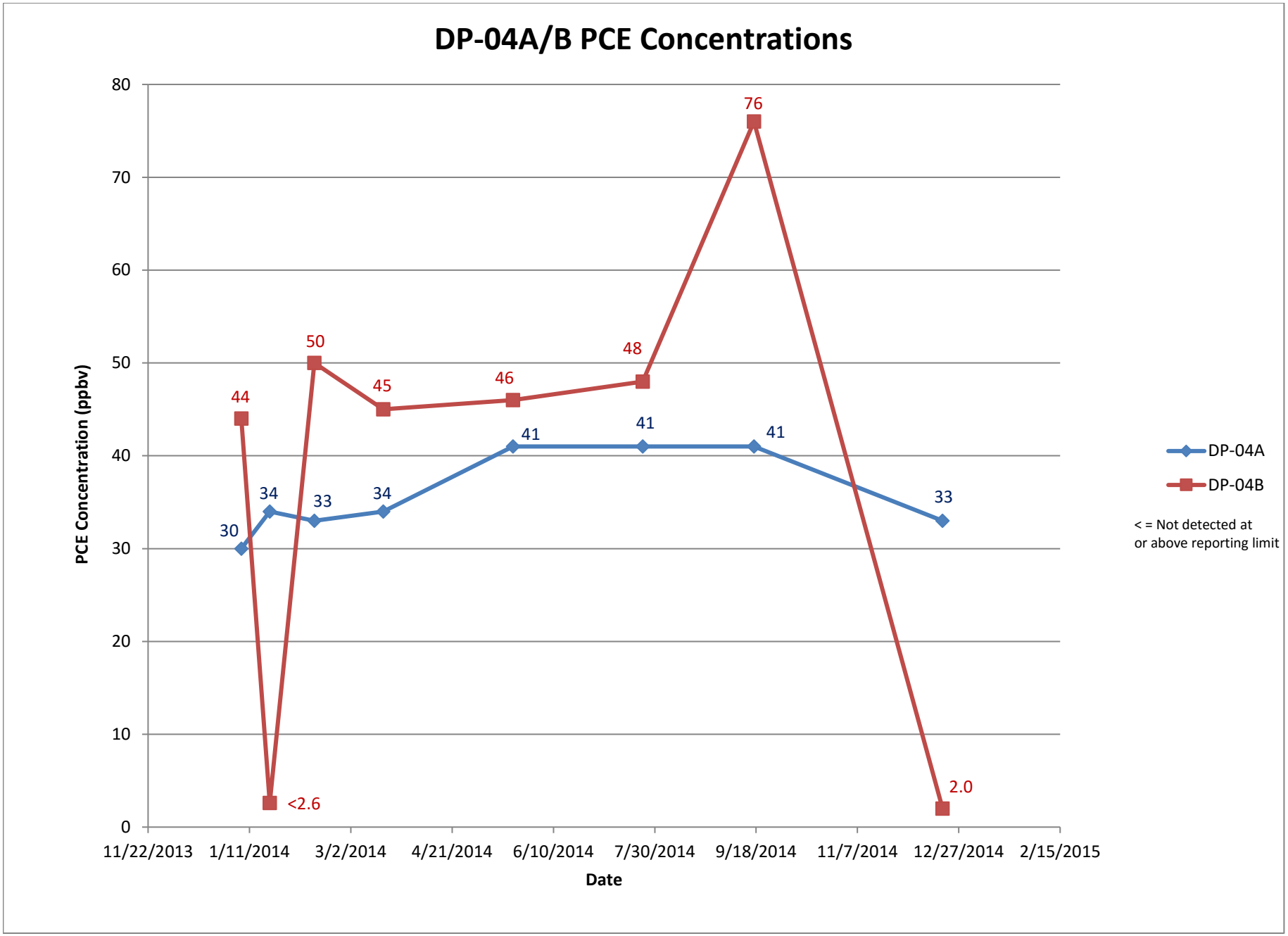

Halford's Cleaners Sub-Slab PCE Concentrations
PCE Concentration (ug/m3)
Date
941-SS-01
OSC-3
SVE Online
SVE Offline
< = Not detected at
or above reporting limit
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
5/10/2016

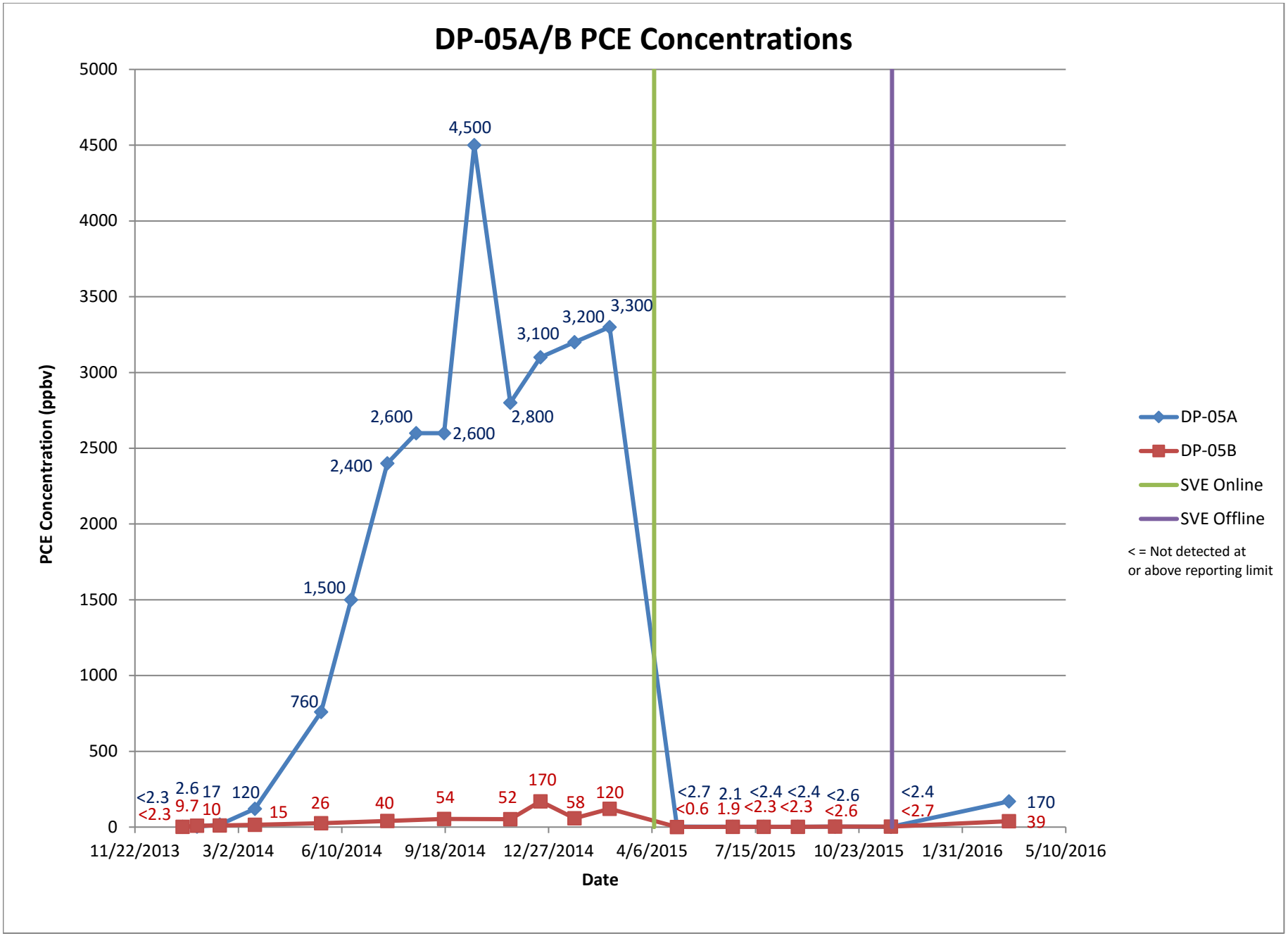

Transmatic Transmissions 931 Indoor Air and Sub-Slab
PCE Concentrations
PCE Concentration (ug/m3)
Date
1600
1400
1200
1000
800
600
400
200
0
800
700
600
500
400
300
200
100
0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
5/10/2016
300
300
55
900
1,100
1,200
1,400
400
200
200
200
30
300
50
8
10
10
0.38
<1.3
<1.3
<1.3
<1.3
<1.3
<1.3
<1.3
<1.3
<1
<1.3
<1.3
<1.3
<1.3
<1.3
<1.3
<7
<1.3
1.3
<1.3
ND
931-SS-01
931-IA-01
SVE Online
SVE Offline
< = Not detected at
or above reporting limit

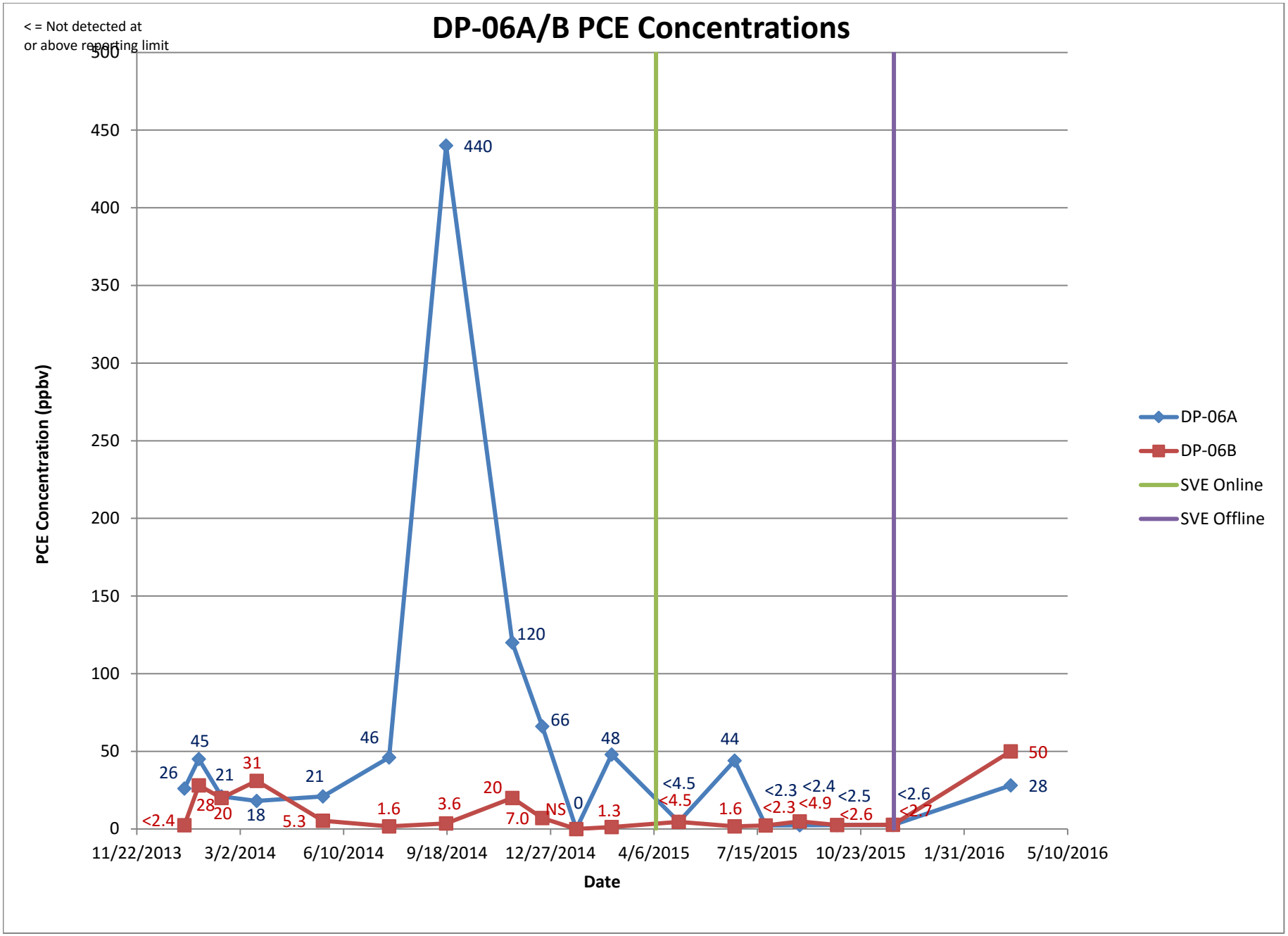

DP-01A/B PCE Concentrations
PCE Concentration (ppbv)
350
300
250
200
150
100
50
0
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
Date
45
1.9
130
3.5
150
140
240
7.3
3.1
320
130
37
72
28
45
110
100
120
110
120
210
160
150
210
210
60
140
55
DP-01A
DP-01B
SVE Online
SVE Offline

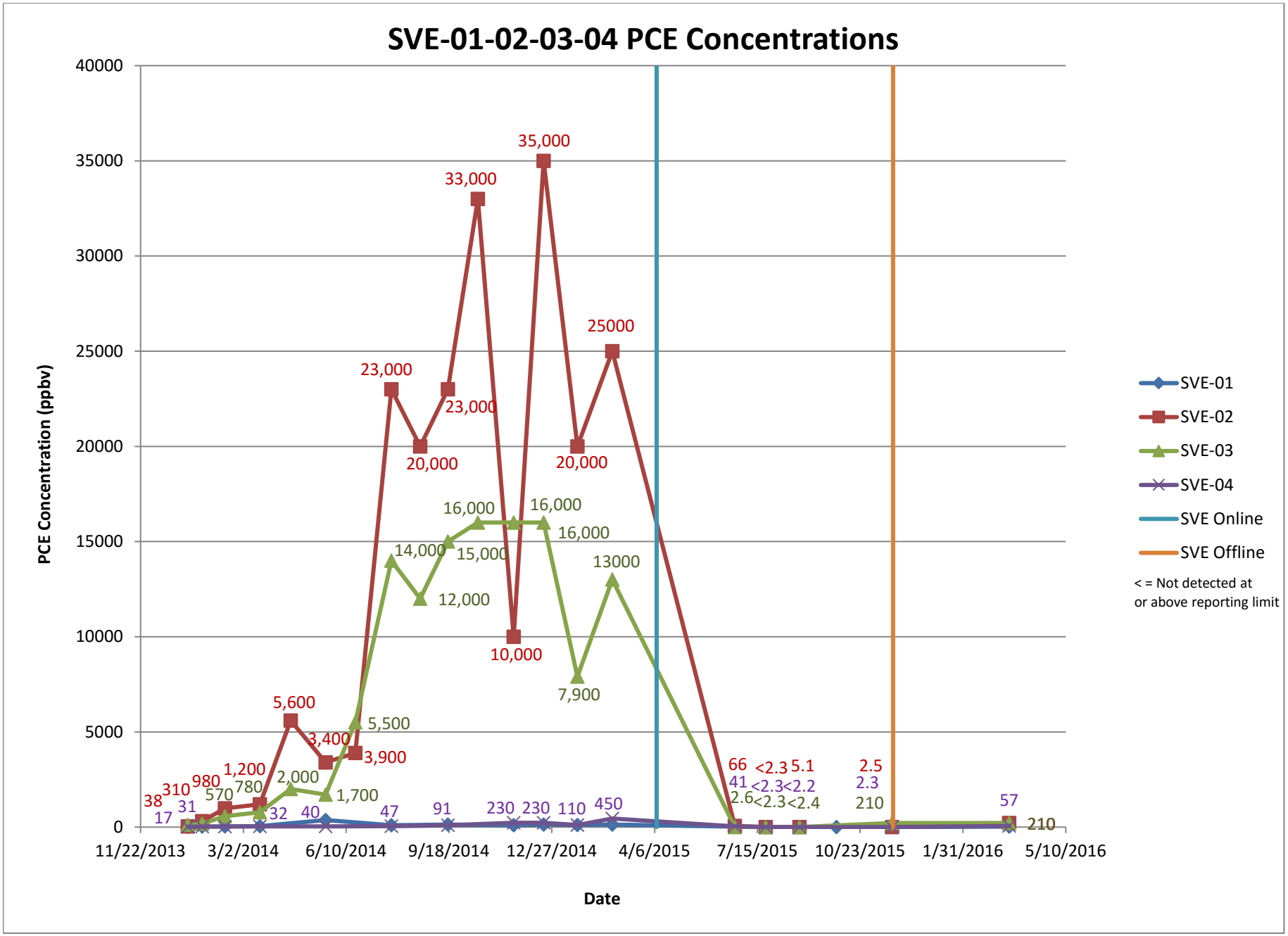

DP-02A/B PCE Concentrations
PCE Concentration (ppbv)
300
250
200
150
100
50
0
11/22/2013
1/11/2014
3/2/2014
4/21/2014
6/10/2014
7/30/2014
9/18/2014
11/7/2014
12/27/2014
2/15/2015
Date
260
88
73
55
60
65
69
66
76
19
1.5
3.0
20
7.4
32
10
6.4
7.0
DP-02A
DP-02B

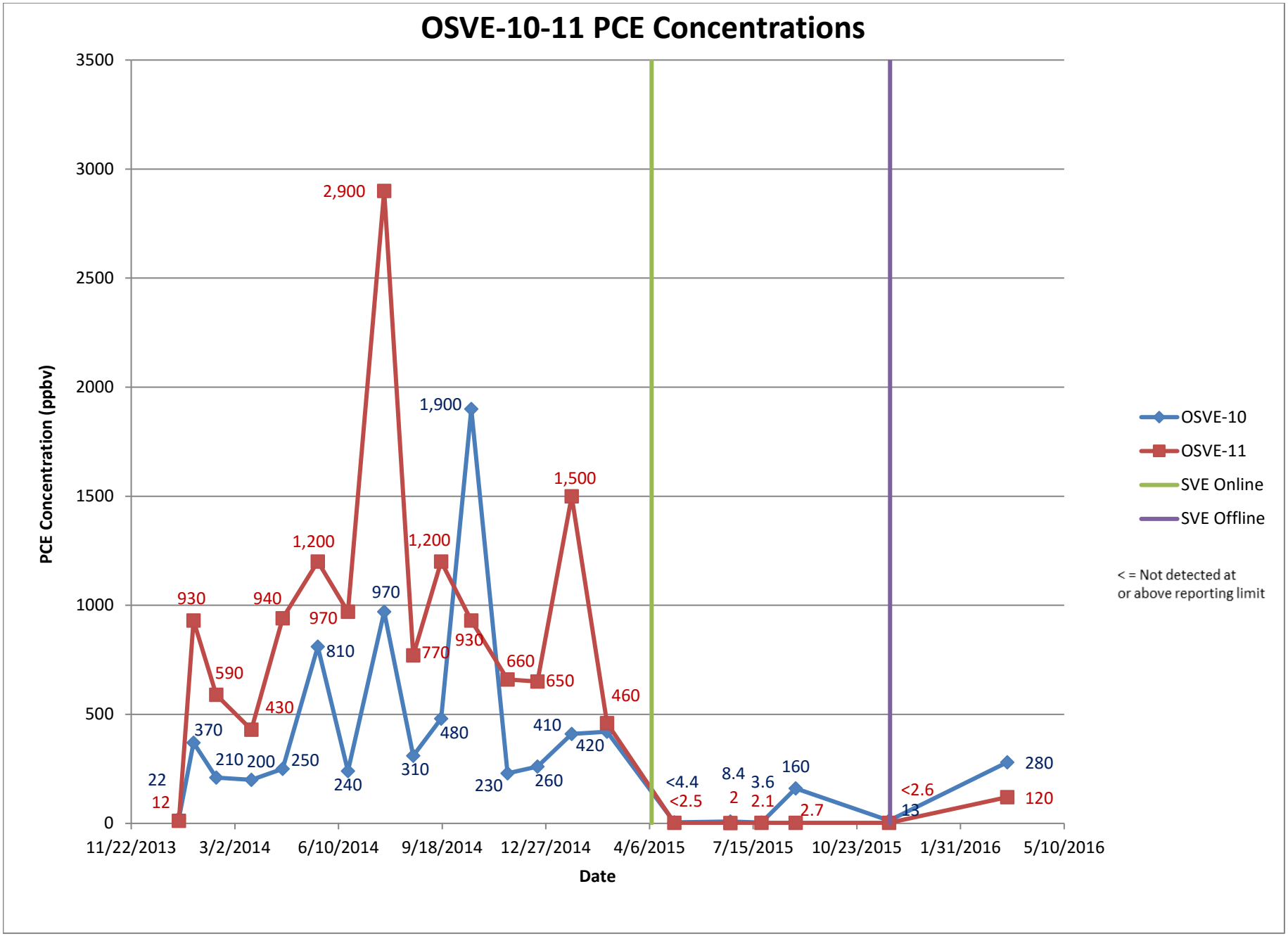

DP-03A/B PCE Concentrations
PCE Concentration (ppbv)
1200
1000
800
600
400
200
0
11/22/2013
1/11/2014
3/2/2014
4/21/2014
6/10/2014
7/30/2014
9/18/2014
11/7/2014
12/27/2014
2/15/2015
Date
1,100
1,100
1,000
820
340
140
120
61
56
<2.3
<2.4
57
12
59
80
83
11
7.9
DP-03A
DP-03B
< = Not detected at
or above reporting limit


DP-04A/B PCE Concentrations
PCE Concentration (ppbv)
80
70
60
50
40
30
20
10
0
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
30
34
33
34
41
41
41
33
44
<2.6
50
45
46
48
76
2.0
DP-04A
DP-04B
< = Not detected at
or above reporting limit


DP-05A/B PCE Concentrations
PCE Concentration (ppbv)
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
5/10/2016
Date
4,500
3,300
3,200
3,100
2,800
2,600
2,600
2,400
1,500
760
120
170
<2.3
2.6
17
<2.3
9.7
10
15
26
40
54
52
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
170
39
DP-05A
DP-05B
SVE Online
SVE Offline
< = Not detected at
or above reporting limit


DP-06A/B PCE Concentrations
< = Not detected at
or above reporting limit
PCE Concentration (ppbv)
Date
DP-06A
DP-06B
SVE Online
SVE Offline
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
5/10/2016
26
45
21
18
21
46
440
120
66
0
48
<4.5
44
<2.3
<2.4
<2.5
<2.6
28
<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
50


SVE-01-02-03-04 PCE Concentrations
PCE Concentration (ppbv)
40000
35000
30000
25000
20000
15000
10000
5000
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
5/10/2016
Date
35,000
33,000
25000
23,000
23,000
20,000
20,000
16,000
16,000
16,000
14,000
15,000
13000
12,000
10,000
7,900
5,600
5,500
3,400
3,900
1,200
2,000
1,700
980
310
38
570
780
17
31
32
40
47
91
230
230
110
450
66
41
2.6
<2.3
<2.3
<2.3
5.1
<2.2
<2.4
2.5
2.3
210
57
210
SVE-01
SVE-02
SVE-03
SVE-04
SVE Online
SVE Offline
< = Not detected at
or above reporting limit


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
5/10/2016
Date
OSVE-10
OSVE-11
SVE Online
SVE Offline
< = Not detected at
or above reporting limit
22
12
370
930
210
590
200
430
250
940
810
1,200
240
970
970
2,900
310
1,200
480
770
1,900
930
230
660
260
650
410
1,500
420
460
<4.4
<2.5
8.4
2
3.6
2.1
160
2.7
<2.6
13
280
120

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Appendix H

Operational History

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APPENDIX H

OPERATIONAL HISTORY

This appendix presents a summary of operation and maintenance events performed on the remedial treatment system from 1 October 2012 through 31 March 2016. Table H-1 lists the event, and start and end dates.

Table H-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 H-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 H-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 H-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
155	Changed bag filters and pumped rain water out of EW-01R.	7-Jan-16	7-Jan-16
156	Changed bag filters and pumped rain water out of EW-01R.	12-Jan-16	12-Jan-16
157	Changed bag filters.	5-Feb-16	5-Feb-16
158	Changed bag filters.	18-Feb-16	18-Feb-16
159	Adjusted sequestrant pumping rate.	23-Feb-16	23-Feb-16
160	Changed bag filters.	29-Feb-16	29-Feb-16
161	Added sequestrant, changed bag filters, and pumped rain water out of EW-01R.	8-Mar-16	8-Mar-16
162	Removed trees behind the GWTS.	17-Mar-16	17-Mar-16
163	Changed bag filters and shut down EW-02 for pump repair/replacement.	25-Mar-16	25-Mar-16

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

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