GROUNDWATER MONITORING REPORT FOR 2010 AND 2011
OMEGA CHEMICAL CORPORATION SUPERFUND SITE

LOS ANGELES COUNTY, CALIFORNIA

EPA CONTRACT NO. EP-S9-08-04
EPA WORK ASSIGNMENT NO. 038-RICO-09BC
CH2M HILL PROJECT NO. 386743

Prepared for
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105

Prepared by
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1770 Iowa Avenue, Suite 200
Riverside, California 92501

June 2012

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Acronyms and Abbreviations

µg/L	microgram(s) per liter
°C	degree(s) Celsius
1,1,1-TCA	1,1,1-trichloroethane
1,1,2-TCA	1,1,2-trichloroethane
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,2,3-TCP	1,2,3-trichloropropane
1,2-DCA	1,2-dichloroethane
AMK	former Angeles Chemical Company and former McKesson Corporation
amsl	above mean sea level
bgs	below ground surface
CDM	Camp Dresser & McKee
CENCO	former CENCO Refinery
CFR	*Code of Federal Regulations*
cis-1,2-DCE	cis-1-2-dichloroethene
CLP	Contract Laboratory Program
COC	chain-of-custody
DO	dissolved oxygen
EPA	United States Environmental Protection Agency
F11	trichlorofluoromethane [Freon 11]
F113	1,1,2-trichloro-1,2,2-trifluoroethane [Freon 113]
F12	dichlorodifluoromethane [Freon 12]
FS	feasibility study
FSP	field sampling plan
ft/ft	foot (feet) per foot
HPLC	high-performance liquid chromatography
J	estimated value
L	liter(s)

MCL	maximum contaminant level
MDL	method detection limit
M-K	Mann-Kendall
MS	matrix spike
MSD	matrix spike duplicate
MTBE	methyl tertiary butyl ether
MW	EPA monitoring wells
n/a	not available
NAVD	North American Vertical Datum
ND	non-detect
NGVD	National Geodetic Vertical Datum
nm	no measurement
NP	not provided
NPL	National Priorities List
NTU	nephelometric turbidity unit
OFRP	Oil Field Reclamation Project
Omega	Omega Chemical Corporation
Omega Site	Omega Chemical Corporation Superfund Site
OPOG	Omega Chemical Site PRP Organized Group
ORP	oxidation-reduction potential
OU	operable unit
OW	OPOG monitoring wells
PARCC	precision, accuracy, representativeness, comparability, and completeness
PCE	perchloroethylene (tetrachloroethylene)
PHG	public health goal
PID	photoionization detector
PRP	potentially responsible party
PVC	polyvinyl chloride
QA	quality assurance
QAO	Quality Assurance Office
QAPP	Quality Assurance Project Plan

QC	quality control
RCRA	Resource Conservation and Recovery Act of 1978
RI	remedial investigation
RPD	relative percent deviation
SAP	sampling and analysis plan
SCH	schedule
SDG	sample delivery group
SIM	selective ion monitoring
SST	stainless steel
SVOA	semivolatile organic analyte
TCE	trichloroethene
TOC	top of casing
trans-1,2-DCE	trans-1,2-dichloroethene
UCL	Upper Confidence Limit
VOA	volatile organic analytes
VOC	volatile organic compound
WDI	Waste Disposal, Inc.

1. Introduction

This report summarizes the results of the March 2010 (1Q2010), September 2010 (3Q2010), and February 2011 (1Q2011) groundwater sampling events performed by CH2M HILL for Operable Unit (OU) 2 of the Omega Site (Figure 1-1). In addition, sampling data for OU1 of the Omega Site, and other non-United States Environmental Protection Agency (EPA), facility-specific well data for the facilities located within OU2 were included in the analyses conducted to evaluate water level and water quality trends at the Omega Site. This report covers 2 years of groundwater monitoring. EPA performed only one sampling event in 2011 due to funding considerations. The water table contours and composite plume extents shown in Figures 3-3 through 3-5 and Figures 3-6 through 3-11, respectively, were prepared for the entire site (OU1 and OU2).

1.1 Background

This section briefly describes the operational history of the Omega facility and the past investigations and remediation activities conducted at the Omega Site. Detailed discussions regarding the Omega Site are provided in the Final Remedial Investigation (RI) Report for the site (CH2M HILL, 2010).

Omega is a former refrigerant/solvent recycling operation located in Whittier, California, a community of approximately 85,000 people. The Omega property occupies Los Angeles County Assessor Tract Number 13486 (Lots 3 and 4). It covers an area of approximately 41,000 square feet (200 feet wide by 205 feet long) and contains two structures—a 140- by 50-foot warehouse, and an 80- by 30-foot administrative building. The Omega property is paved with concrete and secured with a 7-foot-high perimeter fence with a locking gate and topped with razor wire. The facility operated as a Resource Conservation and Recovery Act of 1978 (RCRA) solvent and refrigerant recycling and treatment facility from approximately 1976 to 1991, handling primarily chlorinated hydrocarbons and chlorofluorocarbons. Drums and bulk loads of waste solvents and chemicals from various industrial activities were processed at the former Omega facility to form commercial products. Chemical, thermal, and physical treatment processes were reportedly used to recycle the waste materials. Wastes generated from these treatment and recycling activities included distillation column (still) bottoms, aqueous fractions, and nonrecoverable solvents. Prior to constructing the buildings at the Omega property in July 1951, the property was used for agriculture.

The Omega Site was placed on the National Priorities List (NPL) in January 1999. EPA currently manages the Omega Site as three OUs (OU1, OU2, and OU 3). OU1 includes the soil and groundwater contamination at the former Omega facility, located at 12504 and 12512 East Whittier Boulevard, and approximately 100 feet west-southwest of Putnam Street.

OU2 generally includes the groundwater-contaminated area that extends from the former Omega facility to approximately 4.5 miles south-southwest of the site. A site map showing the approximate boundaries of OU1 and OU2 is presented in Figure 1-2.

EPA created OU 3 to address indoor air impacts at the former Omega property, as well as adjacent and nearby properties where the underlying vadose zone has been affected by contamination derived from the former Omega property.

Groundwater at the Omega Site is found to be primarily affected by volatile organic compounds (VOCs). Chlorinated hydrocarbons (e.g., tetrachloroethylene [PCE], trichloroethene [TCE], and others), freons (trichlorofluoromethane [F11] and 1,1,2-trichloro-1,2,2-trifluoroethane [F113]), and emergent compound 1,4-dioxane are among the contaminants with the highest concentrations.

1.2 Monitoring Wells

The groundwater monitoring well network at the Omega Site consists of the monitoring wells installed by EPA and the Omega Site Potentially Responsible Party (PRP) Organized Group (OPOG):

- **OPOG** installed Monitoring Wells OW1 through OW10 at OU1 and OU2. OW1 through OW8 were installed between 1996 and 2006 as part of Omega OU1 RI. Boring logs, downhole geophysical logs, and well completion diagrams for Wells OW1 to OW8 can be found in the Final RI Report (CH2M HILL, 2010). Wells OW9 and OW10 were installed in December 2008 as part of the OU1 interim groundwater extraction system. Wells OW5 and OW6 were discontinued in late 2009.
- **EPA and another PRP group** installed Monitoring Wells MW1 through MW31. Boring logs, geophysical logs, and well completion diagrams are also included in the Final RI Report (CH2M HILL, 2010).

The groundwater monitoring wells installed by Camp Dresser & McKee (CDM) on behalf of OPOG are collectively referred to as "OPOG wells." These wells are sampled by CDM on a biannual basis. When CDM performs this sampling, CH2M HILL collects split samples concurrently on behalf of EPA.

The EPA monitoring wells are generally located downgradient of OU1. CH2M HILL samples the EPA wells on a biannual basis.

The convention used for the well identifications includes "OW" for the OPOG monitoring wells, a sequential number, and a suffix "A" (shallow well) or "B" (deep well). EPA monitoring wells are designated as "MW" plus a sequential number and a suffix "A" (shallowest well) through "D" (deepest well).

Figure 1-2 is a well location map, showing all OPOG and EPA monitoring wells and other non-EPA facility (Ashland Chemical, former CENCO Refinery [CENCO], Oil Field Reclamation Project [OFRP], and Waste Disposal, Inc. [WDI]) wells. The naming convention for the non-EPA facility wells in this report is a prefix suggestive of the facility name followed by the well name. Selected production wells are also shown in Figure 1-2. Well survey and construction information for OPOG and EPA monitoring wells is provided in Table 1-1. Table 1-2 provides well survey and construction information for other non-EPA facility wells.

1.3 Report Organization

This report is organized into sections that describe the activities and analytical results of the sampling events stated previously. An overview of this document is provided as follows:

- Section 1 introduces the groundwater investigation, including background information, monitoring well information, and report organization.
- Section 2 describes the sampling approach and chronology.
- Section 3 provides a discussion of the analytical data collected during the OU1 oversight sampling. Section 3 also provides a discussion of the water level and analytical data collected at OU2.
- Section 4 provides a summary of findings.
- Section 5 lists recommendations.
- Section 6 lists of all references.

The appendixes to this document include the following:

A – Monitoring Well Purge Forms (on CD only)
B – Chain-of-Custody Forms (on CD only)
C – Data Needs and Uses (on CD only)
D – Shallow Groundwater Gradient Calculations
E – VOC Detection Summary: 1Q2010, 3Q2010, and 1Q2011 (on CD only)
F – OU1 and OU2 Lab Reports (on CD only)
G – Data Quality Assessment (on CD only)
H – Statistical Plots
I – VOC Time Series Plots

2. Sampling Approach

CH2M HILL collected groundwater samples from the EPA monitoring wells in March 2010, September 2010, and February 2011. An overview of sampling methods and analysis, laboratory assignments, and quality assurance/quality control (QA/QC) is presented in this section. Groundwater samples were collected and analyzed in accordance with the protocols outlined in the field sampling plan (FSP) (CH2M HILL, 2004a and 2004c) and Quality Assurance Project Plan (QAPP) (CH2M HILL, 2004b and 2004d), and the 2006 Sampling and Analysis plan (SAP) Addendum 1 (CH2M HILL, 2006a and 2006b).

2.1 Sample Collection Methods

The following subsections describe the general sample collection procedures for groundwater sampling at the Omega monitoring wells.

2.1.1 EPA Well Sampling

EPA monitoring wells are equipped with dedicated pump tubing and bladder pumps to allow sampling using low-flow techniques. During well purging, careful continuous measurements of field parameters including specific conductance, pH, temperature, dissolved oxygen (DO), oxidation reduction potential (ORP), and turbidity were used to assess when purged water had reached equilibrium. A flow-through cell was used to check that the purge water was continuously monitored. Each well was pumped until the measured field parameters stabilized within 10 percent over three successive readings prior to collecting samples. Monitoring well purge forms are provided in Appendix A and chain-of-custody (COC) forms in Appendix B.

If wells did not produce enough water for purging with a pump, the dedicated bladder pump was manually removed from the well, a disposable polyethylene bailer and new polyethylene string was used to collect samples, and the bladder pump was manually lowered down to the same depth in the well. During all three sampling events, several wells were either dry or not enough groundwater was present in them for bailer sampling. During 2010 first quarter sampling event, Wells MW7 and MW26A were sampled with bailers and Wells MW6, MW8A, MW9A, MW11, MW13A, MW16A, MW17A, MW19, and MW22 were not sampled because of dry conditions. During 2010 third quarter sampling events, Wells MW3, MW6, MW7, MW8A, MW12, and MW16A were sampled with bailers and Wells MW9A, MW11, MW13A, MW17A, MW19, and MW26A were not sampled because of dry conditions. During 2011 first quarter sampling events, Wells MW3, MW6, MW8A, MW12, MW13A, MW16A, MW19, and MW26A were sampled with bailers and Wells MW9A, MW11, and MW17A were not sampled because of dry conditions.

2.1.2 OPOG Well Sampling

OPOG samples monitoring wells OW1 through OW10. The wells are not equipped with dedicated pumps, only with dedicated tubing. A 2-inch-diameter portable submersible pump is used for purging and sampling groundwater at these wells. Typically, three casing

volumes are purged before sample collection (that is, OPOG does not use the low-flow sampling method). OPOG's analytical results are included in tables and figures in this report; OPOG's COCs and laboratory reports are not included.

CH2M HILL collects split groundwater samples during OPOG groundwater sampling events. Typically, three split groundwater samples are collected and submitted to the EPA Region 9 laboratory for VOCs and 1,4-dioxane analysis. CH2M HILL collected split samples from OW8B, OW9, and OW10 during all three sampling events. COC forms for the split samples are included in Appendix B.

2.1.3 Field Parameters Measurement

A digital combination conductivity-pH-temperature-DO-ORP meter was used for specific conductance, pH, temperature, DO, and ORP measurements. Turbidity measurements were made with a digital readout turbidity meter (readout in nephelometric turbidity units [NTUs]). A photoionization detector (PID) was used to measure organic vapor measurements (headspace) inside the well immediately after opening the well caps. Equipment used to measure field parameters was maintained and calibrated daily according to the manufacturer's specifications.

2.1.4 Depth to Water Measurement

Depth to groundwater was measured at monitoring wells immediately prior to well purging and sampling activities to establish a static water level. Water levels were measured with a decontaminated electronic water level indicator (sounder) to the nearest 0.01 foot. Water levels were also measured at regular intervals during purging activities to ensure that a constant drawdown was maintained during pumping. A final water level was recorded after sample collection. The reference point for water level measurement was the top of the casing. For wells with both inner and outer (conductor) casing, the top of the inner casing was used as the reference point.

2.2 Sample Analysis and Laboratory Assignments

Monitoring wells were sampled for VOCs (including methyl tertiary butyl ether [MTBE]) and 1,4-dioxane.

A summary of the previously listed analytical parameters and applicable regulatory limits is provided in the Data Needs and Uses table of the QAPP (CH2M HILL, 2004d), which is also included in Appendix C.

The groundwater samples were analyzed using the EPA-approved methods described in SAP Addendum 1 (CH2M HILL, 2006a and 2006b).

2.3 Quality Assurance/Quality Control

QA/QC samples were collected in accordance with the protocols outlined in the FSP and QAPP. QC samples include ambient blanks, equipment blanks, field duplicates, laboratory QC samples (for matrix spike and matrix spike duplicates [MS/MSDs]), and temperature blanks. Ambient and equipment blanks were analyzed for VOCs and 1,2,3-trichloropropane

(1,2,3-TCP). Field duplicates and laboratory QC samples were analyzed for the standard list of parameters as presented in Section 2.2. Twice the normal volume of sample was collected for laboratory QC samples. Equipment blanks were collected only during OPOG well sampling.

Following is a brief description of the QA/QC samples collected during this investigation:

- **Ambient Blanks.** Ambient blanks were collected to verify that contamination was not introduced to samples during collection, handling, or shipping. They were prepared by pouring high-performance liquid chromatography (HPLC) water directly into the sample bottles in the field. Ambient blanks were prepared and labeled in the same manner as the field samples and sent "blind" to the laboratory. Ambient blanks were collected at a frequency of one in every 10 consecutively collected samples or one per week, whichever was greater.

- **Equipment Blanks.** Equipment blanks were collected to verify whether or not contamination was introduced to samples through the repeated use of sampling equipment at different sample locations. One equipment blank per sampling event was collected during biannual sampling of OPOG wells. The OPOG wells have dedicated pump tubing, but not dedicated pumps. Equipment blanks were prepared by pouring HPLC water directly into the pump inlet, through the pump, and into sample containers. These samples are not included in this report. Equipment blanks were not collected for EPA well sampling.

- **Field Duplicates.** The field duplicate is an independent sample collected as close as possible to a primary sample from the same source and is used to document sampling precision. Field duplicates were labeled and packaged in the same manner as the primary samples so that the laboratory could not distinguish between samples and duplicates. Each duplicate was taken using the same sampling and preservation method as other samples. An attempt was made to collect duplicate samples from monitoring wells that are known or suspected to contain the chemicals that are being analyzed. Field duplicates were collected at a frequency of one in every 10 consecutively collected samples or one per week, whichever was greater.

- **Laboratory QC Samples.** Laboratory QC samples were collected to perform MS and MSD analyses. An MS is an aliquot of a sample spiked with a known concentration of target analyte and provides a measure of the method accuracy. The MSD is a laboratory split sample of the MS, and is used to determine the precision of the method. Twice the normal water volume was collected for laboratory QC samples. Laboratory QC samples were collected at a frequency of one in every 20 consecutively collected samples or one per week, whichever was greater.

- **Temperature Blanks.** Temperature blanks were included with each cooler shipment containing samples sent to the laboratory (regardless of targeted analysis). A temperature blank consists of a VOC sample vial filled in the field with deionized water, handled like an environmental sample, and returned to the laboratory for analysis. The temperature blanks provides a means of verifying that samples have been maintained at the proper temperature (4 degrees Celsius [°C]) following collection and during transport to the laboratory.

3. Results and Discussion

This section summarizes the results of the three groundwater sampling events that CH2M HILL conducted in 2010 and 2011. In addition, CH2M HILL made efforts to obtain sampling results of OU1 wells (OPOG wells) or other non-EPA facility wells conducted during similar time periods in 2010 and 2011. Results from these OPOG wells and non-EPA facility wells were also included in the discussion as appropriate. Only laboratory analytical results and water levels for OPOG wells and for wells at non-EPA facilities are included in this report (actual laboratory reports, COCs, and field forms are not included).

3.1 Groundwater Levels

Depth to water measurements were collected during each sampling event to evaluate the direction and gradient of groundwater flow underlying the Omega Site and to help characterize water level differences between the shallow and deep aquifers. Groundwater elevations were calculated by subtracting the depth to static water level from the elevation of the reference point (i.e., the surveyed top of casing elevation of the corresponding monitoring wells). The reference point elevations for EPA wells are consistent with the North American Vertical Datum (NAVD) 1988 (2000 adjusted) datum. As noted in Table 1-1, the reference point elevations for several OPOG wells were surveyed using the National Geodetic Vertical Datum (NGVD) 1929 datum. These reference point elevations were increased by 2.2 feet to match the NAVD 1988 (2000 adjusted) datum in this report. The 2.2-foot elevation adjustment resolved the differences in elevations between the EPA and OPOG wells.

The reference point elevations for other non-EPA facility wells are consistent with the NAVD 1988 (2000 adjusted) datum. As noted in Table 1-2, the reference point elevations for several Ashland Chemical wells were surveyed using the NGVD 1929 datum. The reference point elevations for these Ashland Chemical wells were not altered in this report.

The water table was below the bottoms of some water table wells during each sampling event. Water levels for those dry wells are therefore not available.

Table 3-1a presents historical groundwater elevation data for OPOG and EPA monitoring wells. Table 3-1b presents 1Q2010, 3Q2010, and 1Q2011 groundwater elevation data for other non-EPA facility (Ashland Chemical, CENCO, and OFRP) wells used to prepare the groundwater contour maps shown in Figures 3-3 through 3-5.

3.1.1 Hydrographs

Figure 3-1 presents hydrographs for Omega monitoring wells. As shown in the figures, fluctuations of water levels at OPOG and EPA monitoring wells display a similar pattern over time. Groundwater elevations generally decreased between 2002 and 2004, followed by a fairly quick recovery in the first half of 2005 in response to high precipitation; remained relatively steady during the period of mid-2005 to mid-2007; declined again during the period of mid-2007 to early-2010; and recovered slightly during the period of early-2010 to

early-2011. Slightly steeper decreases in groundwater elevations were observed between June 2003 and December 2004 and between mid-2007 and early-2010 at most wells. Figure 3-2 presents annual rainfall in Whittier. The recent (2010 to 2011) increase in water levels in the monitored wells coincides with the above-average annual rainfall during this period.

3.1.2 Water Table Contours

Groundwater contour maps were prepared for the three sampling events using the water levels measured at the shallow monitoring wells to show the general groundwater flow regime in the water table aquifer at the Omega Site. Figures 3-3, 3-4, and 3-5 show the water table contours for 1Q2010, 3Q2010, and 1Q2011, respectively. Although the overall groundwater flow direction is to the southwest in the vicinity of the Omega Site, the hydraulic gradient varies slightly with locations. Horizontal gradients were calculated for the water table aquifer at the following four selected locations and shown on the water level contour maps (Figures 3-3, 3-4, and 3-5):

- Near O**U**1 (between Washington Boulevard and Whittier Boulevard)
- The upper portion of OU2 (between Slauson Avenue and Washington Boulevard)
- The middle portion of OU2 (between Florence Avenue and Los Nietos Road)
- The lower portion of OU2 (between Imperial Highway and Lakeland Road)

Generally, water level measurements from the same set of wells were used to calculate the horizontal gradients for all three sampling events; however, nearby wells were selected to replace dry wells when dry conditions occurred during any sampling events. Calculations of the horizontal groundwater gradients are included in Appendix D.

The horizontal gradients of water table at the four selected locations are 0.0186, 0.0029, 0.0055, and 0.0049 for 1Q2010; 0.0187, 0.0016, 0.0060, and 0.0053 for 3Q2010; and 0.0085, 0.0015, 0.0061, and 0.0044 for 1Q2011. In general, the calculated horizontal gradients for the same selected locations are similar among the three sampling events. It is noted that the gradient at the location near OU1 for 1Q2011 was calculated using a different set of monitoring wells than that for 1Q2010 and 3Q2010, resulting in a significantly lower horizontal gradient value. Similarly, although there were some temporal variations in the calculated horizontal gradients, the general flow directions in the shallow aquifer at the Omega Site remained relatively constant for the three sampling events.

3.1.3 Vertical Gradients

Calculations of vertical gradients were conducted for the three sampling events at locations where wells screened in different depth intervals are co-located (Table 3-2).

In general, a downward gradient (indicated by a positive vertical gradient value) was observed at most of the 34 well screen pairs, with a few exceptions where the water level at the well screened in the deeper interval was slightly higher than that at the well screened in the shallow interval (indicated by a negative vertical gradient value). The generally downward vertical gradient is mostly attributed to groundwater recharges occurring at the water table including recharge from precipitation and surface water bodies such as rivers and spreading basins, along with groundwater discharge via production pumping occurring in the deep aquifers throughout the basin.

The upward gradients calculated for eight well pairs (Table 3-2) were of small magnitude (ten-thousandths to hundredths of foot per foot [ft/ft]). In comparison, downward gradients greater than 0.1 ft/ft were measured at 16 well screen pairs. The upward gradients could be attributable to local piezometric head variations caused by heterogeneity of the aquifer, but they could also be related to measurement precision.

3.2 Analytical Results

This section discusses the analytical results of the three sampling events. Tables 3-3a, 3-3b, and 3-3c summarize the analytical results for those groundwater samples with detectable contaminant concentrations. Appendix E presents the entire analytical results including the non-detects (NDs). It also includes summary tables for QC samples.

Primary (not duplicate or split) sample results were used in trend analyses, and for the preparation of plume maps and vertical distribution of selected compounds on cross-sections.

3.2.1 Volatile Organic Compounds

The most-frequently detected compounds for each sampling events are summarized as follows, followed by a discussion of individual compounds.

Laboratory Results for 1Q2010 (62 wells sampled)

TCE was detected in 55 wells. The maximum TCE concentration detected was 1,300 micrograms per liter (μg/L) in Well OW9. PCE was detected in 54 wells. The maximum PCE concentration detected was 18,000 μg/L in Well OW9. F113 was detected in 41 wells. The maximum F113 concentration detected was 1,500 μg/L in Well OW9. 1,1-Dichloroethene (1,1-DCE) was detected in 40 wells. The maximum 1,1-DCE concentration detected was 2,200 μg/L in Well OW9. Chloroform was detected in 39 wells. The maximum chloroform concentration detected was 2,000 μg/L in Well OW9. Well OW9 had the highest number of maximum detects in 1Q2010.

Laboratory Results for 3Q2010 (65 wells sampled)

TCE was detected in 60 wells. The maximum TCE concentration detected was 830 μg/L in Well OW9. PCE was detected in 59 wells. The maximum PCE concentration detected was 20,000 μg/L in Well OW9. 1,1-DCE was detected in 43 wells. The maximum 1,1-DCE concentration detected was 1,500 μg/L in Well OW9. F113 was detected in 41 wells. The maximum F113 concentration detected was 900 μg/L in Well OW9. F11 was detected in 40 wells. The maximum F11 concentration detected was 350 μg/L in Well OW9. Well OW9 had the highest number of maximum detects in 3Q2010.

Laboratory Results for 1Q2011 (69 wells sampled)

PCE was detected in 61 wells. The maximum PCE concentration detected was 23,000 μg/L in Well OW9. TCE was detected in 60 wells. The maximum TCE concentration detected was 1,500 μg/L in Well OW9. 1,1-DCE was detected in 43 wells. The maximum 1,1-DCE concentration detected was 2,800 μg/L in Well OW9. F113 was detected in 43 wells. The maximum F113 concentration detected was 1,600 μg/L in Well OW9. F11 was detected in 37 wells. The maximum F11 concentration detected was 760 μg/L in OW9. Well OW9 had the highest number of maximum detects in 1Q2011.

The well-by-well results for 1Q2010, 3Q2010, and 1Q2011 are shown in Appendixes E1, E2, and E3, respectively.

It is noted that sample dilutions were necessary to analyze some well samples (e.g., OW9), because the undiluted sample concentration exceeded the laboratory instrument calibration range. The dilutions raised the reporting limits for all VOC analytes included in the analytical method, resulting in estimated or ND results for lower concentration analytes.

3.2.1.1 Chlorinated VOCs

Chlorinated VOCs were the most-frequently detected compounds.

Tetrachloroethene

PCE was detected at most monitoring wells at concentrations above the California Primary maximum contaminant level (MCL) of 5 µg/L in each sampling event. Detections greater than 1,000 µg/L were reported at Wells MW1A (2,600 µg/L, 1Q2010; 2,500 µg/L, 3Q2010; and 1,700 µg/L, 1Q2011), MW1B (1,900 µg/L, 1Q2010; and 2,300 µg/L, 3Q2010), OW1A (8,000 µg/L, 1Q2011), OW3A (3,600 µg/L, 1Q2010; 2,200 µg/L, 3Q2010; and 1,400 µg/L, 1Q2011), and OW9 (18,000 µg/L, 1Q2010; 20,000 µg/L, 3Q2010; and 23,000 µg/L, 1Q2011). The maximum PCE detection was reported at Well OW9 in the 1Q2011 sampling event. Detections were generally lower at EPA monitoring wells. Other than OPOG and EPA detections, Ashland Chemical (Figure 3-6) has reported concentrations ranging from non-detection to 9.9 µg/L in the 1Q2010 sampling event (URS, 2010a), non-detection to 12 µg/L in the 3Q2010 sampling event (URS, 2011a), and non-detection to 13 µg/L in the 1Q2011 sampling event (EHS Support, Inc., 2011), CENCO (Figure 3-6) has reported concentrations ranging from non-detection to 55 µg/L in the 1Q2011 sampling event (MUREX Environmental, Inc., 2011), Eastman Kodak Company's former Western Zone Warehouse (Site K on Figure 3-6) has reported concentrations ranging from 9.9 to 130 µg/L in the 3Q2010 sampling event (GEOLOGICA, Inc., 2011), Pilot Chemical Company (Figure 3-6) has reported concentrations ranging from non-detection to 150 µg/L in the June 2010 semi-annual groundwater monitoring report (URS, 2010b) and 2.5 to 160 µg/L in the November 2010 semi-annual groundwater monitoring report (URS, 2011b), and Phibro-Tech, Inc. (Figure 3-6) has reported concentrations ranging from 1.6 to 150 µg/L in the 1Q2010 sampling event and 2.6 to 250 µg/L in the 3Q2010 sampling event (Iris, 2010).

PCE plume maps of 1Q2010, 3Q2010, and 1Q2011 are presented in Figures 3-6a, 3-6b, and 3-6c, respectively. The PCE plume is continuous over OU2. The distribution of PCE for these three quarters remained generally the same. PCE concentrations greater than 5 µg/L extend west-southwest downgradient from the former Omega property to near EPA Monitoring Well MW29. Concentrations exceeding 500 µg/L are associated with the Omega property and with another source area, identified in the Omega Chemical Groundwater Monitoring Report for 2008 and 2009 (CH2M HILL, 2011), associated with the former Angeles Chemical Company and the former McKesson Chemical (AMK) properties. Outside OU2, PCE concentrations greater than 5 µg/L are associated with the WDI and Ashland Chemical facilities.

Trichloroethene

TCE was detected at most monitoring wells at concentrations above the California Primary MCL of 5 µg/L in each sampling event. Detections greater than 1,000 µg/L were reported

at Well OW9 (1,300 µg/L, 1Q2010 and 1,500 µg/L, 1Q2011). The maximum detection was reported at Well OW9 in the 1Q2011 sampling event. Other than OPOG and EPA detections, Ashland Chemical (Figure 3-7) has reported concentrations ranging from non-detection to 62 µg/L in the 1Q2010 sampling event (URS, 2010a), non-detection to 33 µg/L in the 3Q2010 sampling event (URS, 2011a), and non-detection to 43 µg/L in the 1Q2011 sampling event (EHS Support, Inc., 2011), CENCO (Figure 3-7) has reported concentrations ranging from non-detection to 13 µg/L in the 1Q2010 sampling event (MUREX Environmental, Inc., 2010a), non-detection to 17 µg/L in the 3Q2010 sampling event (MUREX Environmental, Inc., 2010b), and non-detection to 93 µg/L in the 1Q2011 sampling event (MUREX Environmental, Inc., 2011), Eastman Kodak Company's former Western Zone Warehouse (Site K on Figure 3-7) has reported concentrations ranging from 8.5 to 370 µg/L in the 3Q2010 sampling event (GEOLOGICA, Inc., 2011), Pilot Chemical Company (Figure 3-7) has reported concentrations ranging from non-detection to 120 µg/L in the June 2010 semi-annual groundwater monitoring report (URS, 2010b) and 7.4 to 110 µg/L in the November 2010 semi-annual groundwater monitoring report (URS, 2011b), and Phibro-Tech, Inc. (Figure 3-7) has reported concentrations ranging from 5.8 to 120 µg/L in the 1Q2010 sampling event and 8 to 260 µg/L in the 3Q2010 sampling event (Iris Environmental, 2010).

TCE plume maps of 1Q2010, 3Q2010, and 1Q2011 are presented in Figures 3-7a, 3-7b, and 3-7c, respectively. The TCE plume is continuous over OU2. The distribution of TCE for these three quarters generally remained the same and is similar to the distribution of PCE. Concentrations exceeding 500 µg/L are associated with the Omega property and with another source area identified as the TCE source at Whittier Boulevard outside OU2, TCE concentrations greater than 5 µg/L are associated with the WDI and Ashland Chemical facilities. In addition, a TCE concentration greater than 5 µg/L was measured at Ash-MW-31B, a new monitoring well located downgradient of the Ashland Chemical facility.

F11 and F113

F11 was detected at a few wells in each sampling event. Detections were reported above the California Primary MCL (150 µg/L) at Wells MW1A (160 µg/L, 1Q2010), MW23A (170 µg/L, 3Q2010), MW23C (210 µg/L, 1Q2010 and 270 µg/L, 3Q2010), and OW9 (560 µg/L, 1Q2010; 350 µg/L, 3Q2010; and 760 µg/L, 1Q2011). The maximum detection was reported at Well OW9 in the 1Q2011 sampling event. Other than OPOG and EPA detections, CENCO (Figure 3-8) has reported concentrations ranging from non-detection to 1.1 µg/L in the 1Q2011 sampling event (MUREX Environmental, Inc., 2011), Eastman Kodak Company's former Western Zone Warehouse (Site K on Figure 3-8) has reported concentrations ranging from 3.1 to 86 µg/L in the 3Q2010 sampling event (GEOLOGICA, Inc., 2011), Pilot Chemical Company (Figure 3-8) has reported concentrations ranging from non-detection to 26 µg/L in the June 2010 semi-annual groundwater monitoring report (URS, 2010b) and non-detection to 19 µg/L in the November 2010 semi-annual groundwater monitoring report (URS, 2011b), and Phibro-Tech, Inc. (Figure 3-8) has reported concentrations ranging from non-detection to 29 µg/L in the 1Q2010 sampling event and non-detection to 110 µg/L in the 3Q2010 sampling event (Iris Environmental, 2010).

F11 plume maps of 1Q2010, 3Q2010, and 1Q2011 are presented in Figures 3-8a, 3-8b, and 3-8c, respectively. F11 does not cover the same large area as the PCE or TCE plumes. Changes of 5 µg/L plume distribution are minor; however, the distribution of concentrations

greater than 150 µg/L reduce covered areas between the 3Q2010 and 1Q2011 sampling events.

F113 was detected in samples from a few wells in each sampling event. The maximum detection was reported at Well OW9 (1,600 µg/L) in 1Q2011. Detections greater than 500 µg/L were also reported at Wells MW23C (550 µg/L, 1Q2010) and OW9 (1,500 µg/L, 1Q2010 and 900 µg/L, 3Q2010). Only OW9 exceeded the California Primary MCL of 1,200 µg/L during the 1Q2010 and 1Q2011 sampling events. Eastman Kodak Company's former Western Zone Warehouse (Site K on Figure 3-9) has reported concentrations ranging from 7.0 to 190 µg/L in the 3Q2010 sampling event (GEOLOGICA, Inc., 2011).

F113 plume maps of 1Q2010, 3Q2010, and 1Q2011 are presented in Figures 3-9a, 3-9b, and 3-9c, respectively. The Freon plumes are continuous over OU2. The distribution of F113 is similar to the distribution of F11. Both F113 and F11 are stable compounds in groundwater. The ratio of F113 to F11 can be assumed to remain constant (within a narrow range) once they are released to groundwater. Omega OU1 is the only known source of Freons; therefore, an analysis of the ratio of F113 and F11 can provide an indication as to whether multiple sources exist in OU2. Discussion of the ratio of F113 and F11 is presented in Section 3.2.1.3.

1,2-Dichloroethane

1,2-Dichloroethane (1,2-DCA) was detected at nine wells in 1Q2010, 15 wells in 3Q2010, and 27 wells in 1Q2011 sampling events. The California Primary MCL is 0.5 µg/L. Maximum 1,2-DCA detection was reported at Well OW9 (350 µg/L) in the 1Q2010 sampling event. Other than OPOG and EPA detections, Ashland Chemical (Figure 3-10) has reported concentrations ranging from non-detection to 13 µg/L in the 1Q2010 sampling event (URS, 2010a), non-detection to 10 µg/L in the 3Q2010 sampling event (URS, 2011a), and non-detection to 8.7 µg/L in the 1Q2011 sampling event (EHS Support, Inc., 2011), CENCO (Figure 3-10) has reported concentrations ranging from non-detection to 7.3 µg/L in the 1Q2010 sampling event (MUREX Environmental, Inc., 2010a), non-detection to 3.8 µg/L in the 3Q2010 sampling event (MUREX Environmental, Inc., 2010b), and non-detection to 40 µg/L in the 1Q2011 sampling event (MUREX Environmental, Inc., 2011), Eastman Kodak Company's former Western Zone Warehouse (Site K on Figure 3-10) has reported concentrations ranging from non-detection to 2.1 µg/L in the 3Q2010 sampling event (GEOLOGICA, Inc., 2011), Pilot Chemical Company (Figure 3-10) has reported concentrations ranging from non-detection to 1,200 µg/L in the June 2010 semi-annual groundwater monitoring report (URS, 2010b) and non-detection to 490 µg/L in the November 2010 semi-annual groundwater monitoring report (URS, 2011b), and Phibro-Tech, Inc. (Figure 3-10) has reported concentrations ranging from non-detection to 1 µg/L in the 1Q2010 sampling event and non-detection to 77 µg/L in the 3Q2010 sampling event (Iris Environmental, 2010).

1,2-DCA plume maps of 1Q2010, 3Q2010, and 1Q2011 are presented in Figures 3-10a, 3-10b, and 3-10c, respectively. The 1,2-DCA plume is narrow and follows the main contaminant transport pathway from the former Omega property; the plume is collocated with the zone of high PCE and TCE concentrations. The plume appears to be continuous over OU2. In addition, a 1,2-DCA plume is associated with, and extends to a poorly constrained location downgradient of the Ashland Chemical facility. For the three quarters, CENCO-W-10, located within the boundary of the former CENCO Refinery, has reported 1,2-DCA

concentrations ranging from 3 to 7.3 µg/L. It is unclear from the current monitoring well network if this well indicates the existence of a separate plume associated with CENCO or if the OU2 plume has a broader extent downgradient of the former Omega property.

1,1-Dichloroethane

1,1-Dichloroethane (1,1-DCA) was detected at more than 20 wells in each sampling event. The California Primary MCL is 5 µg/L. Maximum concentrations were detected at Well OW9 in 1Q2010 (57 µg/L), Wells MW20A and OW9 in 3Q2010 (30 and 30 J µg/L, respectively), and Well OW9 in 1Q2011 (52 µg/L) sampling events. The "J" qualifier indicates that the detection is an estimated value.

1,1-Dichloroethene

1,1-DCE was detected at most wells in each sampling event, generally at concentrations above the California Primary MCL (6 µg/L). The maximum detection was reported at Well OW9 (2,800 µg/L) in 1Q2011. Detections greater than 500 µg/L were also reported at Wells MW1A (640 J µg/L, 1Q2010 and 600 µg/L, 3Q2010), MW23C (540 µg/L, 1Q2010), OW3A (800 µg/L, 1Q2010 and 690 µg/L, 3Q2010), and OW9 (2,200 µg/L, 1Q2010 and 1,500 µg/L, 3Q2010).

1,1,1-Trichloroethane

1,1,1-Trichloroethane (1,1,1-TCA) was not detected above the California Primary MCL (200 µg/L) during the three quarters. Detections were reported at Wells MW1A, MW1B, MW16A, MW16B, MW17B, MW20A, MW20B, MW23A, MW23C, MW26A, and OW9, but at concentrations below the MCL. The maximum detection was reported at Well OW9 (6.5 J µg/L) in 1Q2010.

1,1,2-Trichloroethane

1,1,2-Trichloroethane (1,1,2-TCA) was detected at a few wells in each sampling event. The California/EPA Primary MCL is 5 µg/L and the maximum detection was reported at Well OW9 (26 µg/L, 1Q2010). During the 1Q2011 sampling event, the reported concentration at Well OW9 (21 J µg/L) also exceeded the MCL. Detections were also reported at Wells MW1A, MW1B, MW27A, MW27B, and MW27C, but at concentrations below the MCL.

1,2-Dichlorobenzene

1,2-Dichlorobenzene was detected at only one well (OW9 [4 J µg/L, 1Q2010]). This detection was below the California Primary MCL of 600 µg/L.

1,2-Dichloropropane

1,2-dichloropropane was detected at two wells (MW20A and MW20B) in the 1Q2010 and 1Q2011 sampling events and one well (MW20B) in the 3Q2010 sampling event. No detection exceeded the California Primary MCL of 5 µg/L. The maximum detection was reported at Well MW20B (3.7 µg/L) in 3Q2010.

Bromodichloromethane

Bromodichloromethane was detected at three wells (MW2, MW29, and OW7) in the 1Q2010 sampling event and one well (MW23C) in the 3Q2010 sampling event. The maximum detection was reported at Well OW7 (1.4 µg/L) in 1Q2010. EPA and California currently do not have a screening level for this compound.

Carbon Tetrachloride

Carbon tetrachloride was detected at a few wells in each sampling event. The maximum detection was reported at Well MW23D (0.51 µg/L) in the 3Q2010 sampling event. The remaining detections were below the California Primary MCL of 0.5 µg/L.

Chloroform (Trichloromethylene)

Chloroform was detected at most wells in each sampling event. The maximum detection was reported at Well OW9 (2,300 µg/L, 1Q2011). The other detections greater than 100 µg/L were reported at Wells MW1A (200 µg/L, 1Q2010; 170 µg/L, 3Q2010; and 110 µg/L, 1Q2011), MW1B (120 µg/L, 1Q2010 and 150 µg/L, 3Q2010), MW23C (110 µg/L, 1Q2010), and OW9 (2,000 µg/L, 1Q2010 and 1,100 µg/L, 3Q2010). These values exceed the EPA Primary MCL of 80 µg/L, which applies to total trihalomethanes (these include bromoform, bromodichloromethane, chloroform, and dibromochloromethane).

cis-1,2-Dichloroethene

cis-1,2-Dichloroethene (cis-1,2-DCE) was detected at most EPA wells, and a few OPOG wells in each sampling event. The maximum detection was reported at Wells MW1A (69 µg/L, 1Q2011) and MW20A (69 J µg/L, 3Q2010). The majority of the detected concentrations were less than the California Primary MCL of 6 µg/L.

Dibromochloromethane

Dibromochloromethane was detected at two wells (MW29 and OW7) in the 1Q2010 sampling event and one well (OW7) in the 1Q2011 sampling event. The maximum concentration was detected at Well OW7 (1.2 µg/L, 1Q2010) and was below the EPA Primary MCL of 80 µg/L.

Dichlorodifluoromethane

Dichlorodifluoromethane (F12) was detected at a few wells in each sampling event. The maximum concentration was reported at Well MW1A (3.5 µg/L) in the 3Q2010 sampling event. No detections exceeded the California Notification Level of 1,000 µg/L.

Methylene Chloride

Methylene chloride was detected at a few wells in each sampling event. Maximum concentrations were reported at Well MW23C (2.4 J µg/L) in the 1Q2010 sampling event. No detections exceeded the California Primary MCL of 5 µg/L.

Trans-1,2-DCE

Trans-1,2-DCE was detected at a few wells in each sampling event. Trans-1,2-DCE concentrations in Well OW9 exceeded the California Primary MCL of 10 µg/L in each sampling event. Detected concentrations in the remaining wells did not exceed the MCL.

Trans-1,3-Dichloropropene

Trans-1,3-Dichloropropene was detected at only one well (MW4A [0.29 J]), in the 1Q2011 sampling event, but the concentration was below the California Primary MCL of 0.5 µg/L.

Vinyl Chloride

Vinyl chloride was detected at four wells in the 1Q2010 sampling event. Detections were reported at Wells MW27A, MW27B, MW27C, and MW30, with only the maximum detection at Well MW27A (1.1 µg/L) exceeding the California Primary MCL of 0.5 µg/L.

3.2.1.2 Other VOCs

1,4-Dioxane was detected at most wells in each sampling event. The maximum detection was reported at Well OW9 (1,600 µg/L, 1Q2011). The majority of the detected concentrations were greater than the California Notification Level of 1 µg/L. Other than OPOG and EPA detections, Ashland Chemical (Figure 3-11) has reported concentrations ranging from non-detection to 17 µg/L in the 1Q2010 sampling event (URS, 2010a), 0.13 to 15 µg/L in the 3Q2010 sampling event (URS, 2011a), and non-detection to 68 µg/L in the 1Q2011 sampling event (EHS Support, Inc., 2011), and Eastman Kodak Company's former Western Zone Warehouse (Site K on Figure 3-11) has reported concentrations ranging from non-detection to 4.8 µg/L in the 3Q2010 sampling event (GEOLOGICA, Inc., 2011). 1,4-Dioxane plume maps of 1Q2010, 3Q2010, and 1Q2011 are presented in Figures 3-11a, 3-11b, and 3-11c, respectively. The 1,4-dioxane plume is continuous over OU2. In addition, a 1,4-dioxane plume is associated with, and extends to a poorly constrained location downgradient of the Ashland Chemical facility.

Nonchlorinated VOCs detected at OU2 include 2-hexanone, benzene, bromoform, carbon disulfide, isopropylbenzene, m,p-Xylenes, methyl cyclohexane, MTBE, and toluene. Detections of nonchlorinated VOCs were all below screening levels except benzene at OW1A (6.2 µg/L, 3Q2009) and OW1B (21 J µg/L, 1Q2009). Screening levels for 2-hexanone and methyl cyclohexane have not been set.

2-Hexanone was detected only at Well MW8C (15 J µg/L) in the 1Q2011 sampling event. No MCL has been established for 2-Hexanone.

Benzene was detected at one well (OW9) in the 1Q2010 sampling event, one well (MW1A) in the 3Q2010 sampling event, and two wells (MW27B and MW30) in the 1Q2011 sampling event. Detected concentrations exceeding the California Primary MCL of 1 µg/L were reported at Wells OW9 (4.8 J µg/L) and MW30 (1.7 µg/L).

Bromoform was detected only at Well MW25A (2.8 µg/L) in the 1Q2010 sampling event, but did not exceed the EPA Primary MCL of 80 µg/L.

Carbon disulfide was detected at one well (MW13B) in the 1Q2010 sampling event, and five wells (MW6, MW7, MW8A, MW16A, and MW27D) in the 3Q2010 sampling event. The maximum detection was reported at Well MW6 (0.94 J µg/L). No detections exceeded the California Notification Level of 160 µg/L.

Isopropylbenzene was detected at three wells (MW17B, MW20A, and MW27D) in the 3Q2010 sampling event, and one well (MW30) in the 1Q2011 sampling event. The maximum reported concentration was 3.5 µg/L at Well MW30, which is below the California Notification Level of 770 µg/L.

m,p-Xylene was detected only at Well MW17B (2 J µg/L) in the 3Q2010 sampling event. The detected concentration is below the California Primary MCL of 1,750 µg/L.

Methyl cyclohexane was detected only at Well MW27A (2.6 µg/L) in the 1Q2010 sampling event. No MCL has been established for methyl cyclohexane.

MTBE was detected at a few wells in each sampling event. The maximum concentration was reported at Well MW30 (130 µg/L) in the 1Q2011 sampling event. All the remaining detected concentrations were below the California Primary MCL of 13 µg/L.

Toluene was detected only at Well MW24B (0.18 J µg/L) in the 1Q2011 sampling event. The California Primary MCL is 150 µg/L.

3.2.1.3 Ratios of F113 and F11

The ratios of concentrations of F113 and F11 were evaluated to identify indications of potential sources of Freons other than the former Omega facility.

The calculated narrow ratio range seems to be indicative of Omega OU1 being a single source of the two Freons found at OU2. It is noted, though, that because of the limitations of this analysis, only a substantial change in F113/F11 ratio resulting from a substantial release of Freon(s) to groundwater could be detected. The results are summarized as follows and the limitations of the analysis are discussed in Appendix H.

Both F11 and F113 are stable compounds that do not degrade in groundwater. Their sorption characteristics are similar; furthermore, sorption is not substantial in the sandy aquifer materials present at OU2. These characteristics support the expectation of a (relatively) constant F113/F11 ratio in a plume resulting from a single source at OU2. The ratio of their concentrations would be expected to remain constant in the absence of sampling, analytical, and any other variation.

It can be reasonably expected that the source at Omega OU1 is well-mixed and that the Freon ratio at OU1 was fairly uniform over time as a result of the release of mixed waste into soil. If there is another substantial source of either F11 or F113 somewhere at OU2 downgradient from OU1, the ratio of F113/F11 in groundwater is expected to be different downgradient of that source. A source of both F11 and F113 but with a different mix than OU1 would have a similar effect.

Table 3-4 summarizes the statistics for the F113/F11 ratios calculated for each well using the entire historical record (with NDs removed). The mean F113/F11 ratios calculated from historical concentration data, along with the results of trend analyses conducted on these Freon ratios (discussed in the following sections) are shown in Figure 3-12.

3.2.2 Data Quality Assessment

The chemical data quality for Omega 1Q2010, 3Q2010, and 1Q2011 data was managed through the following tools and processes:

- Data quality objectives process as documented in project QA plan (CH2M HILL, 2004d) and 2006 addendum (CH2M HILL, 2006b)
- Project QA plans to define procedures and functional policies for data of known and appropriate quality along with FSPs (CH2M HILL, 2004d; CH2M HILL, 2004c) and 2006 addenda (CH2M HILL, 2006b; CH2M HILL, 2006a)
- Laboratory QA through audits
- Data validation and QA

Following is a description of the analytical methodology, data validation methodology and findings, and data quality assessment methodology and findings. The validation reports and tables summarizing the QA are included in Appendix G.

3.2.2.1 Analytical Program/Methodology

The analytical parameters and the associated methods, the EPA analytical method references are contained in the project-specific QAPP (CH2M HILL, 2004d).

Analyses were carried out through the EPA Contract Laboratory Program (CLP), the analyses were per CLP methodology modified for lower detection where needed and QC procedures. Table G-1 (in Appendix G) shows the analytes and measurement performance criteria for 1Q2010, 3Q2010, and 1Q2011.

The QAPP identifies the following method-specific QC requirements directly or by reference:

- Level of effort (frequency of QC checks) for each QC procedure
- Quantitative acceptance limits for QC data
- Corrective action requirements for the laboratories for QC data that are outside the acceptance limits
- The detection limit requirements

These requirements (also EPA regional and CLP standard operating procedures) have been followed as the project analytical requirements by the laboratory. The analytical laboratory has established method detection limits (MDLs) in accordance with Title 40, Part 136, Appendix B, of the *Code of Federal Regulations* (CFR) before start of the work to ensure that laboratory-specific limits complied with the QAPP specifications.

3.2.2.2 Data Validation and Findings

Data Validation Methodology

All data (100 percent) have been evaluated independent of the laboratory by project chemists per EPA National Functional guidelines.

Sample data have been reviewed outside the laboratories by EPA Quality Assurance Office (QAO) for the QC specifications identified in the project QAPP for each specific parameter and are flagged in accordance with the project QAPP. One hundred percent of the data has been reviewed outside the lab per CLP semi-automated systems (CLP Level 1B equivalent to EPA Region 9 Tier 2, as described in QAPP) and over 10 percent of the data has been validated manually by the EPA Regional QAO (Tier 3 validation per regional guidance).

Reporting

Sample and parameter-specific data validation reports are in Appendix G. Data validation findings and qualifications/flags are summarized in Table G-2.

Each report has subsections that correspond to the internal QC check requirements for that specific method as identified in the project QAPP and EPA data validation functional guidelines. If laboratory data were found to deviate from the specifications, the subsection

provides quantitative details for the QC data deviation and the associated affected samples and provides flags according to defined conventions.

Flagging Conventions, Data Validation Findings

QAPP criteria and EPA data validation functional guidance were used to determine flagging conventions. Data validation flags have been entered into the database that were used for project reports. Data validation findings and qualifications/flags are summarized in Table G-2.

Over 90 percent of data were found to be within criteria as seen in Table G-2. Systematic laboratory errors were not observed and no significant data biases are noted. The only rejected data were for trans-1,2-dichloroethene and 1,2-dibromo-3-chloropropane results per CLP automated validation, this finding was not supported by the manual regional findings and full CLP report was not available. The causes for the rejected data are noted to be isolated occurrences and not a systematic bias. These reject data have not impacted project decisions as can be seen in this report.

Data reported in this report include validation flags.

Data Storage

Backup information for the data evaluation and validation findings includes the following:

- Laboratory hardcopy packages, assembled in sample delivery group (SDG) units, which include all QC data. These packages are stored at the EPA Region 9 Laboratory and EPA CLP
- Laboratory electronic databases, which includes all sample concentration data with laboratory data flags and a subset of laboratory QC data
- COC forms and tracking records in project files, as well as at the laboratory
- Laboratory bench records and sample custody logs maintained by the laboratory
- Project electronic databases to include validation flags stored with project files; electronic database structure/content are per project/program specifications

3.2.2.3 Data Quality Assessment and QC Data

Data quality objectives have been prescribed in the QAPP in terms of precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters. The following is a description of the assessment for each parameter. Associated data for the PARCC parameters are in laboratory hardcopy packages and a subset of these parameters are found in laboratory, as well as project electronic databases. Tables G-2 through G-7 (in Appendix G) present the following data associated with the PARCC evaluations: precision (field duplicates Table G-3, MSDs Table G-6), accuracy (surrogates Table G -5, MSs Table G-6, field blank Table G-4), representativeness (field blanks Table G-4), completeness (data validation summary Table G-2). Accuracy data as represented by laboratory control standard recoveries are available in laboratory hard copies and the evaluation of these data can be seen in the appended data validation reports (Appendix G).

Accuracy measurement data include laboratory control sample and matrix spike recovery data for both organic and inorganic analytical parameters, as well as surrogate recovery

data for organic parameters. Surrogate recoveries are summarized in Table G-5. MS/MSD data are presented in Table G-6. Laboratory control standard recoveries are available in laboratory hard copies and the evaluation of these data can be seen in the appended data validation reports (Appendix G). Surrogate recoveries show large deviations due to dilutions or large sample concentration to spike concentration ratios. However, sample matrix and sample matrix duplicate results are found to be within limits at large (over 90 percent) and do not indicate any significant bias.

Precision measurement data include laboratory and field duplicate data expressed as relative percent deviation (RPD). Field duplicate measurements are shown in Table G-3. The evaluation of lab duplicates can be seen in the appended data validation reports (Appendix G). Laboratory MSD data were found to be within acceptance criteria at large as seen in the validation reports and Table G-2, thus no significant lab precision bias is noted. Field duplicate relative percent recoveries (Table G-3) do not indicate significant field bias also. The larger deviations noted for fluorocarbons (freons) and ethylenes are intrinsic to the limitations of the measurements. Data users have taken these findings into consideration in their decision processes. Thus overall project precision targets are met and no significant biases are noted.

Representativeness is a measure of how closely the measured results reflect the actual concentration or distribution of the chemical compounds in the sampled media. Representativeness is assessed in both qualitative and quantitative terms. The project report discusses the qualitative aspects of representativeness in terms of design of the FSP, sampling techniques, sample handling protocols, and associated documentation. Quantitative measures of representativeness include field and laboratory blank measurements to identify if contamination was introduced through field or laboratory operations. Field duplicate measurements (Table G-3) are used to establish variability. Field blank results and associated evaluations are shown in Table G-4. For sample results where the sample results is less than 5 times the associated field blank detection, the sample results are qualified as NDs. These field blank qualifications have not impacted project decisions and not affected the needed representativeness. Similarly, samples have been qualified for laboratory blanks through the validation reports where again no significant bias has been noted.

Comparability expresses the confidence with which one data set can be compared to another. Comparability of data has been established through use of following:

- Standard analytical methods and QC procedures established in the project QAPP
- Consistent reporting units for a specified procedure
- MDLs for all analytical parameters that were established in accordance with 40 CFR Part 136, Appendix B, before the start of the analyses to meet the project requirements

All comparability factors have been met for this set of data.

Completeness in this report is assessed as a measure of the amount of valid data obtained from the analytical measurements. Field activity completeness is assessed within the context of the overall sampling design. Data validation summaries are presented in Table G-2. Data completeness was found to be above 90 percent at large, and meets project needs.

3.3 Trend Analysis

Statistical trend analyses were conducted to help in assessing the temporal concentration changes of the various contaminants in groundwater at the Omega Site. Trend analyses were also conducted for F113/F11 ratios for the monitoring wells where sufficient data are available.

Method

The trend test applied to the current Omega groundwater network monitoring results is the Mann-Kendall [M-K] test. Trend tests were performed using the Environmental Statistics module of *S*+, distributed by Insightful Corporation statistical software. The M-K test is a nonparametric test that is robust to the underlying distribution of observed values and does not require uniform spacing between observations. The latter is important given inconsistencies in data collection throughout the network over the period of record. Functionally, the M-K test works by comparing all possible pairs of sample results with results from all subsequent events, from the beginning of the series. For each set of paired observations, concentration differences are calculated. The full set of possible differences includes the first observation minus the second, the first observation minus the third and so on, through the value of the penultimate sample minus the value of the final event result. The significance test is based upon a binomial distribution, which assumes that if the numbers of positive and negative differences are equal, then there is no significant trend in the sequence of observations. So, for example, a monotonically increasing function would consist of all possible differences being negative values, while a monotonically decreasing function would consist exclusively of positive differences. The value of the actual test statistic depends on the number of positive and negative differences within the series being tested. The probability of the test depends on the value of the test statistic within the set of all possible combinations of results from a sample of the same size. By convention, if the probability of the test statistic is greater than 0.05, it is concluded that no trend exists. If the probability of the test statistic is less than or equal to 0.05, it is concluded that there is a statistically significant trend. The direction of a significant trend and conclusion from the M-K test is interpretable from the sign of the test statistic, output from the statistical algorithm. Detailed description of the test is found in numerous references, including EPA's *Unified Guidance* and statistical texts such as the user's manual for S-plus environmental statistics software (EPA, 2009; Millard and Neerchal, 2001).

The M-K test requires a minimum of four unique observations and is increasingly optimally applied with larger sample sizes. A sample size of 10 to 12 is preferred but constraints to available data over the majority of the network argue for a more-relaxed sample size for trend testing. For purposes of performing the M-K test on currently available Omega groundwater data of VOCs, a series consisting of seven or more detected concentrations have been tested with the M-K test. Freon ratios have been tested for trend only in wells where five or more FC113 and FC11 concentrations were reported as detectable concentrations.

Trend Analyses for VOC Concentrations

All historical concentration measurements after January 2006 taken from the 76 Omega monitoring wells were included in the analysis. All contaminants of concern with sufficient detectable values were included in the trend analysis. Table 3-5 shows the matrix of the

trend analysis conducted on concentration data collected from the 76 Omega monitoring wells for 17 detected VOCs. A total of 4,363 well and chemical compound concentration pairs were analyzed. Trends could not be statistically analyzed for 3,973 data pairs mainly because of the presence of NDs and short monitoring records. Of the 390 monitoring well and chemical compound concentration pairs with sufficient data to perform trend analysis, 88 pairs showed significant decreasing trends, 63 showed significant increasing trends, and the remaining 239 exhibited no significant trend. The plots of the concentration time series for selected compounds for all wells are presented in Appendix I.

Figures 3-13 through 3-20 show the spatial distribution of the trends for selected chemical compounds, including PCE, TCE, F11, F113, trichloromethylene (chloroform), 1,1-DCE, 1,4-dioxane, and cis-1,2-DCE, respectively:

- PCE (Figure 3-13): among the 76 wells, 13 showed an increasing trend, nine showed a decreasing trend, 38 exhibited no significant trend, and the other 16 had insufficient data. Wells with increasing trends appear randomly distributed in the northern portion of OU2 (upgradient of Well Cluster MW17); wells with decreasing trends are concentrated in an area downgradient of the Omega facility and upgradient of AMK, with one well (OW1B) located on the Omega facility; and wells with no significant trends appear to be randomly scattered throughout OU2.

- TCE (Figure 3-14): among the 76 wells, eight showed an increasing trend, 11 showed a decreasing trend, 39 exhibited no significant trend, and the other 18 had insufficient data. Wells with increasing trends appear randomly distributed throughout OU2; wells with decreasing trends are concentrated in an area downgradient of the Omega facility and upgradient of AMK, with one well (OW1B) located on the Omega facility; and wells with no significant trends appear to be randomly scattered throughout the entire OU2.

- F11 (Figure 3-15): among the 76 wells, three showed an increasing trend, eight showed a decreasing trend, 23 exhibited no significant trend, and the other 42 had insufficient data. Increasing trends were detected at three locations away from the Omega facility—MW1B, MW8D, and MW16B. Except for MW10, wells with decreasing trends are concentrated in a relatively small area between the Omega facility and Slauson Avenue. One well on the Omega facility (OW7) has a decreasing trend. Wells with no significant trends appear to be randomly scattered throughout the entire OU2 area.

- F113 (Figure 3-16): among the 76 wells, four showed an increasing trend, eight showed a decreasing trend, 29 exhibited no significant trend, and the remaining 35 had insufficient data. Increasing trends were detected at four locations away from the Omega facility—MW1B, MW8D, MW23B, and MW16B. Wells with decreasing trends are concentrated in an area downgradient of the Omega facility and upgradient of Los Nietos Road. One well on the Omega facility (OW7) has a decreasing trend. Wells with no significant trends appear to be randomly scattered throughout OU2.

- Trichloromethylene (Figure 3-17): among the 76 wells, 12 showed an increasing trend, eight showed a decreasing trend, 18 exhibited no significant trend, and the other 38 had insufficient data. In general, wells with increasing and decreasing trends are concentrated in an area downgradient of the Omega facility and upgradient of Los Nietos Road. Wells with no significant trends appear to be randomly scattered throughout OU2.

- 1,1-DCE (Figure 3-18): among the 76 wells, 10 showed an increasing trend, 10 showed a decreasing trend, 23 exhibited no significant trend, and the other 33 had insufficient data. Wells with increasing trends occupy an area downgradient of the Omega facility extending from Washington Boulevard to Telegraph Road. Except for MW10, wells with decreasing trends are concentrated in a relatively small area between the Omega facility and Slauson Avenue. One well on the Omega facility (OW1A) has a decreasing trend. Wells with no significant trends appear to be randomly scattered throughout OU2.
- 1,4-Dioxane (Figure 3-19): among the 76 wells, two showed an increasing trend, 10 showed a decreasing trend, 14 exhibited no significant trend, and the other 50 had insufficient data. Increasing trends were detected at two wells located at one location away from the Omega facility—MW1A and MW1B. In general, wells with decreasing trends are concentrated in a relatively small area between the Omega facility and Slauson Avenue. Two wells on the Omega facility (OW1A and OW1B) have decreasing trends. Wells with no significant trends appear to randomly scattered throughout OU2.
- cis-1,2-DCE (Figure 3-20): among the 76 wells, eight showed an increasing trend, seven showed a decreasing trend, 19 exhibited no significant trend, and the other 42 had insufficient data. Wells with increasing, decreasing, and no significant trends appear randomly distributed throughout OU2.

Overall, compound concentrations in groundwater exhibited no significant trend at the majority of monitoring wells. In addition, the number of wells with a decreasing trend generally exceeds the number of wells with an increasing trend for most compounds. Notable exceptions are PCE, trichloromethylene, and cis-1,2-DCE. PCE shows an increasing trend at 13 wells and a decreasing trend at nine wells, trichloromethylene shows an increasing trend at 12 wells and a decreasing trend at eight wells, and cis-1,2-DCE shows an increasing trend at eight wells and a decreasing trend at seven wells. In addition, 1,1-DCE shows an increasing trend at 10 wells and a decreasing trend at 10 wells.

In general, a decreasing trend was observed for the majority of contaminants (except PCE, which showed an increasing trend at some locations) at the wells located in the close vicinity of and immediately downgradient of the Omega facility, including the following:

- MW15 has decreasing trends for 13 chemical compounds, including PCE, TCE, F11, F113, trichloromethylene, 1,1-DCE, 1,4-dioxane, and cis-1,2-DCE
- MW2 has decreasing trends for nine chemical compounds, including PCE, TCE, F11, F113, trichloromethylene, 1,1-DCE, and 1,4-dioxane; cis-1,2-DCE concentration has been relatively stable and showed no significant trend
- MW4A has decreasing trends for nine chemical compounds, including PCE, TCE, F11, F113, 1,1-DCE, 1,4-Dioxane, and cis-1,2-DCE; trichloromethylene concentration has been relatively stable and showed no significant trend
- OW5 has decreasing trends for eight chemical compounds, including PCE, F11, F113, trichloromethylene, 1,1-DCE, and 1,4-dioxane; TCE and cis-1,2-DCE concentrations have been relatively stable and showed no significant trends

- MW5 has decreasing trends for seven chemical compounds, including PCE, TCE, trichloromethylene, 1,1-DCE, 1,4-dioxane, and cis-1,2-DCE; F11 and F113 concentrations have been relatively stable and showed no significant trends
- MW4B has decreasing trends for F11, trichloromethylene, 1,1-DCE, and 1,4-dioxane; PCE, TCE, F113, and cis-1,2-DCE concentrations have been relatively stable and showed no significant trends
- OW10 has decreasing trends for PCE, TCE, F11, and 1,1-DCE; F113 concentration has been relatively stable and showed no significant trend, and trichloromethylene, 1,4-dioxane, and cis-1,2-DCE data are not sufficient for trend analyses at this well
- OW4A has decreasing trends for PCE, TCE, trichloromethylene, and 1,1-DCE; F11 and F113 concentrations have been relatively stable and showed no significant trends, and 1,4-dioxane and cis-1,2-DCE data are not sufficient for trend analyses at this well
- OW1A has decreasing trends for three chemical compounds, including 1,1-DCE and 1,4-dioxane; PCE, TCE, and trichloromethylene concentrations have been relatively stable and showed no significant trends, and F11, F113, and cis-1,2-DCE data are not sufficient for trend analyses at this well
- OW1B has decreasing trends for PCE, TCE, and 1,4-dioxane; F11, F113, and 1,1-DCE concentrations have been relatively stable and showed no significant trends, and trichloromethylene and cis-1,2-DCE data are not sufficient for trend analyses at this well
- OW8A has decreasing trends for three chemical compounds, including trichloromethylene; PCE, TCE, F11, F113, 1,1-DCE and 1,4-dioxane concentrations have been relatively stable and showed no significant trends, and cis-1,2-DCE data is not sufficient for trend analysis at this well

Increasing concentration trends were observed at several monitoring wells, most of which are located downgradient of the wells with decreasing trends and at locations closer to the AMK facilities, including the following:

- MW16B has increasing trends for PCE, TCE, F11, F113, trichloromethylene, 1,1-DCE, and cis-1,2-DCE; 1,4-dioxane data is not sufficient for trend analysis at this well
- MW1B has increasing trends for PCE, F11, F113, trichloromethylene, 1,1-DCE, 1,4-dioxane, and cis-1,2-DCE; TCE concentration has been relatively stable and showed no significant trend
- MW1A has increasing trends for six chemical compounds, including PCE, trichloromethylene, 1,1-DCE, 1,4-dioxane, and cis-1,2-DCE; TCE, F11, and F113 concentrations have been relatively stable and showed no significant trends
- MW8B has increasing trends for PCE, TCE, trichloromethylene, 1,1-DCE, and cis-1,2-DCE; F113 concentration has been relatively stable and showed no significant trend, and F11 and 1,4-dioxane data are not sufficient for trend analyses at this well

- MW8C has increasing trends for PCE, TCE, trichloromethylene, 1,1-DCE, and cis-1,2-DCE; F113 concentration has been relatively stable and showed no significant trend, and F11 and 1,4-dioxane data are not sufficient for trend analyses at this well
- MW8D has increasing trends for PCE, F11, F113, trichloromethylene, and 1,1-DCE; TCE and cis-1,2-DCE concentrations have been relatively stable and showed no significant trends, and 1,4-dioxane data is not sufficient for trend analysis at this well
- MW20A has increasing trends for three chemical compounds, including 1,1-DCE and cis-1,2-DCE; PCE, TCE, F11, F113, trichloromethylene, and 1,4-dioxane concentrations have been relatively stable and showed no significant trends
- MW23B has increasing trends for F113, trichloromethylene, and 1,1-DCE; PCE, TCE, and cis-1,2-DCE concentrations have been relatively stable and showed no significant trends, and F11 and 1,4-dioxane data are not sufficient for trend analyses at this well
- MW25B has increasing trends for PCE, trichloromethylene, and 1,1-DCE; TCE, F11, F113, and cis-1,2-DCE concentrations have been relatively stable and showed no significant trends, and 1,4-dioxane data is not sufficient for trend analysis at this well
- MW27C has increasing trends for PCE, TCE, and cis-1,2-DCE; F11, F113, trichloromethylene, 1,1-DCE, and 1,4-dioxane data are not sufficient for trend analyses at this well

Wells situated in the far southern portion of OU2 generally showed no significant concentration trend; these wells include MW28, MW29, and MW30. It is noted that these wells generally have shorter monitoring records than wells located in the northern portion of OU2, and future monitoring may reveal temporal concentration trends at these wells.

Trend Analyses for F113 and F11 Ratios

Freon ratios have been tested for trend only in wells where five or more FC113 and FC11 concentrations were reported as detectable concentrations.

F113 and/or F11 were not detected historically in 22 wells (MW3, MW13B, MW16C, MW17C, MW18A, MW18B, MW18C, MW19, MW20C, MW21, MW22, MW25D, MW26D, MW27B, MW27C, MW27D, MW28, MW29, MW30, MW31, OW3B, and OW8B). Out of the remaining 54 wells, 43 had sufficient data to support trend testing. Table 3-4 summarizes trend test results for these monitoring wells. Figure 3-12 shows calculated mean Freon ratio values for each well and the results of the Freon ratio trend analyses. The spatial pattern does not indicate clustering of Freon ratio values or trends in the ratios over OU2. The variability in the ratios may be entirely attributable to the limitations listed in Appendix H.

The trend analysis leads to the following interpretations:

- PCE showed increasing trend at multiple locations downgradient of the Omega facility and in the vicinity of other facilities, suggesting that the mass of PCE in groundwater at OU2 is increasing and/or moving with groundwater flow. TCE trends are similar although less pronounced.
- Wells situated in the southern portion of OU2 (Well Clusters MW17, MW20, MW26, and MW27, and Monitoring Wells MW20 and MW21) showed significant concentration

trends for several compounds, including PCE and TCE. These trends also suggest the increase and/or movement of the contaminant mass with groundwater flow in OU2 aquifer.

- MW8C, MW23D, and MW27C showed increasing trends in PCE and TCE concentrations and MW8D showed an increasing trend in PCE concentration.
- F11 and F113 showed decreasing trends near the Omega facility and increasing trends downgradient of the Omega facility. These trends may suggest that there is currently no substantial release of Freons into the aquifer at OU1. The center of the mass of the Freon plume may currently be at the locations where the Freon concentrations are increasing.
- 1,1-DCE and cis-1,2-DCE showed increasing trends throughout OU2, suggesting degradation of PCE and TCE may be significant at OU2.

3.4 Vertical Distribution of Contaminants

The change in the vertical distribution of contaminants over time is shown for the three sampling events for PCE and F 113 in Figures 3-21 (a, b, and c) and 3-22 (a, b, and c), respectively.

The Cross-Sections BB' and CC' depicted in Figures 3-21 and 3-22 are identical to the cross-sections developed for the RI/Feasibility Study (FS) (CH2M HILL, 2010) and show more-permeable, coarse-grained units and less-permeable, fine-grained units. To better depict the lateral and vertical extent of the PCE and F113 plumes downgradient of the Omega facility, Cross-Section AA' was modified slightly by adding projected Wells OW9, MW1, and MW5. The contamination is expected to migrate predominantly via the coarse-grained units while the fine-grained units act as partial barriers to groundwater flow as indicated by the differences in piezometric heads and contaminant distribution.

As seen on Cross-Section AA', the zone of high PCE concentrations (over 100 µg/L) in the shallow groundwater downgradient of the Omega facility continues to MW23A. This zone is separated from the lower concentration zone in the underlying aquifer by a fine-grained unit. The zone of PCE concentrations exceeding 500 µg/L appears continuous on Cross-Section AA' because projected Wells OW9, MW1, and MW5 are located in a higher PCE concentration region of the plume. However, as seen on the plan view map in Figure 3-21, Cross-Section AA' does not follow the over 500 µg/L axis of the PCE plume immediately downgradient of the Omega facility.

Separate zones of high concentrations exist in the units penetrated by the screens of MW23C and MW17B. The high concentration zone at MW23C could be an indication of a vertical conduit in this area that allows contaminant migration from the shallow groundwater into this deeper zone. The high concentrations at MW17B may be associated with the AMK facilities.

In 1Q2010 and 1Q2011, samples from the deep D screens of MW8 and MW23 had PCE concentrations over the MCL. In 3Q2010 samples from MW8D and MW23D, as well as MW27D had PCE concentrations over the MCL.

The F113 distribution is similar to that of PCE except that no high concentration zone is associated with the AMK facilities. A zone of high F113 concentrations (over 150 µg/L) is present in the shallow groundwater between the former Omega facility and extends past MW23A; this zone is also separated by the fine-grained unit from the lower concentrations in the underlying aquifer. As for PCE, a zone of high F113 concentrations is present in the unit screened by MW23C.

Both PCE and F113 concentrations have decreased between 1Q2010 and 1Q2011 at Wells MW8D and MW23D. In addition, PCE concentrations have also decreased at Wells MW27C and MW27D between 1Q2010 and 1Q2011. However, as discussed in Section 3.3, trend analyses indicated that PCE concentrations at MW8C, MW8D, MW23D, and MW27C showed increasing trends. The increase in concentrations in the deep monitoring wells is indicative of PCE mass migration at depth.

The vertical slice through the plume is also indicative of the plume lateral shifts over time. Cross-Section AA' was constructed so that it was oriented along the high concentration zone between the Omega facility and MW23 for the PCE (and other VOC) distribution in 2007. In 2010 and 2011, Cross-Section AA' no longer appears to follow the high concentration zone in this area, indicating that the main contaminant transport pathway has shifted over time and that the high concentration zone marking this pathway is rather narrow. The lateral shift of the high concentration (over 500 µg/L) zone in this area is also apparent on the plume maps (Figures 3-6 and 3-9).

4. Summary of Findings

The following summarizes the major findings from the three sampling events conducted in 1Q2010, 3Q2010, and 1Q2011:

4.1 Groundwater Flow

- Depth to water measurements were collected at the OPOG and EPA monitoring wells during the three sampling events to calculate the water level elevations at these monitoring wells. Hydrographs of the OPOG and the EPA wells were prepared to reveal the temporal water level variations at the Omega Site. The hydrographs of these monitoring wells indicate that water levels at the Omega Site generally decreased between 2002 and 2004, followed by a fairly quick recovery in the first half of 2005 in response to high precipitation that year, then remained relatively constant during the period between mid-2005 and mid-2007, declined again during the period of mid-2007 to early-2010; and recovered slightly during the reporting period of early-2010 to early-2011. The recent (2010 to 2011) increase in water levels in the monitoring wells coincides with the above-average annual rainfall during this period.
- Vertical gradients were calculated at locations where wells screened in different depth intervals are collocated. The majority of the 34 well screen pairs exhibited downward vertical gradients as expected at OU2 where regional groundwater flow is driven by recharge and deep aquifer pumping. Downward vertical gradients greater than 0.1 ft/ft were calculated for 16 well screen pairs. Upward gradients of small magnitude calculated for eight well screen pairs could be attributable to local piezometric head variations caused by heterogeneity of the aquifer or to measurement precision.
- Water table contour maps were prepared for the three sampling events using the water levels measured at the water table wells. In addition, horizontal groundwater gradients were calculated at four locations to show the spatial variations in the shallow groundwater flow regime at the Omega Site. The calculated gradients are generally similar for the three sampling events and range from 0.0029 to 0.0186 for 1Q2010, 0.0016 to 0.0187 for 3Q2010, and 0.0015 to 0.0085 for 1Q2011. The general shallow groundwater flow regime remained constant, as indicated by the similarities among the groundwater contours for the three sampling events.

4.2 VOC Detections

- PCE was detected at most monitoring wells at concentrations above the California Primary MCL of 5 µg/L in each sampling event. PCE concentrations over 1,000 µg/L were reported for Wells MW1A (2,600 µg/L in 1Q2010 and 2,500 µg/L in 3Q2010; 1,700 µg/L in 1Q2011), MW1B (1,900 µg/L in 1Q2010 and 2,300 µg/L in 3Q2010), OW1A (8,000 µg/L in 1Q2011), OW3A (3,600 µg/L in 1Q2010 and 2,200 µg/L in 3Q2010;

1,400 µg/L in 1Q2011), and OW9 (18,000 µg/L in 1Q2010; 20,000 µg/L in 3Q2010; and 23,000 µg/L in 1Q2011).

- TCE was detected at most monitoring wells at concentrations above the California Primary MCL of 5 µg/L in each sampling event. TCE concentrations over 1,000 µg/L were reported for Well OW9 (1,300 µg/L in 1Q2010 and 1,500 µg/L in 1Q2011).
- F11 was detected at several wells in each sampling event. Detections above the California Primary MCL (150 µg/L) were reported for Wells MW1A (160 µg/L in 1Q2010), MW23A (170 µg/L in 3Q2010), MW23C (210 µg/L in 1Q2010 and 270 µg/L in 3Q2010), and OW9 (560 µg/L in 1Q2010; 350 µg/L in 3Q2010; and 760 µg/L in 1Q2011).
- F113 was detected in samples from several wells in each sampling event. Detections over 500 µg/L were reported for Wells MW23C (550 µg/L in 1Q2010), and OW9 (1,500 µg/L in 1Q2010; 900 µg/L in 3Q2010; and 1,600 µg/L in 1Q2011).
- cis-1,2-DCE was detected at most EPA wells and a few OPOG wells in each sampling event. The maximum detection was reported at Wells MW1A (69 µg/L in 1Q2011) and MW20A (69 J µg/L in 3Q2010). The majority of the detected concentrations were less than the California Primary MCL of 6 µg/L.
- 1,1-DCE was detected at most wells in each sampling event, generally at concentrations above the California Primary MCL (6 µg/L). 1,1-DCE concentrations over 500 µg/L were reported for Wells MW1A (640 J µg/L in 1Q2010 and 600 µg/L in 3Q2010), MW23C (540 µg/L in 1Q2010), OW3A (800 µg/L in 1Q2010 and 690 µg/L in 3Q2010), and OW9 (2,200 µg/L in 1Q2010; 1,500 µg/L in 3Q2010; and 2,800 µg/L in 1Q2011).
- 1,1-DCA was detected at more than 20 wells in each sampling event. The California Primary MCL for 1,1-DCA is 5 µg/L and the maximum concentrations were detected at Wells OW9 (57 µg/L in 1Q2010; 30 J µg/L in 3Q2010; and 52 µg/L in 1Q2011) and MW20A (30 µg/L in 3Q2010).
- Chloroform was detected at most wells in each sampling event. Chloroform concentrations over 100 µg/L were reported for Wells MW1A (200 µg/L in 1Q2010; 170 µg/L in 3Q2010; and 110 µg/L in 1Q2011), MW1B (120 µg/L in 1Q2010 and 150 µg/L in 3Q2010), MW23C (110 µg/L in 1Q2010), and OW9 (2,000 µg/L in 1Q2010; 1,100 µg/L in 3Q2010; and 2,300 µg/L in 1Q2011). These values exceed the EPA Primary MCL of 80 µg/L.
- Other chemical compounds were detected at only a few monitoring wells, with generally lower concentrations.

4.3 Plume Extent for Main Contaminants

- For each sampling event, plume maps were prepared for PCE, TCE, F11, F113, 1,2-DCA, and 1,4-dioxane to show the lateral extent of contamination at the Omega Site for these chemical compounds. The maximum concentrations at cluster well locations were used to construct a vertical composite plume for each compound.

- The PCE plume is continuous over OU2. The distribution of PCE for these three quarters remained generally the same. PCE concentrations greater than 5 µg/L extend west-southwest downgradient from the former Omega property to near EPA Well MW29. Concentrations exceeding 500 µg/L are associated with the Omega property and with another source area identified as AMK. Outside OU2, PCE concentrations greater than 5 µg/L are associated with the WDI and Ashland Chemical facilities.
- The TCE plume is continuous over OU2. The distribution of TCE for these three quarters generally remained the same and is similar to the distribution of PCE. Concentrations exceeding 500 µg/L are associated with the Omega property and with another source area identified as the TCE source at Whittier Boulevard. Outside OU2, TCE concentrations greater than 5 µg/L are associated with the WDI and Ashland Chemical facilities. In addition, a TCE concentration greater than 5 µg/L was measured at Ash-MW-31B, a new monitoring well located downgradient of the Ashland Chemical facility.
- The Freon plumes are continuous over OU2. The distribution of F113 is similar to the distribution of F11. Both plumes do not cover the same large area as the PCE or TCE plumes. This can be explained by the much higher PCE and TCE concentrations than Freon concentrations at the former Omega facility, and by the presence of other PCE and TCE sources throughout OU2.
- The distributions of 1,2-DCA were similar for the three sampling events. The 1,2-DCA plume is narrow and follows the main contaminant transport pathway from the former Omega property; the plume is collocated with the zone of high PCE and TCE concentrations. Outside OU2, a 1,2-DCA plume is associated with, and extends to, a poorly constrained location downgradient of the Ashland Chemical facility. A well within the boundary of the former CENCO Refinery (CENCO-W-10) has reported 1,2-DCA concentrations ranging from 3 to 7.3 µg/L for the three quarters.
- The distributions of 1,4-dioxane were similar for the three sampling events. The plume appears to be continuous over OU2 but covers a smaller extent than PCE or TCE. Outside OU2, a 1,4-dioxane plume is associated with, and extends to, a poorly constrained location downgradient of the Ashland Chemical facility.

4.4 Freon Ratios

- The ratios of concentrations of F113 and F11 were evaluated to identify indications of potential sources of Freons other than the former Omega facility. The average ratios fall within a narrow range of 1.1 to 4.3 with a few exceptions. The narrow ratio range of the Freon ratios is not indicative of another source of Freon contamination that is significantly different from that of the former Omega property. However, it is noted that because of the limitations of this analysis, only a substantial change in the F113/F11 ratio resulting from a substantial release of Freon(s) to groundwater could have been distinguished. Trend testing performed on wells with sufficient historical observations revealed nine wells with statistically significant trends, all decreasing.

4.5 Temporal Concentration Trends

Statistical trend analyses were conducted to help in assessing the temporal concentration changes of the various contaminants in groundwater at the Omega Site, with the following findings:

- In general, a decreasing trend was observed for the majority of contaminants (except PCE, trichloromethylene, and cis-1,2-DCE, which showed increasing trends at some locations) at the wells located in the vicinity of and immediately downgradient of the Omega facility.
- Increasing VOC concentration trends were observed at several monitoring wells, most of which are located downgradient of the wells with decreasing trends, and at locations closer to the AMK properties.
- Wells situated in the far southern portion of OU2 generally showed no significant VOC concentration trend. It is noted, however, that these wells generally have shorter monitoring records than wells located in the northern portion of OU2, which affects the trend determination. No trend could be indicative of a stationary plume condition in this area (equilibrium between the contaminant mass flux from upgradient areas and dilution at the plume leading edge).
- PCE showed increasing trend at multiple locations downgradient of the Omega facility and in the vicinity of other facilities, suggesting that the mass of PCE in groundwater at OU2 is increasing and/or moving with groundwater flow. TCE trends are similar although less pronounced.
- Wells MW8C, MW23D, and MW27C showed increasing trends in PCE and TCE concentrations, and MW8D showed an increasing trend in PCE concentration.
- F11 and F113 showed decreasing trends near the Omega facility and increasing trends downgradient of the Omega facility. These trends may suggest that there is currently no substantial release of Freons into the aquifer at OU1. The center of the mass of the Freon plume may currently be at the locations where the Freon concentrations are increasing.
- 1,1-DCE and cis-1,2-DCE showed increasing trends throughout OU2, suggesting degradation of PCE and TCE may be significant at OU2.

4.6 Other Facility-Specific Data

Reports with groundwater analytical data were obtained for the following facilities located within the Omega OU2 area:

- Former Ashland Chemical Company at 10505 Painter Avenue (13157-13195 Flores Street and 13161-13198 Sandoval Street), Santa Fe Springs (EHS Support, Inc., 2011; URS, 2010a and 2011a)
- Former CENCO Refinery at 12345 Lakeland Road, Santa Fe Springs (MUREX Environmental, Inc., 2010a, 2010b, and 2011)

- Former Western Zone Warehouse – Kodak Regional Distribution Center at 12100 Rivera Road, Whittier (GEOLOGICA, Inc., 2011)
- PhibroTech, Inc. at 8851 Dice Road, Santa Fe Springs (Iris Environmental, 2010)
- Pilot Chemical Company at 11756 Burke Street, Santa Fe Springs (URS, 2010b and 2011b)

The following is a summary of key VOC detections at these facilities:

- PCE and TCE were detected at the following facilities: Ashland Chemical (PCE up to 9.9 µg/L, TCE up to 62 µg/L in 1Q2010; PCE up to 12 µg/L, TCE up to 33 µg/L in 3Q2010; and PCE up to 13 µg/L, TCE up to 43 µg/L in 1Q2011), CENCO (TCE up to 13 µg/L in 1Q2010; TCE up to 17 µg/L in 3Q2010; and PCE up to 55 µg/L, TCE up to 93 µg/L in 1Q2011), Eastman Kodak Company's Former Western Zone Warehouse (PCE up to 130 µg/L and TCE up to 370 µg/L in 3Q2010), Pilot Chemical Company (PCE up to 150 µg/L and TCE up to 120 µg/L in the June 2010 semi-annual groundwater monitoring report and PCE up to 160 µg/L and TCE up to 110 µg/L in the November 2010 semi-annual groundwater monitoring report), and Phibro-Tech, Inc. (PCE up to 150 µg/L and TCE up to 120 µg/L in 1Q2010 and PCE up to 250 µg/L and TCE up to 260 µg/L in 3Q2010).
- F11 was detected at CENCO (up to 1.1 µg/L in 1Q2011), Eastman Kodak Company's Former Western Zone Warehouse (up to 86 µg/L in 3Q2010), Pilot Chemical Company (up to 26 µg/L in the June 2010 semi-annual groundwater monitoring report and up to 19 µg/L in the November 2010 semi-annual groundwater monitoring report), and Phibro-Tech, Inc. (up to 29 µg/L in 1Q2010 and up to 110 µg/L in 3Q2010). F113 was detected at Eastman Kodak Company's Former Western Zone Warehouse (up to 190 µg/L in 3Q2010).
- 1,2-DCA was detected at the following facilities: Ashland Chemical (up to 13 µg/L in 1Q2010, up to 10 µg/L in 3Q2010, and up to 8.7 µg/L in 1Q2011), CENCO (up to 7.3 µg/L in 1Q2010, up to 3.8 µg/L in 3Q2010, and up to 40 µg/L in 1Q2011), Eastman Kodak Company's Former Western Zone Warehouse (up to 2.1 µg/L in 3Q2010), Pilot Chemical Company (up to 1,200 µg/L in the June 2010 semi-annual groundwater monitoring report and up to 490 µg/L in the November 2010 semi-annual groundwater monitoring report), and Phibro-Tech, Inc. (up to 1 µg/L in 1Q2010 and 77 µg/L in 3Q2010).
- 1,4-Dioxane was detected at Ashland Chemical (up to 17 µg/L in 1Q2010, up to 15 µg/L in 3Q2010, and up to 68 µg/L in the 1Q2011), and Eastman Kodak Company's Former Western Zone Warehouse (up to 4.8 µg/L in 3Q2010).

The groundwater samples collected at non-EPA facilities are not routinely analyzed for F113; consequently, F113 data are generally not available for these facility wells.

5. Recommendations

CH2M HILL recommends the following actions in 2012:

- Continue sampling for VOCs, including 1,4-Dioxane. Sample EPA wells every first and third quarter concurrently with OPOG sampling. Collect split samples only from OPOG wells. It is assumed that OPOG will provide EPA with the analytical results for their well sampling.
- The 2012 annual report should include plume maps for the same compounds as this report, temporal trends, and trend maps.
- The interpretation of Freon ratios in annual reports should be discontinued. Further Freon ratio analysis could be included in future OU2 evaluations.
- Attempts to measure water levels and collect samples for VOC analysis at the remaining former Oil Field Reclamation Project (OFRP) Wells MW19 and MW21 should continue. The sampling will be limited to collecting grab samples using disposable bailers without purging the wells.
- EPA should request analysis for F113 for former CENCO wells and WDI wells. Alternatively, split samples from selected wells could be collected at these facilities.
- Analytical results and water levels from groundwater monitoring at Ashland; CENCO; WDI; McKesson Chemical; Angeles Chemical Company; Phibro-Tech, Inc.; Techni Braze, Inc.; Pilot Chemical Company; Foss Plating; Mission Linen; Sites B, C, I, J, and K; and water levels for Golden West Refinery should be obtained through interagency data sharing and included in future monitoring reports.

6. References

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Tables

TABLE 1-1
OPOG and EPA Monitoring Well Construction Details
Omega Chemical Superfund Site

Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
OW1A	403554.4000	3759242.1000	209.99[a]	212.50[a]	63	77.5	77.5	80	10	4	SST	0.02	SCH40 PVC	2/12	59	78	hollow stem auger	neat slurry	3.5	56.2
OW1B	403542.8490	3759236.7550	207.37	207.18	110	120	120	130	10	4	SST	0.02	Mild Steel	2/12	99	130	hollow stem auger	95/5 slurry bentonite pellets	0 96	96 99
OW2	403461.2000	3759246.6000	203.24[a]	202.30[a]	60	80	80	85	10	4	SST	0.02	Mild Steel	2/12	55	85	hollow stem auger	95/5 slurry bentonite pellets	0 50	50 55
OW3A	403503.4000	3759170.1000	199.08[a]	198.53[a]	63	83	83	85	10	4	SST	0.02	Mild Steel	2/12	58	85	hollow stem auger	95/5 slurry bentonite pellets	0 53	53 58
OW3B*	403522.0000	3759148.0000	197.77[a]	197.06[a]	112	122	122	139	10	4	SST	0.01	SCH40 PVC	2/12	106	126	mud rotary	95/5 slurry bentonite chips #30 transition sand	0 99 105	99 105 107
OW4A	403320.6000	3759071.9000	184.93[a]	184.67[a]	49.8	69.8	69.8	80	10	4	SST	0.02	Mild Steel	2/12	47.7	75.7	hollow stem auger	95/5 slurry bentonite pellets	2 42.5	42.5 47.7
OW4B	403317.0360	3759072.3480	184.95	184.50	112	122.3	122.3	132	10	4	SST	0.02	Mild Steel	2/12	109.5	132	hollow stem auger	95/5 slurry bentonite pellets	2 105	105 109.5
OW5	402744.6000	3758929.8000	154.88[a]	154.16[a]	30	50	50	52	10	4	SST	0.02	SCH40 PVC	2/12	25	51	hollow stem auger	95/5 slurry bentonite	0 20	20 25
OW6	403207.7000	3758942.3000	173.14[a]	172.74[a]	38	58	58	61.5	10	4	SST	0.02	Mild Steel	2/12	36	59	hollow stem auger	95/5 slurry bentonite chips	2 30.5	30.5 36
OW7	403600.4000	3759301.6000	215.54[a]	214.21[a]	70.9	90.9	90.9	92	10	4	SST	0.02	Mild Steel	2/12	65	92.5	hollow stem auger	95/5 slurry bentonite pellets	2 60.6	60.6 65
OW8A	403481.6370	3759209.4910	201.20	200.64	60.4	80	80	81	10	4	SST	0.02	Mild Steel	2/12	55	81	hollow stem auger	95/5 slurry bentonite pellets	2 51	51 55
OW8B	403480.0430	3759212.7890	201.43	200.82	116	126	126	143	10	4	SST	0.01	SCH40 PVC	2/12	111.3	128	mud rotary	95/5 slurry	2	110
OW-9	403443.8000	3759195.6000	198.26[a]	195.70[a]	70	90	90.2	n/a	n/a	4	SST	0.02	SCH40 PVC	2/12	65.0	90	hollow stem auger	95/5 slurry	2	60
OW-10	403476.6000	3759118.7000	195.77[a]	193.17[a]	70	89.5	90.2	n/a	n/a	4	SST	0.02	SCH40 PVC	2/12	64.5	90	hollow stem auger	95/5 slurry	2	59.5
MW1A	402749.8678	3759022.8370	157.81	157.71	45	60	60	60	10	4	SCH40 PVC	0.02	SCH40 PVC	3	41.5	60	hollow stem auger	95/5 slurry medium chips	1 35	35 42
MW1B	402749.9621	3759020.3187	158.10	158.05	75	85.4	85.4	95	10	4	SCH40 PVC	0.02	SCH40 PVC	3	72	86	hollow stem auger	95/5 slurry bentonite pellets	1 67	67 72
MW2	402799.4810	3758870.1561	154.24	154.21	45	60	60	60	10	4	SCH40 PVC	0.02	SCH40 PVC	3	42.5	60	hollow stem auger	95/5 slurry bentonite pellets	1 38	38 42
MW3	402931.5361	3758376.4901	151.86	151.48	38	48	48	51.3	10	4	SCH40 PVC	0.02	SCH40 PVC	3	35.5	48	hollow stem auger	95/5 slurry bentonite chips	1 32	32 36
MW4A	402537.1475	3758403.1393	147.02	146.80	42.7	53	53	53	10	4	SCH40 PVC	0.02	SCH40 PVC	3	38.5	53	hollow stem auger	95/5 slurry bentonite chips	1 36	36 38.5
MW4B	402539.6698	3758404.8988	147.00	146.84	69.7	80	80	125	10	2	SCH40 PVC	0.02	SCH40 PVC	3	67	80	mud rotary	95/5 slurry bentonite chips/pellets	1 61.5	61.5 67
MW4C	402539.8674	3758404.7150	147.39	147.10	88.7	99	99	125	10	2	SCH40 PVC	0.02	SCH40 PVC	3	85	99.5	mud rotary	bentonite pellets	80	85
MW5	402519.7145	3758707.9616	150.84	150.60	43.3	53.3	53.3	53	10	4	SCH40 PVC	10.00	SCH40 PVC	3	40.5	53.3	hollow stem auger	95/5 slurry bentonite chips	1 34	34 40.5
MW6	402213.7998	3758823.5521	150.39	150.28	37.1	47.5	47.5	47.5	10	4	SCH40 PVC	0.02	SCH40 PVC	3	35	47.5	hollow stem auger	95/5 slurry bentonite pellets	1 32	32 35

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Omega Chemical Superfund Site

Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
MW7	402772.1185	3757891.0470	143.59	143.28	35.8	46	46	46	10	4	SCH40 PVC	0.02	SCH40 PVC	3	31	46	hollow stem auger	95/5 slurry bentonite chips	1 28	28 31
MW8A	402025.0430	3758460.7972	150.44	150.14	30	45	45	45	10	4	SCH40 PVC	0.02	SCH40 PVC	3	27	45	hollow stem auger	95/5 slurry bentonite chips	1 22	22 27
MW8B	402028.6156	3758457.7772	150.33	150.03	65	75	75	93	10	2	SCH40 PVC	0.02	SCH40 PVC	3	63	75	hollow stem auger	95/5 slurry bentonite pellets	1 59	59 63
MW8C	402028.4773	3758457.8119	150.33	150.03	86.7	91.7	91.7	93	10	2	SCH40 PVC	0.02	SCH40 PVC	3	84	93	hollow stem auger	bentonite pellets	75	83.5
MW8D	402021.5454	3758462.1309	150.09	149.91	110	120	120	150	10	4	SCH40 PVC	0.02	SCH40 PVC	3	108	122.5	mud rotary	95/5 slurry bentonite pellets	1 103	103 108
MW9A	401709.5798	3758510.4304	148.88	148.84	25	35	35	90	10	4	SCH40 PVC	0.02	SCH40 PVC	3	23	35	hollow stem auger	95/5 slurry bentonite chips	1 18	18 23
MW9B	401711.8963	3758510.1513	149.06	148.90	49.8	60	60	65	10	4	SCH40 PVC	0.02	SCH40 PVC	3	47	65	hollow stem auger	95/5 slurry bentonite pellets	1 44	44 47
MW10	402019.5356	3757645.7219	147.40	147.45	52	62	62	65	10	4	SCH40 PVC	0.02	SCH40 PVC	3	49	65	hollow stem auger	95/5 slurry bentonite pellets	1 45	45 49
MW11	402265.9120	3757445.4058	150.94	150.89	40	50	50	55	10	4	SCH40 PVC	0.02	SCH40 PVC	3	38	55	hollow stem auger	95/5 slurry bentonite chips	1 31	31 37
MW12	403349.1800	3759544.0500	220.53	220.87	82	97	102.18	102	6	2	SCH80 PVC	0.01	SCH80 PVC	30	80	102	sonic	95/5 slurry	1	80
MW13A	403429.2800	3759304.2900	206.33	206.02	56	66	72.2	71	10	2	SCH80 PVC	0.02	SCH80 PVC	2/16	54	69	mud rotary	95/5 slurry medium chips	1 52	52 54
MW13B	403429.2800	3759304.2900	206.33	205.88	123	133	138.4	138	10	2	SCH80 PVC	0.02	SCH80 PVC	2/16	121	139	mud rotary	medium chips 1:1 medium chips	69 71 119	71 119 121
MW14	403113.1900	3759053.8700	172.97	172.63	60	75	79.91	80	6	2	SCH80 PVC	0.02	SCH80 PVC	2/12	57	80	sonic	95/5 slurry medium chips	1 55	55 57
MW15	402532.6800	3758539.7300	148.65	148.28	50	70	74.95	75	6	2	SCH80 PVC	0.01	SCH80 PVC	2/12	48	75	sonic	95/5 slurry medium chips	1 46	46 48
MW16A	401492.7800	3757951.1300	153.47	153.19	45	60	65.93	65	8.75	2	SCH80 PVC	0.02	SCH80 PVC	2/16	43	60	mud rotary	95/5 slurry medium chips	1 40	40 43
MW16B	401492.7800	3757951.1300	153.47	153.19	106	116	120.19	121	8.75	2	SCH80 PVC	0.02	SCH80 PVC	2/16	104	118	mud rotary	1:1 medium chips	65 102	102 104
MW16C	401492.7800	3757951.1300	153.47	153.26	149	164	169.7	169	8.75	2	SCH80 PVC	0.02	SCH80 PVC	3	147	169	mud rotary	medium chips 1:1 medium chips	118 121 145	121 145 147
MW17A	401264.1800	3757463.4200	159.40	159.03	56	71	75.67	76	8.75	2	SCH80 PVC	0.02	SCH80 PVC	2/16	54	73	mud rotary	95/5 slurry medium chips	1 52	52 54
MW17B	401264.1800	3757463.4200	159.40	158.90	94	104	109.7	109	8.75	2	SCH80 PVC	0.02	SCH80 PVC	2/16	92	107	mud rotary	medium chips 1:1 medium chips	73 76 90	76 90 92
MW17C	401264.1800	3757463.4200	159.40	159.00	172	182	187.15	187	8.75	2	SCH80 PVC	0.02	SCH80 PVC	2/16	170	190	mud rotary	medium chips 1:1 medium chips	107 109 168	109 168 170
MW18A	402590.5500	3757631.0500	144.32	143.73	56	71	75.95	76	8.75	2	SCH80 PVC	0.02	SCH80 PVC	2/16	54	76	mud rotary	95/5 slurry medium chips	1 52	52 54
MW18B	402590.5500	3757631.0500	144.32	143.83	90	100	105.47	105	8.75	2	SCH80 PVC	0.02	SCH80 PVC	2/16	88	103	mud rotary	1:1 medium chips	76 86	86 88
MW18C	402590.5500	3757631.0500	144.32	143.83	146	161	166.6	166	8.75	2	SCH80 PVC	0.02	SCH80 PVC	2/16	144	164	mud rotary	medium chips 1:1 medium chips	103 105 142	105 142 144

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MW19	401687.0600	3756760.8500	159.01	158.73	56	71	74.8	76	6	2	SCH80 PVC	0.02	SCH80 PVC	2/16	54	76	sonic	95/5 slurry medium chips	1 52	51 54
MW20A	400670.8400	3756601.7200	142.07	141.31	75	90	94.7	95	10	2	SCH80 PVC	0.02	SCH80 PVC	2/12	73	87	mud rotary	95/5 slurry medium chips	1 70	70 73
MW20B	400670.8400	3756601.7200	142.07	141.32	122	132	137.7	137	10	2	SCH80 PVC	0.02	SCH80 PVC	2/12	120	137	mud rotary	medium chips 1:1 medium chips	87 89 118	89 118 120
MW20C	400670.8400	3756601.7200	142.07	141.35	180	190	195.2	195	10	2	SCH80 PVC	0.02	SCH80 PVC	2/12	178	196	mud rotary	medium chips 1:1 medium chips	132 134 176	134 176 178
MW21	400223.2600	3756893.9900	129.27	128.81	64	79	84.8	84	6	2	SCH80 PVC	0.02	SCH80 PVC	2/16	61	83	sonic	95/5 slurry medium chips	1 59	59 61
MW22	400466.1900	3757381.9000	151.47	150.82	74	89	93.83	94	6	2	SCH80 PVC	0.02	SCH80 PVC	2/16	71	94	sonic	95/5 slurry medium chips	1 68	68 71
MW23A	402207.2296	3758346.3553	149.07	148.76	35	55	60.00	62	8	4	SCH80 PVC	0.02	SCH80 PVC	3	32	62	sonic	95/5 slurry medium chips	1 26	26 32
MW23B	402203.7800	3758349.1800	149.36	149.06	82	97	101.6	102	10	2	SCH80 PVC	0.02	SCH80 PVC	2/16	86	99	mud rotary	95/5 slurry transitional sand	1 85	85 86
MW23C	402203.7800	3758349.1800	149.36	149.07	145	160	164.55	165	10	2	SCH80 PVC	0.02	SCH80 PVC	2/16	143	162	mud rotary	medium chips 1:1 transitional sand	99 102 142	102 142 143
MW23D	402203.7800	3758349.1800	149.36	148.04	175	185	189.8	190	10	2	SCH80 PVC	0.02	SCH80 PVC	2/16	173	190	mud rotary	medium chips 1:1 transitional sand	161 164 171	164 171 173
MW24A	402993.5009	3758908.7331	162.44	162.04	50	70	75	200	16	4	SCH80 PVC	0.02	SCH80 PVC	3	47	75	mud rotary	95/5 slurry medium chips	1 40	40 47
MW24B	402993.3534	3758908.7679	162.44	162.03	110	125	130	200	16	2	SCH80 PVC	0.02	SCH80 PVC	3	107	130	mud rotary	1:1 medium chips	75 100	100 107
MW24C	402993.4479	3758908.9665	162.44	162.02	140	160	165	200	16	4	SCH80 PVC	0.02	SCH80 PVC	3	137	163	mud rotary	medium chips	130	137
MW24D	402993.5391	3758908.8547	162.44	162.05	173	178	183	200	16	2	SCH80 PVC	0.02	SCH80 PVC	3	170	185	mud rotary	medium chips	163	170
MW25A	401814.5784	3757890.5951	148.25	147.90	45	65	70	220	14.5	4	SCH80 PVC	0.02	SCH80 PVC	3	41	71	mud rotary	95/5 slurry medium chips	1 35	35 41
MW25B	401814.5418	3757890.6288	148.25	147.84	90	110	115	220	14.5	2	SCH80 PVC	0.02	SCH80 PVC	3	85	116	mud rotary	1:1 medium chips	71 80	80 85
MW25C	401814.5418	3757890.6288	148.25	147.86	140	150	155	220	14.5	4	SCH80 PVC	0.02	SCH80 PVC	3	135	156	mud rotary	1:1 medium chips	116 130	130 135
MW25D	401814.5418	3757890.6288	148.25	147.87	194	209	214	220	14.5	2	SCH80 PVC	0.02	SCH80 PVC	3	189	220	mud rotary	1:1 medium chips	156 184	184 189
MW26A	401270.0608	3757125.1557	155.98	155.62	70	90	95	250	14.5	4	SCH80 PVC	0.02	SCH80 PVC	3	65	93	mud rotary	95/5 slurry medium chips	1 57	57 65
MW26B	401269.9123	3757125.0907	155.98	155.45	105	120	125	250	14.5	2	SCH80 PVC	0.02	SCH80 PVC	3	100	126.5	mud rotary	medium chips	93	100
MW26C	401270.0435	3757125.2668	155.98	155.41	145	160	165	250	14.5	2	SCH80 PVC	0.02	SCH80 PVC	3	140	166	mud rotary	1:1 medium chips	126.5 135	135 140
MW26D	401269.9045	3757125.2349	155.98	155.37	185	205	210	250	14.5	2	SCH80 PVC	0.02	SCH80 PVC	3	180	212	mud rotary	1:1 medium chips	166 175	175 180
MW27A	400902.9714	3755901.7834	139.47	139.24	90	110	115	225	14.5	4	SCH80 PVC	0.02	SCH80 PVC	2/12	87	115	mud rotary	95/5 slurry medium chips	1 78	78 87

TABLE 1-1
OPOG and EPA Monitoring Well Construction Details
Omega Chemical Superfund Site

Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
MW27B	400903.0537	3755901.6938	139.47	139.18	144	164	169	225	14.5	4	SCH80 PVC	0.02	SCH80 PVC	2/12	141	168	mud rotary	1:1 medium chips	115 130	130 141
MW27C	400902.8870	3755901.6623	139.47	139.17	180	190	195	225	14.5	2	SCH80 PVC	0.02	SCH80 PVC	2/12	177	193	mud rotary	medium chips	168	177
MW27D	400902.9879	3755901.5947	139.47	139.13	200	210	215	225	14.5	2	SCH80 PVC	0.02	SCH80 PVC	2/12	197	225	mud rotary	medium chips	193	197
MW28	400066.1942	3755133.6448	120.40	119.91	85	105	110	112	8	4	SCH80 PVC	0.02	SCH80 PVC	3	80	112	sonic	95/5 slurry medium chips	1 74	74 80
MW29	400888.7643	3753618.8894	107.34	107.10	90	110	115	117	8	4	SCH80 PVC	0.02	SCH80 PVC	3	87	117	sonic	95/5 slurry medium chips	1 80	80 87
MW30	401820.1912	3753277.4081	107.24	106.70	95	115	120	130	8	4	SCH80 PVC	0.02	SCH80 PVC	3	91	120	sonic	95/5 slurry medium chips medium chips	1 85 120	85 91 130
MW31	403391.2061	3759680.3420	233.00	232.67	106	121	126	126	8.00	2	SCH80 PVC	0.01	SCH80 PVC	2/16	103	126	hollow stem auger	95/5 slurry bentonite chips #60 transition sand	1 99.5 102.6	99.5 102.6 103

Notes:
* Survey information for OW3B is not currently available. Coordinates are approximate.
X and Y coordinates surveyed in UTM meters, NAD 83, Zone 11
Surface and TOC elevations surveyed in NAVD 88 datum, benchmark of DYHS (Downey High School), unless noted
[a] = Surface and TOC elevations surveyed in NGVD 29 datum

Abbreviations:
amsl = above mean sea level
bgs = below ground surface
SCH = schedule
PVC = polyvinyl chloride
SST = stainless steel
TOC = top of casing
n/a = not available

TABLE 1-2
Other Facility Well Construction Details
Omega Chemical Superfund Site

Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
Ash-EX-1	402718.6910	3755946.1688	164.63	163.49	48	88	89	n/a	n/a	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-EX-2	402692.0167	3755894.6533	166.16	166.01	48	88	90	n/a	n/a	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-EX-4	402660.6225	3755954.8937	165.80	165.13	55	85	107	n/a	n/a	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-EX-5	402727.3599	3755985.7357	166.14	165.51	72	102	107	n/a	n/a	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-EX-6	402601.3651	3755684.2182	162.88	162.32	87	107	110	n/a	n/a	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-1R	402748.3444	3755999.5775	166.59	166.23	50	85	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-2R	402783.1069	3755961.9328	166.06	165.66	49	84	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-4R	402787.7260	3755711.2330	166.42	166.10	50	85	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-5	402661.2617	3755688.2188	165.40	164.96	60	85	85	n/a	n/a	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-6R	402663.9329	3755812.7611	164.51	164.19	50	85	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-7	402815.5033	3756008.4864	165.31	165.02	60	80	85	n/a	n/a	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-12R	402761.2354	3755933.7470	166.04	165.59	50	85	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-13R	402772.8453	3755935.4036	165.88	165.45	51	86	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-14A	402801.0819	3756040.9998	165.69	165.35	53	73	75	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-14B	402802.2814	3756041.7028	165.69	165.18	76	86	90	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-15A	402724.8142	3755541.7542	162.65	162.08	54	74	75	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-15B	402725.6896	3755542.0070	162.65	162.07	80	90	90	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-16A	402557.2651	3755509.8325	159.99	159.70	52	72	75	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-16B	402557.9482	3755509.7708	159.99	159.56	80	90	90	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-17A	402586.2866	3755888.8993	161.86	161.46	57	77	79	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-17B	402587.3562	3755889.8420	161.90	161.59	76	86	89	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-21A	402591.0404	3755681.4734	162.63	162.35	60	80	81	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-21B	402591.6130	3755682.1463	162.70	162.33	90	100	100	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-22	402839.5207	3756097.9459	162.71	162.24	47	87	90	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

TABLE 1-2
Other Facility Well Construction Details
Omega Chemical Superfund Site

Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
Ash-MW-23	402840.8480	3755965.6687	165.60	165.01	50	75	75	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-24	402839.3511	3755799.0469	164.86	164.33	50	75	75	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-25	402731.1003	3755989.6925	165.97	165.58	50	85	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-26	402716.3563	3755922.9616	165.06	165.14	51	86	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-27	402733.4128	3755854.4249	165.70	165.40	51	86	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-28A	402474.5141	3755384.8596	155.21[a]	154.84[a]	70	90	90	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-28B	402474.4325	3755386.8122	155.20[a]	154.49[a]	96	106	106	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-29A	402476.7256	3755644.8763	157.98[a]	157.49[a]	67	87	87	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-29B	402476.7740	3755646.8830	158.00[a]	157.52[a]	100	105	105	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-30C1	402762.0468	3755947.9952	162.53[a]	162.06[a]	114	119	119	n/a	n/a	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-30C2	402762.0468	3755947.9952	162.53[a]	162.14[a]	132	137	137	n/a	n/a	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-31A	402162.1041	3755557.8267	151.97[a]	151.51[a]	81	91	91	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-31B	402161.4323	3755559.9074	151.96[a]	151.40[a]	92	102	103	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-32A	402220.4946	3755291.3097	149.01	148.47	70	90	90	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-32B	402222.8985	3755291.3626	149.12	148.62	100	110	110	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-33C1	402508.8078	3755671.4755	160.87	160.28	123	128	128	n/a	n/a	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ash-MW-33C2	402508.8078	3755671.4755	160.86	160.29	135	140	139	n/a	n/a	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-EW-1	401896.2741	3755042.3181	146.85	144.78	n/a	n/a	113.5	n/a	n/a	4	n/a	n/a	n/a	n/a	69.5	90	n/a	n/a	n/a	n/a
CENCO-MW-101	401067.5931	3755280.6625	145.19	138.00	70	90	90	95	12	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-103	401507.9779	3755113.3479	137.18	139.36	79	99	99	99.5	12	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-104A	401564.8017	3755459.0262	142.38	144.13	65	100	100	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-105	401059.7009	3755479.5460	n/a	141.16	68	98	98	100	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-106A	401796.8324	3755468.4969	152.92	152.81	83	110	110	110	8	4	n/a	n/a	n/a	n/a	82	110	n/a	n/a	n/a	n/a
CENCO-MW-107A	401878.9112	3755171.7502	147.37	147.02	83	110	110	110	8	4	n/a	n/a	n/a	n/a	82	110	n/a	n/a	n/a	n/a

TABLE 1-2
Other Facility Well Construction Details
Omega Chemical Superfund Site

Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
CENCO-MW-201	401080.2207	3755118.0832	134.86	135.65	72	102	102	103	12	4	n/a	n/a	n/a	n/a	66	103	n/a	n/a	n/a	n/a
CENCO-MW-202	401361.1830	3755108.6126	139.00	140.62	63	93	93	105	16	4	n/a	n/a	n/a	n/a	58	105	n/a	n/a	n/a	n/a
CENCO-MW-203	401698.9691	3755125.9754	144.08	143.71	77	107	107	119	12	4	n/a	n/a	n/a	n/a	64.7	107	n/a	n/a	n/a	n/a
CENCO-MW-204	401451.1540	3755192.2699	141.15	142.90	73	103.3	103.3	105	12	4	n/a	n/a	n/a	n/a	67.5	105	n/a	n/a	n/a	n/a
CENCO-MW-205	401170.1917	3755320.1235	140.00	140.09	70	99.5	99.5	104.5	12	4	n/a	n/a	n/a	n/a	65.5	103	n/a	n/a	n/a	n/a
CENCO-MW-501A	401384.2644	3754901.1193	131.26	130.89	75	95	95	95	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-502	401290.1532	3754903.4154	131.88	131.00	74	104	104	104	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-503B	401102.3188	3754955.5039	133.03	132.66	69	109	109	109	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-504	401200.1821	3755114.9264	n/a	137.18	58	118	96	118	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-600A	401269.6335	3754803.9737	123.28	124.26	n/a	n/a	93	100	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-601A	401340.0309	3754780.1261	n/a	126.53	65	100	100	100	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-603	400909.7492	3754679.2769	121.40	120.95	70	100	100	100	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-604	401593.2136	3754813.4443	140.52	140.07	73	103	103	103	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-605	400892.3863	3754346.2261	117.40	116.82	65	95	95	95	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-606	401299.6238	3754238.8922	116.90	116.06	70	100	100	100	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-607	401650.0375	3754450.4032	128.92	128.28	77	107	107	107	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-MW-701	401074.8635	3755290.6158	136.87	139.48	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-702	401309.6072	3755281.0942	140.90	140.12	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-703	401099.5377	3755116.2624	134.73	137.23	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-704	401222.0240	3755112.4350	137.93	137.66	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-705	401370.4275	3755117.2777	139.16	141.94	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-706	401511.4793	3755116.5213	139.68	139.30	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-707	401137.9384	3754890.2880	128.86	128.43	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-708	401335.6022	3754836.9399	126.73	126.26	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a

TABLE 1-2
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Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
CENCO-MW-709	401595.0660	3754825.5939	140.48	139.78	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-710	400918.5303	3754678.5706	122.15	121.99	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-711	401159.8527	3754675.2760	128.09	127.84	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-712	401304.2463	3754568.5761	123.57	123.31	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-713	401469.9761	3754556.8278	128.42	128.15	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-714	401630.1228	3754447.0196	129.07	128.87	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-MW-715	401281.8119	3754217.7683	116.66	116.22	80	130	130	130	12	4	n/a	0.02	n/a	n/a	77	130	n/a	n/a	n/a	n/a
CENCO-W-1	401687.9200	3755036.0044	145.19	144.81	70	129	129	130	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-W-3A	401727.3810	3754706.1104	137.18	136.79	n/a	n/a	112	115	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-W-4	401686.3416	3754886.0526	143.18	142.56	580	600	609	n/a	n/a	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-W-7	401643.1766	3755250.3919	n/a	141.97	450	530	690	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-W-8	401183.6905	3755476.2523	n/a	141.11	n/a	n/a	994	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CENCO-W-9	401617.5051	3755414.1744	140.37	139.84	75	110	110	121	8	2	n/a	n/a	n/a	n/a	73	111	n/a	n/a	n/a	n/a
CENCO-W-10	401344.7732	3755428.0538	141.39	140.71	75	110	110	130	8	2	n/a	n/a	n/a	n/a	73	111	n/a	n/a	n/a	n/a
CENCO-W-11	401185.1659	3755281.6030	141.96	142.10	75	110	110	119	8	2	n/a	n/a	n/a	n/a	73	111	n/a	n/a	n/a	n/a
CENCO-W-12	401520.0553	3755305.0553	142.93	145.15	75	114	114	121	8	2	n/a	n/a	n/a	n/a	75	114	n/a	n/a	n/a	n/a
CENCO-W-14A	401136.8298	3754319.0627	115.23	114.71	67	112	112	200	9	2	n/a	0.02	n/a	n/a	67	112	n/a	n/a	n/a	n/a
CENCO-W-14B	401136.8676	3754319.1399	115.00[b]	114.78	157	167	167	200	9	2	n/a	0.02	n/a	n/a	157	167	n/a	n/a	n/a	n/a
CENCO-W-14C	401136.9041	3754319.0952	115.00[b]	114.78	185	195	195	200	9	2	n/a	0.02	n/a	n/a	185	195	n/a	n/a	n/a	n/a
CENCO-W-15A	401625.8552	3754195.9069	127.91	127.59	80	125	125	200	10	2	n/a	0.02	n/a	n/a	78	126	n/a	n/a	n/a	n/a
CENCO-W-15B	401625.9295	3754195.9394	128.00[b]	127.61	145	155	155	200	10	2	n/a	0.02	n/a	n/a	143	156	n/a	n/a	n/a	n/a
CENCO-W-15C	401625.9105	3754195.8842	128.00[b]	127.59	190	200	200	200	10	2	n/a	0.02	n/a	n/a	188	200	n/a	n/a	n/a	n/a
CENCO-W-16A	401736.3940	3755003.6910	147.89	147.60	78	123	123	200	10	2	n/a	0.02	n/a	n/a	76	125	n/a	n/a	n/a	n/a
CENCO-W-16B	401736.2921	3755003.6698	148.00[b]	147.68	152	162	162	200	10	2	n/a	0.02	n/a	n/a	143	156	n/a	n/a	n/a	n/a

TABLE 1-2
Other Facility Well Construction Details
Omega Chemical Superfund Site

Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
CENCO-W-16C	401736.3657	3755003.6358	148.00[b]	147.67	186	196	196	200	10	2	n/a	0.02	n/a	n/a	184	200	n/a	n/a	n/a	n/a
CENCO-W-17A	401454.8439	3755476.9453	141.60	141.38	63	108	108	200	9	2	n/a	0.02	n/a	n/a	63	108	n/a	n/a	n/a	n/a
CENCO-W-17B	401454.7796	3755476.9904	142.00[b]	141.37	159	169	169	200	9	2	n/a	0.02	n/a	n/a	159	169	n/a	n/a	n/a	n/a
CENCO-W-17C	401454.7329	3755476.9354	142.00[b]	141.38	190	200	200	200	9	2	n/a	0.02	n/a	n/a	190	200	n/a	n/a	n/a	n/a
OFRP-MW19	402055.0000	3756800.0000	n/a	158.24	53	78	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
OFRP-MW21	402321.0000	3756214.0000	n/a	157.43	67	92	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-1	402323.7682	3757316.1796	n/a	153.50	38	58	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-2	402452.0937	3757238.792	n/a	149.30	33	53	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-3	402398.1531	3757167.248	n/a	167.50	48	68	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-4	402467.1583	3757135.875	n/a	166.80	48	68	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-5	402480.606	3757067.257	n/a	166.70	43	63	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-6	402563.2509	3757001.298	n/a	158.40	43	63	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-7	402588.0851	3756983.831	n/a	154.50	38	58	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-8	402308.9187	3757141.401	n/a	163.40	43	63	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-9	402215.0358	3757154.56	n/a	153.50	38	58	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-10	402185.9567	3757087.951	n/a	154.70	38	58	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDII-GW-11	402196.7385	3757097.06	n/a	154.70	118	128	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-13	402249.6656	3757016.759	n/a	157.50	39	59	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-14	402267.0259	3756985.199	n/a	157.80	38	58	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-15	402331.8156	3756997.544	n/a	163.30	48	68	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-16	402321.161	3757005.134	n/a	163.10	74	79	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-18	402374.6498	3756916.974	n/a	159.10	69	74	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-19	402383.7563	3756911.15	n/a	158.90	39	59	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-21	402526.1425	3756917.555	n/a	155.20	36	56	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

TABLE 1-2
Other Facility Well Construction Details
Omega Chemical Superfund Site

Well ID	X Coordinate (meters)	Y Coordinate (meters)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)
WDI-GW-22	402089.8363	3757077.605	n/a	156.70	58	78	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-23	402190.7805	3756967.074	n/a	157.00	43	63	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-24	402199.7811	3756961.976	n/a	156.70	103	113	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-26	402266.9329	3756908.86	n/a	156.00	44	64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-27	402333.9728	3756851.492	n/a	157.00	43	63	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-28	402386.9685	3756806.235	n/a	157.30	44	64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-29	402392.7355	3756800.775	n/a	157.40	44	64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-30	402410.1353	3756801.575	n/a	156.80	74	94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDI-GW-31	402447.8426	3757149.739	n/a	167.20	43	63	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDII-GW-32	402333.5973	3757311.08	n/a	153.60	115	125	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WDII-GW-33	402411.2253	3757016.208	n/a	163.70	35	60	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes:
X and Y coordinates surveyed in UTM meters, NAD 83, Zone 11, unless noted
-Ashland Chemical (Ash) X and Y coordinates surveyed in Latitude/Longitude degrees, NAD 83, and converted to UTM meters, NAD 83, Zone 1
-CENCO X and Y coordinates surveyed in State Plane feet, NAD 83, California Zone 5, and converted to UTM meters, NAD 83, Zone 1
Surface and TOC elevations surveyed in NAVD 88 datum, unless noted
[a] = Surface and TOC elevations surveyed in NGVD 29 datum
[b] = Surface elevation obtained from Google Earth
Depths measured in feet bgs, unless noted
-Ashland Chemical (Ash) Depth to Screen Top and Depth to Screen Bottom measured in feet below TOC

Abbreviations:
amsl = above mean sea level
bgs = below ground surface
SCH = schedule
PVC = polyvinyl chloride
SST = stainless steel
TOC = top of casing
n/a = not available

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
MW1A	45-60	08/19/02	33.74	157.71	123.97	Weston
		11/18/02	35.65	157.71	122.06	Weston
		02/26/03	34.68	157.71	123.03	Weston
		05/21/03	32.33	157.71	125.38	Weston
		03/04/04	39.04	157.71	118.67	CH2M HILL
		06/23/04	39.77	157.71	117.94	CH2M HILL
		09/14/04	41.02	157.71	116.69	CH2M HILL
		12/07/04	42.65	157.71	115.06	CH2M HILL
		03/02/05	41.88	157.71	115.83	CH2M HILL
		06/21/05	34.91	157.71	122.80	CH2M HILL
		09/01/05	33.36	157.71	124.35	CH2M HILL
		03/08/06	33.84	157.71	123.87	CH2M HILL
		05/23/06	32.51	157.71	125.20	CH2M HILL
		09/08/06	33.08	157.71	124.63	CH2M HILL
		03/07/07	33.84	157.71	123.87	CH2M HILL
		07/25/07	33.55	157.71	124.16	CH2M HILL
		02/26/08	38.46	157.71	119.25	CH2M HILL
		03/04/09	44.32	157.71	113.39	CH2M HILL
		09/11/09	46.70	157.71	111.01	CH2M HILL
		03/11/10	49.72	157.71	107.99	CH2M HILL
		09/02/10	48.60	157.71	109.11	CH2M HILL
		02/25/11	48.41	157.71	109.30	CH2M HILL
		02/28/11	48.41	157.71	109.30	CH2M HILL
MW1B	75-85.4	08/28/02	34.05	158.05	124.00	Weston
		11/18/02	35.10	158.05	122.95	Weston
		02/26/03	34.56	158.05	123.49	Weston
		05/21/03	32.32	158.05	125.73	Weston
		03/04/04	38.93	158.05	119.12	CH2M HILL
		06/23/04	39.64	158.05	118.41	CH2M HILL
		09/14/04	40.91	158.05	117.14	CH2M HILL
		12/07/04	42.51	158.05	115.54	CH2M HILL
		03/02/05	41.73	158.05	116.32	CH2M HILL
		06/21/05	34.91	158.05	123.14	CH2M HILL
		09/01/05	33.22	158.05	124.83	CH2M HILL
		03/08/06	33.80	158.05	124.25	CH2M HILL
		05/23/06	32.39	158.05	125.66	CH2M HILL
		09/08/06	32.96	158.05	125.09	CH2M HILL
		03/07/07	33.68	158.05	124.37	CH2M HILL
		07/25/07	33.42	158.05	124.63	CH2M HILL
		02/26/08	38.33	158.05	119.72	CH2M HILL
		03/04/09	44.20	158.05	113.85	CH2M HILL
		09/11/09	46.57	158.05	111.48	CH2M HILL
		03/11/10	49.60	158.05	108.45	CH2M HILL
		09/02/10	48.49	158.05	109.56	CH2M HILL
		02/25/11	48.32	158.05	109.73	CH2M HILL
		02/28/11	48.30	158.05	109.75	CH2M HILL
MW2	45-60	08/19/02	30.05	154.21	124.16	Weston
		11/20/02	31.88	154.21	122.33	Weston
		03/03/03	31.18	154.21	123.03	Weston
		05/22/03	29.05	154.21	125.16	Weston

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		03/04/04	35.20	154.21	119.01	CH2M HILL
		06/22/04	35.91	154.21	118.30	CH2M HILL
		09/14/04	37.20	154.21	117.01	CH2M HILL
		12/08/04	45.20	154.21	109.01	CH2M HILL
		03/02/05	37.98	154.21	116.23	CH2M HILL
		06/21/05	31.88	154.21	122.33	CH2M HILL
		09/02/05	30.17	154.21	124.04	CH2M HILL
		03/08/06	30.40	154.21	123.81	CH2M HILL
		05/24/06	29.02	154.21	125.19	CH2M HILL
		09/07/06	29.52	154.21	124.69	CH2M HILL
		03/05/07	30.31	154.21	123.90	CH2M HILL
		07/26/07	30.08	154.21	124.13	CH2M HILL
		02/29/08	34.68	154.21	119.53	CH2M HILL
		03/06/09	40.27	154.21	113.94	CH2M HILL
		09/14/09	42.71	154.21	111.50	CH2M HILL
		03/12/10	45.55	154.21	108.66	CH2M HILL
		09/02/10	44.80	154.21	109.41	CH2M HILL
		02/25/11	44.64	154.21	109.57	CH2M HILL
		03/02/11	44.63	154.21	109.58	CH2M HILL
MW3	38-48	08/19/02	28.05	151.48	123.43	Weston
		11/13/02	29.51	151.48	121.97	Weston
		02/24/03	29.05	151.48	122.43	Weston
		05/16/03	27.85	151.48	123.63	Weston
		03/04/04	32.33	151.48	119.15	CH2M HILL
		06/24/04	33.30	151.48	118.18	CH2M HILL
		09/16/04	34.38	151.48	117.10	CH2M HILL
		12/08/04	35.42	151.48	116.06	CH2M HILL
		03/02/05	30.88	151.48	120.60	CH2M HILL
		06/24/05	30.18	151.48	121.30	CH2M HILL
		09/01/05	29.10	151.48	122.38	CH2M HILL
		03/09/06	28.90	151.48	122.58	CH2M HILL
		05/18/06	28.57	151.48	122.91	CH2M HILL
		09/07/06	28.20	151.48	123.28	CH2M HILL
		03/06/07	28.94	151.48	122.54	CH2M HILL
		07/19/07	28.76	151.48	122.72	CH2M HILL
		02/21/08	31.82	151.48	119.66	CH2M HILL
		03/02/09	36.50	151.48	114.98	CH2M HILL
		09/11/09	38.71	151.48	112.77	CH2M HILL
		03/02/10	40.71	151.48	110.77	CH2M HILL
		03/16/10	40.77	151.48	110.71	CH2M HILL
		09/10/10	41.26	151.48	110.22	CH2M HILL
		02/21/11	40.92	151.48	110.56	CH2M HILL
MW4A	42.7-53	08/19/02	25.74	146.80	121.06	Weston
		11/14/02	27.39	146.80	119.41	Weston
		02/18/03	26.37	146.80	120.43	Weston
		05/19/03	24.50	146.80	122.30	Weston
		03/04/04	30.37	146.80	116.43	CH2M HILL
		06/21/04	31.07	146.80	115.73	CH2M HILL
		09/16/04	32.40	146.80	114.40	CH2M HILL
		12/06/04	33.78	146.80	113.02	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		02/28/05	31.76	146.80	115.04	CH2M HILL
		06/21/05	31.07	146.80	115.73	CH2M HILL
		08/30/05	25.56	146.80	121.24	CH2M HILL
		03/07/06	25.90	146.80	120.90	CH2M HILL
		05/19/06	24.56	146.80	122.24	CH2M HILL
		08/29/06	25.03	146.80	121.77	CH2M HILL
		02/26/07	26.03	146.80	120.77	CH2M HILL
		07/24/07	25.51	146.80	121.29	CH2M HILL
		02/26/08	29.66	146.80	117.14	CH2M HILL
		03/05/09	35.15	146.80	111.65	CH2M HILL
		09/04/09	37.20	146.80	109.60	CH2M HILL
		03/09/10	39.71	146.80	107.09	CH2M HILL
		08/31/10	38.96	146.80	107.84	CH2M HILL
		02/21/11	38.68	146.80	108.12	CH2M HILL
		02/25/11	38.63	146.80	108.17	CH2M HILL
MW4B	69.7-80	08/19/02	25.60	146.84	121.24	Weston
		11/14/02	27.22	146.84	119.62	Weston
		02/18/03	26.27	146.84	120.57	Weston
		05/19/03	24.40	146.84	122.44	Weston
		03/04/04	30.24	146.84	116.60	CH2M HILL
		06/21/04	31.01	146.84	115.83	CH2M HILL
		09/13/04	32.22	146.84	114.62	CH2M HILL
		12/06/04	33.69	146.84	113.15	CH2M HILL
		02/28/05	31.60	146.84	115.24	CH2M HILL
		06/21/05	26.59	146.84	120.25	CH2M HILL
		08/30/05	25.38	146.84	121.46	CH2M HILL
		03/07/06	25.80	146.84	121.04	CH2M HILL
		05/19/06	24.47	146.84	122.37	CH2M HILL
		08/29/06	24.82	146.84	122.02	CH2M HILL
		02/26/07	25.86	146.84	120.98	CH2M HILL
		07/24/07	25.49	146.84	121.35	CH2M HILL
		02/26/08	29.57	146.84	117.27	CH2M HILL
		03/05/09	35.00	146.84	111.84	CH2M HILL
		09/04/09	37.10	146.84	109.74	CH2M HILL
		03/09/10	39.57	146.84	107.27	CH2M HILL
		08/31/10	38.88	146.84	107.96	CH2M HILL
		02/21/11	38.55	146.84	108.29	CH2M HILL
		02/25/11	38.55	146.84	108.29	CH2M HILL
MW4C	88.7-99	08/19/02	27.52	147.10	119.58	Weston
		11/14/02	29.21	147.10	117.89	Weston
		02/18/03	27.90	147.10	119.20	Weston
		05/19/03	25.89	147.10	121.21	Weston
		03/04/04	32.30	147.10	114.80	CH2M HILL
		06/21/04	33.25	147.10	113.85	CH2M HILL
		09/13/04	34.95	147.10	112.15	CH2M HILL
		12/06/04	36.01	147.10	111.09	CH2M HILL
		02/28/05	33.09	147.10	114.01	CH2M HILL
		06/21/05	27.85	147.10	119.25	CH2M HILL
		08/30/05	26.91	147.10	120.19	CH2M HILL
		03/07/06	27.42	147.10	119.68	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		05/19/06	26.10	147.10	121.00	CH2M HILL
		08/29/06	26.43	147.10	120.67	CH2M HILL
		02/26/07	27.34	147.10	119.76	CH2M HILL
		07/24/07	27.32	147.10	119.78	CH2M HILL
		02/26/08	31.32	147.10	115.78	CH2M HILL
		03/05/09	37.72	147.10	109.38	CH2M HILL
		09/04/09	40.44	147.10	106.66	CH2M HILL
		03/09/10	42.34	147.10	104.76	CH2M HILL
		08/31/10	41.62	147.10	105.48	CH2M HILL
		02/21/11	40.28	147.10	106.82	CH2M HILL
MW5	43.3-53.3	08/19/02	28.03	150.60	122.57	Weston
		11/20/02	29.97	150.60	120.63	Weston
		02/03/03	28.63	150.60	121.97	Weston
		05/22/03	26.30	150.60	124.30	Weston
		03/04/04	33.44	150.60	117.16	CH2M HILL
		06/22/04	33.98	150.60	116.62	CH2M HILL
		09/14/04	35.32	150.60	115.28	CH2M HILL
		12/06/04	37.10	150.60	113.50	CH2M HILL
		02/28/05	35.75	150.60	114.85	CH2M HILL
		06/21/05	28.51	150.60	122.09	CH2M HILL
		08/30/05	27.18	150.60	123.42	CH2M HILL
		03/07/06	27.80	150.60	122.80	CH2M HILL
		05/24/06	26.31	150.60	124.29	CH2M HILL
		08/29/06	26.94	150.60	123.66	CH2M HILL
		02/26/07	27.89	150.60	122.71	CH2M HILL
		07/18/07	27.55	150.60	123.05	CH2M HILL
		02/26/08	32.64	150.60	117.96	CH2M HILL
		03/05/09	38.94	150.60	111.66	CH2M HILL
		09/04/09	40.99	150.60	109.61	CH2M HILL
		03/11/10	44.30	150.60	106.30	CH2M HILL
		08/31/10	42.65	150.60	107.95	CH2M HILL
		02/25/11	42.24	150.60	108.36	CH2M HILL
MW6	37.1-47.5	08/19/02	28.34	150.28	121.94	Weston
		11/19/02	30.39	150.28	119.89	Weston
		02/03/03	28.59	150.28	121.69	Weston
		05/19/03	25.84	150.28	124.44	Weston
		03/04/04	33.94	150.28	116.34	CH2M HILL
		06/22/04	34.45	150.28	115.83	CH2M HILL
		09/14/04	35.98	150.28	114.30	CH2M HILL
		12/07/04	37.84	150.28	112.44	CH2M HILL
		03/02/05	36.08	150.28	114.20	CH2M HILL
		06/21/05	27.81	150.28	122.47	CH2M HILL
		08/30/05	26.57	150.28	123.71	CH2M HILL
		03/07/06	27.67	150.28	122.61	CH2M HILL
		05/23/06	26.16	150.28	124.12	CH2M HILL
		08/30/06	26.81	150.28	123.47	CH2M HILL
		02/28/07	27.72	150.28	122.56	CH2M HILL
		07/18/07	27.50	150.28	122.78	CH2M HILL
		02/25/08	33.01	150.28	117.27	CH2M HILL
		03/04/09	39.93	150.28	110.35	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		09/04/09	41.90	150.28	108.38	CH2M HILL
		03/10/10	45.33	150.28	104.95	CH2M HILL
		09/02/10	42.97	150.28	107.31	CH2M HILL
		09/14/10	43.18	150.28	107.10	CH2M HILL
		02/28/11	41.71	150.28	108.57	CH2M HILL
MW7	35.8-46	08/19/02	23.54	143.28	119.74	Weston
		11/13/02	23.68	143.28	119.60	Weston
		02/24/03	23.15	143.28	120.13	Weston
		05/19/03	21.90	143.28	121.38	Weston
		03/04/04	25.88	143.28	117.40	CH2M HILL
		06/24/04	26.79	143.28	116.49	CH2M HILL
		09/14/04	27.77	143.28	115.51	CH2M HILL
		12/07/04	28.65	143.28	114.63	CH2M HILL
		03/03/05	25.85	143.28	117.43	CH2M HILL
		06/21/05	23.82	143.28	119.46	CH2M HILL
		08/30/05	23.17	143.28	120.11	CH2M HILL
		03/06/06	23.13	143.28	120.15	CH2M HILL
		05/18/06	22.21	143.28	121.07	CH2M HILL
		08/28/06	22.12	143.28	121.16	CH2M HILL
		02/27/07	22.96	143.28	120.32	CH2M HILL
		07/16/07	22.90	143.28	120.38	CH2M HILL
		02/21/08	25.39	143.28	117.89	CH2M HILL
		03/02/09	29.65	143.28	113.63	CH2M HILL
		09/01/09	31.65	143.28	111.63	CH2M HILL
		03/02/10	33.45	143.28	109.83	CH2M HILL
		09/03/10	33.92	143.28	109.36	CH2M HILL
		02/21/11	33.59	143.28	109.69	CH2M HILL
MW8A	30-45	08/19/02	29.61	150.14	120.53	Weston
		11/15/02	31.62	150.14	118.52	Weston
		02/25/03	30.07	150.14	120.07	Weston
		05/20/03	27.70	150.14	122.44	Weston
		03/04/04	35.21	150.14	114.93	CH2M HILL
		06/23/04	35.53	150.14	114.61	CH2M HILL
		09/14/04	37.02	150.14	113.12	CH2M HILL
		12/09/04	38.72	150.14	111.42	CH2M HILL
		03/01/05	36.94	150.14	113.20	CH2M HILL
		06/21/05	29.65	150.14	120.49	CH2M HILL
		08/31/05	28.31	150.14	121.83	CH2M HILL
		03/06/06	29.40	150.14	120.74	CH2M HILL
		05/16/06	27.93	150.14	122.21	CH2M HILL
		08/30/06	28.44	150.14	121.70	CH2M HILL
		02/28/07	29.36	150.14	120.78	CH2M HILL
		07/17/07	28.91	150.14	121.23	CH2M HILL
		02/25/08	34.13	150.14	116.01	CH2M HILL
		03/03/09	40.60	150.14	109.54	CH2M HILL
		09/03/09	dry	150.14	n/a	CH2M HILL
		03/08/10	44.46	150.14	105.68	CH2M HILL
		09/01/10	43.60	150.14	106.54	CH2M HILL
		09/14/10	43.80	150.14	106.34	CH2M HILL
		02/24/11	43.08	150.14	107.06	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
MW8B	65-75	08/19/02	29.54	150.03	120.49	Weston
		11/15/02	31.55	150.03	118.48	Weston
		02/25/03	30.06	150.03	119.97	Weston
		05/20/03	27.70	150.03	122.33	Weston
		03/04/04	34.95	150.03	115.08	CH2M HILL
		06/23/04	35.45	150.03	114.58	CH2M HILL
		09/15/04	36.96	150.03	113.07	CH2M HILL
		12/09/04	38.63	150.03	111.40	CH2M HILL
		03/01/05	36.85	150.03	113.18	CH2M HILL
		06/21/05	29.55	150.03	120.48	CH2M HILL
		08/31/05	28.24	150.03	121.79	CH2M HILL
		03/06/06	29.26	150.03	120.77	CH2M HILL
		05/16/06	27.72	150.03	122.31	CH2M HILL
		08/30/06	28.27	150.03	121.76	CH2M HILL
		02/28/07	29.28	150.03	120.75	CH2M HILL
		07/17/07	28.73	150.03	121.30	CH2M HILL
		02/25/08	34.04	150.03	115.99	CH2M HILL
		03/03/09	40.50	150.03	109.53	CH2M HILL
		09/03/09	42.40	150.03	107.63	CH2M HILL
		03/08/10	45.41	150.03	104.62	CH2M HILL
		09/09/10	43.60	150.03	106.43	CH2M HILL
		02/24/11	43.02	150.03	107.01	CH2M HILL
MW8C	86.7-91.7	08/19/02	30.51	150.03	119.52	Weston
		11/15/02	32.47	150.03	117.56	Weston
		02/25/03	30.78	150.03	119.25	Weston
		05/20/03	28.37	150.03	121.66	Weston
		03/04/04	35.88	150.03	114.15	CH2M HILL
		06/23/04	36.58	150.03	113.45	CH2M HILL
		09/15/04	38.42	150.03	111.61	CH2M HILL
		12/09/04	39.77	150.03	110.26	CH2M HILL
		03/01/05	37.18	150.03	112.85	CH2M HILL
		06/21/05	30.24	150.03	119.79	CH2M HILL
		08/31/05	29.05	150.03	120.98	CH2M HILL
		03/06/06	30.10	150.03	119.93	CH2M HILL
		05/16/06	28.50	150.03	121.53	CH2M HILL
		08/30/06	29.05	150.03	120.98	CH2M HILL
		02/28/07	29.96	150.03	120.07	CH2M HILL
		07/17/07	29.63	150.03	120.40	CH2M HILL
		02/25/08	34.76	150.03	115.27	CH2M HILL
		03/03/09	41.69	150.03	108.34	CH2M HILL
		09/03/09	43.99	150.03	106.04	CH2M HILL
		03/08/10	46.46	150.03	103.57	CH2M HILL
		09/01/10	44.83	150.03	105.20	CH2M HILL
		02/24/11	43.68	150.03	106.35	CH2M HILL
MW8D	110-120	08/19/02	35.81	149.91	114.10	Weston
		11/15/02	37.54	149.91	112.37	Weston
		02/25/03	34.47	149.91	115.44	Weston
		05/20/03	31.84	149.91	118.07	Weston
		03/04/04	40.98	149.91	108.93	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		06/23/04	42.65	149.91	107.26	CH2M HILL
		09/15/04	46.08	149.91	103.83	CH2M HILL
		12/09/04	45.90	149.91	104.01	CH2M HILL
		03/01/05	39.32	149.91	110.59	CH2M HILL
		06/21/05	33.54	149.91	116.37	CH2M HILL
		08/31/05	33.08	149.91	116.83	CH2M HILL
		03/07/06	34.25	149.91	115.66	CH2M HILL
		05/16/06	32.36	149.91	117.55	CH2M HILL
		08/30/06	33.35	149.91	116.56	CH2M HILL
		02/28/07	33.77	149.91	116.14	CH2M HILL
		07/17/07	34.63	149.91	115.28	CH2M HILL
		02/25/08	39.02	149.91	110.89	CH2M HILL
		03/03/09	48.40	149.91	101.51	CH2M HILL
		09/03/09	52.75	149.91	97.16	CH2M HILL
		03/08/10	52.34	149.91	97.57	CH2M HILL
		09/09/10	51.95	149.91	97.96	CH2M HILL
		02/24/11	47.39	149.91	102.52	CH2M HILL
MW9A	25-35	08/19/02	28.30	148.84	120.54	Weston
		11/19/02	30.47	148.84	118.37	Weston
		02/26/03	28.82	148.84	120.02	Weston
		05/21/03	26.35	148.84	122.49	Weston
		03/04/04	dry	148.84	n/a	CH2M HILL
		06/22/04	dry	148.84	n/a	CH2M HILL
		09/15/04	dry	148.84	n/a	CH2M HILL
		12/07/04	dry	148.84	n/a	CH2M HILL
		03/01/05	34.49	148.84	114.35	CH2M HILL
		06/21/05	28.27	148.84	120.57	CH2M HILL
		08/31/05	26.78	148.84	122.06	CH2M HILL
		03/08/06	28.00	148.84	120.84	CH2M HILL
		05/24/06	26.25	148.84	122.59	CH2M HILL
		09/01/06	27.02	148.84	121.82	CH2M HILL
		03/02/07	28.02	148.84	120.82	CH2M HILL
		07/25/07	27.39	148.84	121.45	CH2M HILL
		02/27/08	32.96	148.84	115.88	CH2M HILL
		03/06/09	34.51	148.84	114.33	CH2M HILL
		09/09/09	dry	148.84	n/a	CH2M HILL
		03/12/10	dry	148.84	n/a	CH2M HILL
		09/14/10	dry	148.84	n/a	CH2M HILL
		02/24/11	34.95	148.84	113.89	CH2M HILL
MW9B	49.8-60	08/19/02	34.31	148.90	114.59	Weston
		11/19/02	35.40	148.90	113.50	Weston
		02/26/03	32.37	148.90	116.53	Weston
		05/21/03	29.41	148.90	119.49	Weston
		03/04/04	39.32	148.90	109.58	CH2M HILL
		06/22/04	40.36	148.90	108.54	CH2M HILL
		09/15/04	43.22	148.90	105.68	CH2M HILL
		12/07/04	44.25	148.90	104.65	CH2M HILL
		03/01/05	38.36	148.90	110.54	CH2M HILL
		06/21/05	31.09	148.90	117.81	CH2M HILL
		08/31/05	30.31	148.90	118.59	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		03/08/06	31.80	148.90	117.10	CH2M HILL
		05/16/06	29.87	148.90	119.03	CH2M HILL
		09/01/06	30.93	148.90	117.97	CH2M HILL
		03/02/07	31.54	148.90	117.36	CH2M HILL
		07/25/07	32.28	148.90	116.62	CH2M HILL
		02/27/08	37.18	148.90	111.72	CH2M HILL
		03/06/09	46.64	148.90	102.26	CH2M HILL
		09/09/09	49.41	148.90	99.49	CH2M HILL
		03/12/10	50.87	148.90	98.03	CH2M HILL
		09/14/10	48.83	148.90	100.07	CH2M HILL
		02/24/11	46.31	148.90	102.59	CH2M HILL
MW10	52-62	08/19/02	33.36	147.45	114.09	Weston
		11/19/02	36.59	147.45	110.86	Weston
		02/24/03	35.07	147.45	112.38	Weston
		05/20/03	33.45	147.45	114.00	Weston
		03/04/04	38.47	147.45	108.98	CH2M HILL
		06/22/04	40.26	147.45	107.19	CH2M HILL
		09/15/04	42.00	147.45	105.45	CH2M HILL
		12/08/04	43.50	147.45	103.95	CH2M HILL
		03/01/05	41.35	147.45	106.10	CH2M HILL
		06/21/05	36.63	147.45	110.82	CH2M HILL
		09/01/05	35.12	147.45	112.33	CH2M HILL
		03/09/06	35.15	147.45	112.30	CH2M HILL
		05/23/06	33.73	147.45	113.72	CH2M HILL
		09/07/06	33.58	147.45	113.87	CH2M HILL
		03/06/07	34.25	147.45	113.20	CH2M HILL
		07/20/07	33.96	147.45	113.49	CH2M HILL
		02/21/08	38.51	147.45	108.94	CH2M HILL
		03/03/09	45.42	147.45	102.03	CH2M HILL
		09/02/09	47.80	147.45	99.65	CH2M HILL
		03/02/10	50.95	147.45	96.50	CH2M HILL
		08/30/10	49.75	147.45	97.70	CH2M HILL
		02/21/11	48.94	147.45	98.51	CH2M HILL
MW11	40-50	08/19/02	35.87	150.89	115.02	Weston
		11/19/02	37.61	150.89	113.28	Weston
		02/24/03	37.43	150.89	113.46	Weston
		05/16/03	36.20	150.89	114.69	Weston
		03/04/04	40.87	150.89	110.02	CH2M HILL
		06/24/04	41.72	150.89	109.17	CH2M HILL
		09/15/04	43.08	150.89	107.81	CH2M HILL
		12/08/04	44.32	150.89	106.57	CH2M HILL
		03/03/05	42.83	150.89	108.06	CH2M HILL
		06/21/05	38.98	150.89	111.91	CH2M HILL
		09/02/05	37.75	150.89	113.14	CH2M HILL
		03/09/06	37.60	150.89	113.29	CH2M HILL
		05/18/06	36.58	150.89	114.31	CH2M HILL
		09/07/06	36.34	150.89	114.55	CH2M HILL
		03/06/07	36.77	150.89	114.12	CH2M HILL
		07/23/07	36.59	150.89	114.30	CH2M HILL
		02/21/08	40.36	150.89	110.53	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		03/02/09	46.02	150.89	104.87	CH2M HILL
		09/02/09	48.32	150.89	102.57	CH2M HILL
		03/05/10	dry	150.89	n/a	CH2M HILL
		08/30/10	50.70	150.89	100.19	CH2M HILL
		09/14/10	dry	150.89	n/a	CH2M HILL
		02/21/11	49.87	150.89	101.02	CH2M HILL
MW12	82-97	08/31/05	88.20	220.87	132.67	CH2M HILL
		03/15/06	82.90	220.87	137.97	CH2M HILL
		06/22/06	85.44	220.87	135.43	Aracadis
		08/07/06	83.11	220.87	137.76	CH2M HILL
		09/08/06	82.36	220.87	138.51	CH2M HILL
		03/06/07	83.14	220.87	137.73	CH2M HILL
		07/17/07	83.53	220.87	137.34	CH2M HILL
		02/25/08	84.45	220.87	136.42	CH2M HILL
		03/05/09	88.00	220.87	132.87	CH2M HILL
		09/14/09	89.81	220.87	131.06	CH2M HILL
		03/12/10	92.15	220.87	128.72	CH2M HILL
		09/13/10	92.70	220.87	128.17	CH2M HILL
		03/02/11	93.08	220.87	127.79	CH2M HILL
MW13A	56-66	08/31/05	65.11	206.02	140.91	CH2M HILL
		03/15/06	dry	206.02	n/a	CH2M HILL
		06/22/06	dry	206.02	n/a	Aracadis
		03/06/07	dry	206.02	n/a	CH2M HILL
		07/26/07	dry	206.02	n/a	CH2M HILL
		03/03/08	dry	206.02	n/a	CH2M HILL
		03/06/09	dry	206.02	n/a	CH2M HILL
		09/14/09	dry	206.02	n/a	CH2M HILL
		03/12/10	69.87	206.02	136.15	CH2M HILL
		09/14/10	69.84	206.02	136.18	CH2M HILL
		03/02/11	65.49	206.02	140.53	CH2M HILL
MW13B	123-133	08/31/05	81.05	205.88	124.83	CH2M HILL
		03/15/06	81.85	205.88	124.03	CH2M HILL
		05/15/06	80.33	205.88	125.55	CH2M HILL
		06/22/06	81.75	205.88	124.13	Arcadis
		09/08/06	81.61	205.88	124.27	CH2M HILL
		03/06/07	81.68	205.88	124.20	CH2M HILL
		07/26/07	83.26	205.88	122.62	CH2M HILL
		03/03/08	85.39	205.88	120.49	CH2M HILL
		03/06/09	93.72	205.88	112.16	CH2M HILL
		09/14/09	98.27	205.88	107.61	CH2M HILL
		03/12/10	96.30	205.88	109.58	CH2M HILL
		09/14/10	97.20	205.88	108.68	CH2M HILL
		03/02/11	91.98	205.88	113.90	CH2M HILL
MW14	60-75	06/13/06	46.20	172.63	126.43	Arcadis
		08/09/06	46.20	172.63	126.43	CH2M HILL
		09/11/06	46.35	172.63	126.28	CH2M HILL
		03/06/07	47.22	172.63	125.41	CH2M HILL
		07/19/07	46.78	172.63	125.85	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		02/25/08	50.98	172.63	121.65	CH2M HILL
		03/05/09	55.68	172.63	116.95	CH2M HILL
		09/14/09	58.18	172.63	114.45	CH2M HILL
		03/11/10	60.87	172.63	111.76	CH2M HILL
		09/14/10	60.91	172.63	111.72	CH2M HILL
		02/28/11	60.88	172.63	111.75	CH2M HILL
MW15	50-70	08/31/05	25.40	148.28	122.88	CH2M HILL
		03/15/06	25.75	148.28	122.53	CH2M HILL
		05/24/06	24.41	148.28	123.87	CH2M HILL
		06/22/06	24.57	148.28	123.71	Arcadis
		08/30/06	24.79	148.28	123.49	CH2M HILL
		02/26/07	25.85	148.28	122.43	CH2M HILL
		07/24/07	25.49	148.28	122.79	CH2M HILL
		02/26/08	29.97	148.28	118.31	CH2M HILL
		03/05/09	35.69	148.28	112.59	CH2M HILL
		09/04/09	37.75	148.28	110.53	CH2M HILL
		03/05/10	40.33	148.28	107.95	CH2M HILL
		08/31/10	39.65	148.28	108.63	CH2M HILL
		02/25/11	39.22	148.28	109.06	CH2M HILL
MW16A	45-60	08/31/05	47.36	153.19	105.83	CH2M HILL
		03/13/06	48.03	153.19	105.16	CH2M HILL
		05/18/06	46.37	153.19	106.82	CH2M HILL
		06/22/06	46.07	153.19	107.12	Arcadis
		08/31/06	46.36	153.19	106.83	CH2M HILL
		03/01/07	47.54	153.19	105.65	CH2M HILL
		07/23/07	47.11	153.19	106.08	CH2M HILL
		02/29/08	53.94	153.19	99.25	CH2M HILL
		03/10/09	dry	153.19	n/a	CH2M HILL
		09/08/09	dry	153.19	n/a	CH2M HILL
		03/04/10	dry	153.19	n/a	CH2M HILL
		09/02/10	55.80	153.19	97.39	CH2M HILL
		09/14/10	61.81	153.19	91.38	CH2M HILL
		02/17/11	62.41	153.19	90.78	CH2M HILL
MW16B	106-116	08/31/05	48.51	153.19	104.68	CH2M HILL
		03/13/06	48.90	153.19	104.29	CH2M HILL
		06/22/06	46.88	153.19	106.31	Arcadis
		08/07/06	47.03	153.19	106.16	CH2M HILL
		08/31/06	47.25	153.19	105.94	CH2M HILL
		03/01/07	48.17	153.19	105.02	CH2M HILL
		07/23/07	48.23	153.19	104.96	CH2M HILL
		02/29/08	54.28	153.19	98.91	CH2M HILL
		03/10/09	63.79	153.19	89.40	CH2M HILL
		09/08/09	67.35	153.19	85.84	CH2M HILL
		03/04/10	69.11	153.19	84.08	CH2M HILL
		09/02/10	66.81	153.19	86.38	CH2M HILL
		02/17/11	64.68	153.19	88.51	CH2M HILL
MW16C	149-164	08/31/05	51.29	153.26	101.97	CH2M HILL
		03/13/06	50.78	153.26	102.48	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		06/22/06	49.17	153.26	104.09	Arcadis
		08/07/06	49.35	153.26	103.91	CH2M HILL
		08/31/06	49.63	153.26	103.63	CH2M HILL
		03/01/07	49.80	153.26	103.46	CH2M HILL
		07/23/07	51.69	153.26	101.57	CH2M HILL
		02/29/08	55.86	153.26	97.40	CH2M HILL
		03/10/09	65.53	153.26	87.73	CH2M HILL
		09/08/09	71.04	153.26	82.22	CH2M HILL
		03/04/10	70.06	153.26	83.20	CH2M HILL
		09/02/10	69.98	153.26	83.28	CH2M HILL
		02/17/11	65.47	153.26	87.79	CH2M HILL
MW17A	56-71	08/31/05	66.79	159.03	92.24	CH2M HILL
		03/13/06	66.47	159.03	92.56	CH2M HILL
		06/22/06	65.03	159.03	94.00	Arcadis
		08/09/06	64.17	159.03	94.86	CH2M HILL
		09/05/06	64.35	159.03	94.68	CH2M HILL
		03/05/07	65.50	159.03	93.53	CH2M HILL
		07/18/07	64.11	159.03	94.92	CH2M HILL
		03/04/08	70.31	159.03	88.72	CH2M HILL
		03/11/09	dry	159.03	n/a	CH2M HILL
		09/08/09	dry	159.03	n/a	CH2M HILL
		03/03/10	dry	159.03	n/a	CH2M HILL
		09/08/10	dry	159.03	n/a	CH2M HILL
		02/18/11	75.31	159.03	83.72	CH2M HILL
MW17B	94-104	08/31/05	78.52	158.90	80.38	CH2M HILL
		03/13/06	65.95	158.90	92.95	CH2M HILL
		06/22/06	64.07	158.90	94.83	Arcadis
		08/09/06	63.54	158.90	95.36	CH2M HILL
		09/05/06	63.81	158.90	95.09	CH2M HILL
		03/05/07	64.74	158.90	94.16	CH2M HILL
		07/18/07	63.66	158.90	95.24	CH2M HILL
		03/04/08	71.10	158.90	87.80	CH2M HILL
		03/11/09	80.25	158.90	78.65	CH2M HILL
		09/08/09	82.91	158.90	75.99	CH2M HILL
		03/03/10	86.30	158.90	72.60	CH2M HILL
		09/08/10	83.31	158.90	75.59	CH2M HILL
		02/18/11	82.79	158.90	76.11	CH2M HILL
MW17C	170-180	08/31/05	66.02	159.00	92.98	CH2M HILL
		03/13/06	73.24	159.00	85.76	CH2M HILL
		06/22/06	73.54	159.00	85.46	Arcadis
		08/09/06	74.64	159.00	84.36	CH2M HILL
		09/05/06	75.41	159.00	83.59	CH2M HILL
		03/05/07	71.00	159.00	88.00	CH2M HILL
		07/18/07	81.24	159.00	77.76	CH2M HILL
		03/04/08	78.10	159.00	80.90	CH2M HILL
		03/11/09	84.65	159.00	74.35	CH2M HILL
		09/08/09	99.90	159.00	59.10	CH2M HILL
		03/03/10	85.30	159.00	73.70	CH2M HILL
		09/08/10	98.11	159.00	60.89	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		02/18/11	83.37	159.00	75.63	CH2M HILL
MW18A	56-71	08/31/05	28.01	143.73	115.72	CH2M HILL
		03/14/06	27.93	143.73	115.80	CH2M HILL
		05/17/06	26.88	143.73	116.85	CH2M HILL
		06/22/06	26.97	143.73	116.76	Arcadis
		08/28/06	26.81	143.73	116.92	CH2M HILL
		02/27/07	27.51	143.73	116.22	CH2M HILL
		07/20/07	27.48	143.73	116.25	CH2M HILL
		02/27/08	30.82	143.73	112.91	CH2M HILL
		03/09/09	36.65	143.73	107.08	CH2M HILL
		09/02/09	39.01	143.73	104.72	CH2M HILL
		03/08/10	41.05	143.73	102.68	CH2M HILL
		09/10/10	40.85	143.73	102.88	CH2M HILL
		02/21/11	39.53	143.73	104.20	CH2M HILL
MW18B	90-100	08/31/05	27.99	143.83	115.84	CH2M HILL
		03/14/06	27.88	143.83	115.95	CH2M HILL
		05/17/06	26.89	143.83	116.94	CH2M HILL
		06/22/06	26.95	143.83	116.88	Arcadis
		08/28/06	26.81	143.83	117.02	CH2M HILL
		02/27/07	27.50	143.83	116.33	CH2M HILL
		07/20/07	27.45	143.83	116.38	CH2M HILL
		02/27/08	30.77	143.83	113.06	CH2M HILL
		03/09/09	36.60	143.83	107.23	CH2M HILL
		09/02/09	39.06	143.83	104.77	CH2M HILL
		03/08/10	40.96	143.83	102.87	CH2M HILL
		09/10/10	40.80	143.83	103.03	CH2M HILL
		02/21/11	39.49	143.83	104.34	CH2M HILL
MW18C	146-161	08/31/05	29.97	143.83	113.86	CH2M HILL
		03/14/06	29.58	143.83	114.25	CH2M HILL
		05/17/06	28.50	143.83	115.33	CH2M HILL
		06/22/06	28.94	143.83	114.89	Arcadis
		08/28/06	29.18	143.83	114.65	CH2M HILL
		02/27/07	29.20	143.83	114.63	CH2M HILL
		07/20/07	30.38	143.83	113.45	CH2M HILL
		03/05/08	32.31	143.83	111.52	CH2M HILL
		03/09/09	38.68	143.83	105.15	CH2M HILL
		09/02/09	43.05	143.83	100.78	CH2M HILL
		03/08/10	42.23	143.83	101.60	CH2M HILL
		09/10/10	44.07	143.83	99.76	CH2M HILL
		02/21/11	40.19	143.83	103.64	CH2M HILL
MW19	56-71	06/22/06	69.38	158.73	89.35	Arcadis
		08/09/06	68.43	158.73	90.30	CH2M HILL
		09/07/06	68.61	158.73	90.12	CH2M HILL
		03/05/07	68.58	158.73	90.15	CH2M HILL
		07/25/07	68.22	158.73	90.51	CH2M HILL
		02/26/08	68.27	158.73	90.46	CH2M HILL
		03/02/09	below screen	158.73	n/a	CH2M HILL
		09/11/09	dry	158.73	n/a	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		03/04/10	dry	158.73	n/a	CH2M HILL
		09/07/10	dry	158.73	n/a	CH2M HILL
		02/21/11	70.09	158.73	88.64	CH2M HILL
MW20A	75-90	06/22/06	67.35	141.31	73.96	Arcadis
		08/08/06	66.77	141.31	74.54	CH2M HILL
		09/01/06	67.01	141.31	74.30	CH2M HILL
		03/02/07	68.72	141.31	72.59	CH2M HILL
		07/19/07	66.84	141.31	74.47	CH2M HILL
		03/03/08	73.64	141.31	67.67	CH2M HILL
		03/12/09	81.95	141.31	59.36	CH2M HILL
		09/08/09	84.92	141.31	56.39	CH2M HILL
		03/10/10	obstructed	141.31	n/a	CH2M HILL
		09/03/10	86.34	141.31	54.97	CH2M HILL
		02/18/11	86.30	141.31	55.01	CH2M HILL
MW20B	122-132	06/22/06	67.69	141.32	73.63	Arcadis
		08/08/06	67.22	141.32	74.10	CH2M HILL
		09/01/06	67.48	141.32	73.84	CH2M HILL
		03/02/07	68.11	141.32	73.21	CH2M HILL
		07/19/07	67.32	141.32	74.00	CH2M HILL
		03/03/08	74.04	141.32	67.28	CH2M HILL
		03/10/09	82.50	141.32	58.82	CH2M HILL
		09/08/09	85.61	141.32	55.71	CH2M HILL
		03/10/10	89.06	141.32	52.26	CH2M HILL
		09/03/10	86.92	141.32	54.40	CH2M HILL
		02/18/11	86.49	141.32	54.83	CH2M HILL
MW20C	180-190	06/22/06	77.90	141.35	63.45	Arcadis
		08/08/06	81.18	141.35	60.17	CH2M HILL
		09/01/06	81.17	141.35	60.18	CH2M HILL
		03/02/07	77.20	141.35	64.15	CH2M HILL
		07/19/07	85.85	141.35	55.50	CH2M HILL
		03/03/08	87.29	141.35	54.06	CH2M HILL
		03/10/09	93.91	141.35	47.44	CH2M HILL
		09/09/09	n/a	141.35	n/a	CH2M HILL
		03/11/10	95.19	141.35	46.16	CH2M HILL
		09/03/10	105.15	141.35	36.20	CH2M HILL
		02/18/11	90.93	141.35	50.42	CH2M HILL
MW21	64-79	06/22/06	49.86	128.81	78.95	Arcadis
		08/08/06	50.10	128.81	78.71	CH2M HILL
		08/31/06	50.38	128.81	78.43	CH2M HILL
		03/01/07	50.96	128.81	77.85	CH2M HILL
		07/26/07	50.96	128.81	77.85	CH2M HILL
		02/21/08	57.97	128.81	70.84	CH2M HILL
		03/02/09	67.50	128.81	61.31	CH2M HILL
		09/11/09	71.30	128.81	57.51	CH2M HILL
		03/04/10	73.35	128.81	55.46	CH2M HILL
		08/30/10	70.95	128.81	57.86	CH2M HILL
		02/17/11	69.01	128.81	59.80	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
MW22	74-89	06/22/06	61.81	150.82	89.01	Arcadis
		08/08/06	62.34	150.82	88.48	CH2M HILL
		08/31/06	62.54	150.82	88.28	CH2M HILL
		03/01/07	63.31	150.82	87.51	CH2M HILL
		07/26/07	63.25	150.82	87.57	CH2M HILL
		02/21/08	71.14	150.82	79.68	CH2M HILL
		03/03/09	81.62	150.82	69.20	CH2M HILL
		09/11/09	n/a	150.82	n/a	CH2M HILL
		03/04/10	dry	150.82	n/a	CH2M HILL
		08/30/10	83.72	150.82	67.10	CH2M HILL
		02/17/11	81.67	150.82	69.15	CH2M HILL
MW23A	35-55	06/19/07	27.80	148.76	120.96	CH2M HILL
		07/13/07	28.17	148.76	120.59	CH2M HILL
		02/28/08	33.13	148.76	115.63	CH2M HILL
		03/16/09	39.38	148.76	109.38	CH2M HILL
		09/03/09	41.31	148.76	107.45	CH2M HILL
		03/09/10	43.94	148.76	104.82	CH2M HILL
		09/01/10	42.71	148.76	106.05	CH2M HILL
		02/24/11	42.11	148.76	106.65	CH2M HILL
MW23B	87-91	08/31/05	29.11	149.06	119.95	CH2M HILL
		03/14/06	29.53	149.06	119.53	CH2M HILL
		05/15/06	28.25	149.06	120.81	CH2M HILL
		06/22/06	28.33	149.06	120.73	Arcadis
		09/11/06	28.92	149.06	120.14	CH2M HILL
		03/07/07	29.62	149.06	119.44	CH2M HILL
		07/13/07	29.25	149.06	119.81	CH2M HILL
		02/28/08	34.03	149.06	115.03	CH2M HILL
		03/16/09	40.96	149.06	108.10	CH2M HILL
		09/03/09	43.30	149.06	105.76	CH2M HILL
		03/09/10	45.50	149.06	103.56	CH2M HILL
		09/01/10	44.45	149.06	104.61	CH2M HILL
		02/24/11	43.01	149.06	106.05	CH2M HILL
MW23C	145-160	08/31/05	31.85	149.07	117.22	CH2M HILL
		03/14/06	32.35	149.07	116.72	CH2M HILL
		05/15/06	30.91	149.07	118.16	CH2M HILL
		06/22/06	31.08	149.07	117.99	Arcadis
		09/11/06	31.91	149.07	117.16	CH2M HILL
		03/07/07	32.19	149.07	116.88	CH2M HILL
		07/13/07	32.98	149.07	116.09	CH2M HILL
		02/28/08	36.83	149.07	112.24	CH2M HILL
		03/16/09	45.38	149.07	103.69	CH2M HILL
		09/03/09	49.35	149.07	99.72	CH2M HILL
		03/09/10	49.42	149.07	99.65	CH2M HILL
		09/01/10	49.26	149.07	99.81	CH2M HILL
		02/24/11	45.49	149.07	103.58	CH2M HILL
MW23D	175-180	08/31/05	32.67	148.04	115.37	CH2M HILL
		03/15/06	33.15	148.04	114.89	CH2M HILL
		05/15/06	31.69	148.04	116.35	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		06/22/06	31.85	148.04	116.19	Arcadis
		09/11/06	32.69	148.04	115.35	CH2M HILL
		03/07/07	32.95	148.04	115.09	CH2M HILL
		07/13/07	33.40	148.04	114.64	CH2M HILL
		02/28/08	37.59	148.04	110.45	CH2M HILL
		03/16/09	46.26	148.04	101.78	CH2M HILL
		09/03/09	50.40	148.04	97.64	CH2M HILL
		03/09/10	50.11	148.04	97.93	CH2M HILL
		09/01/10	50.15	148.04	97.89	CH2M HILL
		02/24/11	46.09	148.04	101.95	CH2M HILL
MW24A	50-70	06/18/07	36.80	162.04	125.24	CH2M HILL
		07/09/07	37.01	162.04	125.03	CH2M HILL
		02/28/08	41.31	162.04	120.73	CH2M HILL
		03/12/09	46.42	162.04	115.62	CH2M HILL
		09/14/09	48.82	162.04	113.22	CH2M HILL
		03/10/10	51.58	162.04	110.46	CH2M HILL
		09/13/10	51.42	162.04	110.62	CH2M HILL
		02/28/11	51.50	162.04	110.54	CH2M HILL
MW24B	110-125	06/18/07	41.24	162.03	120.79	CH2M HILL
		07/09/07	42.08	162.03	119.95	CH2M HILL
		02/28/08	45.40	162.03	116.63	CH2M HILL
		03/12/09	53.78	162.03	108.25	CH2M HILL
		09/14/09	58.60	162.03	103.43	CH2M HILL
		03/10/10	56.62	162.03	105.41	CH2M HILL
		09/10/10	57.48	162.03	104.55	CH2M HILL
		02/28/11	52.43	162.03	109.60	CH2M HILL
MW24C	140-160	06/18/07	41.60	162.02	120.42	CH2M HILL
		07/09/07	42.41	162.02	119.61	CH2M HILL
		02/28/08	45.72	162.02	116.30	CH2M HILL
		03/16/09	53.91	162.02	108.11	CH2M HILL
		09/14/09	58.73	162.02	103.29	CH2M HILL
		03/10/10	56.92	162.02	105.10	CH2M HILL
		09/13/10	57.82	162.02	104.20	CH2M HILL
		02/28/11	52.80	162.02	109.22	CH2M HILL
MW24D	173-178	06/18/07	41.90	162.05	120.15	CH2M HILL
		07/09/07	42.64	162.05	119.41	CH2M HILL
		02/28/08	46.09	162.05	115.96	CH2M HILL
		03/13/09	54.36	162.05	107.69	CH2M HILL
		09/14/09	59.60	162.05	102.45	CH2M HILL
		03/10/10	57.11	162.05	104.94	CH2M HILL
		09/10/10	58.34	162.05	103.71	CH2M HILL
		02/28/11	52.82	162.05	109.23	CH2M HILL
MW25A	45-65	04/25/07	37.65	147.90	110.25	CH2M HILL
		05/01/07	37.46	147.90	110.44	CH2M HILL
		07/10/07	37.80	147.90	110.10	CH2M HILL
		02/29/08	43.74	147.90	104.16	CH2M HILL
		03/12/09	51.50	147.90	96.40	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		09/02/09	54.06	147.90	93.84	CH2M HILL
		03/02/10	57.00	147.90	90.90	CH2M HILL
		09/13/10	55.26	147.90	92.64	CH2M HILL
		03/01/11	53.66	147.90	94.24	CH2M HILL
MW25B	90-110	04/25/07	37.67	147.84	110.17	CH2M HILL
		05/01/07	37.55	147.84	110.29	CH2M HILL
		07/10/07	38.09	147.84	109.75	CH2M HILL
		02/29/08	43.66	147.84	104.18	CH2M HILL
		03/12/09	51.88	147.84	95.96	CH2M HILL
		09/02/09	54.91	147.84	92.93	CH2M HILL
		03/02/10	57.05	147.84	90.79	CH2M HILL
		09/09/10	55.72	147.84	92.12	CH2M HILL
		03/01/11	53.26	147.84	94.58	CH2M HILL
MW25C	140-150	04/25/07	39.45	147.86	108.41	CH2M HILL
		05/01/07	39.30	147.86	108.56	CH2M HILL
		07/10/07	41.85	147.86	106.01	CH2M HILL
		02/29/08	45.80	147.86	102.06	CH2M HILL
		03/16/09	54.10	147.86	93.76	CH2M HILL
		09/02/09	60.20	147.86	87.66	CH2M HILL
		03/02/10	58.80	147.86	89.06	CH2M HILL
		09/13/10	59.73	147.86	88.13	CH2M HILL
		03/01/11	53.78	147.86	94.08	CH2M HILL
MW25D	194-209	04/25/07	49.91	147.87	97.96	CH2M HILL
		05/01/07	51.23	147.87	96.64	CH2M HILL
		07/10/07	67.55	147.87	80.32	CH2M HILL
		02/29/08	58.04	147.87	89.83	CH2M HILL
		03/16/09	60.89	147.87	86.98	CH2M HILL
		09/02/09	n/a	147.87	n/a	CH2M HILL
		03/02/10	62.11	147.87	85.76	CH2M HILL
		09/09/10	85.18	147.87	62.69	CH2M HILL
		03/01/11	57.11	147.87	90.76	CH2M HILL
MW26A	70-90	04/25/07	67.65	155.62	87.97	CH2M HILL
		05/02/07	67.60	155.62	88.02	CH2M HILL
		07/11/07	67.04	155.62	88.58	CH2M HILL
		03/04/08	74.21	155.62	81.41	CH2M HILL
		03/13/09	82.42	155.62	73.20	CH2M HILL
		09/11/09	85.16	155.62	70.46	CH2M HILL
		03/04/10	88.62	155.62	67.00	CH2M HILL
		03/16/10	88.41	155.62	67.21	CH2M HILL
		09/07/10	86.33	155.62	69.29	CH2M HILL
		02/23/11	86.30	155.62	69.32	CH2M HILL
		03/01/11	86.30	155.62	69.32	CH2M HILL
MW26B	105-120	04/25/07	67.72	155.45	87.73	CH2M HILL
		05/02/07	67.69	155.45	87.76	CH2M HILL
		07/11/07	67.12	155.45	88.33	CH2M HILL
		03/04/08	74.31	155.45	81.14	CH2M HILL
		03/13/09	82.64	155.45	72.81	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		09/11/09	85.28	155.45	70.17	CH2M HILL
		03/04/10	88.70	155.45	66.75	CH2M HILL
		09/09/10	86.42	155.45	69.03	CH2M HILL
		02/23/11	86.32	155.45	69.13	CH2M HILL
MW26C	145-160	04/25/07	73.05	155.41	82.36	CH2M HILL
		05/02/07	73.56	155.41	81.85	CH2M HILL
		07/11/07	80.55	155.41	74.86	CH2M HILL
		03/05/08	82.87	155.41	72.54	CH2M HILL
		03/13/09	88.73	155.41	66.68	CH2M HILL
		09/11/09	100.40	155.41	55.01	CH2M HILL
		03/03/10	91.25	155.41	64.16	CH2M HILL
		09/07/10	98.09	155.41	57.32	CH2M HILL
		02/23/11	87.53	155.41	67.88	CH2M HILL
MW26D	185-205	04/25/07	71.59	155.37	83.78	CH2M HILL
		05/02/07	72.42	155.37	82.95	CH2M HILL
		07/11/07	82.44	155.37	72.93	CH2M HILL
		03/05/08	81.24	155.37	74.13	CH2M HILL
		03/13/09	87.61	155.37	67.76	CH2M HILL
		09/11/09	n/a	155.37	n/a	CH2M HILL
		03/03/10	88.91	155.37	66.46	CH2M HILL
		09/09/10	100.65	155.37	54.72	CH2M HILL
		02/23/11	84.53	155.37	70.84	CH2M HILL
MW27A	90-110	04/25/07	77.18	139.24	62.06	CH2M HILL
		05/03/07	77.17	139.24	62.07	CH2M HILL
		07/12/07	76.97	139.24	62.27	CH2M HILL
		03/05/08	81.77	139.24	57.47	CH2M HILL
		03/11/09	88.05	139.24	51.19	CH2M HILL
		09/09/09	91.20	139.24	48.04	CH2M HILL
		03/05/10	95.17	139.24	44.07	CH2M HILL
		09/07/10	94.97	139.24	44.27	CH2M HILL
		02/23/11	95.29	139.24	43.95	CH2M HILL
MW27B	144-164	04/25/07	77.02	139.18	62.16	CH2M HILL
		05/03/07	76.99	139.18	62.19	CH2M HILL
		07/12/07	76.84	139.18	62.34	CH2M HILL
		03/05/08	81.61	139.18	57.57	CH2M HILL
		03/11/09	87.99	139.18	51.19	CH2M HILL
		09/09/09	91.16	139.18	48.02	CH2M HILL
		03/05/10	95.06	139.18	44.12	CH2M HILL
		09/08/10	94.81	139.18	44.37	CH2M HILL
		02/23/11	95.11	139.18	44.07	CH2M HILL
MW27C	180-190	04/25/07	84.34	139.17	54.83	CH2M HILL
		05/02/07	84.32	139.17	54.85	CH2M HILL
		07/12/07	92.07	139.17	47.10	CH2M HILL
		03/05/08	96.66	139.17	42.51	CH2M HILL
		03/13/09	103.32	139.17	35.85	CH2M HILL
		09/09/09	112.91	139.17	26.26	CH2M HILL
		03/05/10	103.50	139.17	35.67	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		09/07/10	108.20	139.17	30.97	CH2M HILL
		02/23/11	98.60	139.17	40.57	CH2M HILL
MW27D	200-210	04/25/07	83.00	139.13	56.13	CH2M HILL
		05/02/07	83.25	139.13	55.88	CH2M HILL
		07/12/07	91.85	139.13	47.28	CH2M HILL
		03/05/08	95.86	139.13	43.27	CH2M HILL
		03/13/09	102.67	139.13	36.46	CH2M HILL
		09/09/09	n/a	139.13	n/a	CH2M HILL
		03/05/10	104.31	139.13	34.82	CH2M HILL
		09/08/10	111.86	139.13	27.27	CH2M HILL
		02/23/11	98.62	139.13	40.51	CH2M HILL
MW28	85-105	06/19/07	73.94	119.91	45.97	CH2M HILL
		07/16/07	74.29	119.91	45.62	CH2M HILL
		03/03/08	78.04	119.91	41.87	CH2M HILL
		03/09/09	84.45	119.91	35.46	CH2M HILL
		09/09/09	88.25	119.91	31.66	CH2M HILL
		03/03/10	90.82	119.91	29.09	CH2M HILL
		09/08/10	91.26	119.91	28.65	CH2M HILL
		02/17/11	90.93	119.91	28.98	CH2M HILL
MW29	90-110	06/19/07	80.66	107.10	26.44	CH2M HILL
		07/13/07	81.03	107.10	26.07	CH2M HILL
		03/03/08	83.23	107.10	23.87	CH2M HILL
		03/09/09	86.69	107.10	20.41	CH2M HILL
		09/09/09	89.30	107.10	17.80	CH2M HILL
		03/01/10	90.11	107.10	16.99	CH2M HILL
		09/07/10	91.51	107.10	15.59	CH2M HILL
		03/01/11	90.51	107.10	16.59	CH2M HILL
MW30	95-115	06/19/07	91.88	106.70	14.82	CH2M HILL
		03/03/08	95.09	106.70	11.61	CH2M HILL
		03/09/09	98.23	106.70	8.47	CH2M HILL
		09/09/09	102.27	106.70	4.43	CH2M HILL
		03/01/10	100.35	106.70	6.35	CH2M HILL
		09/08/10	103.37	106.70	3.33	CH2M HILL
		02/17/11	100.12	106.70	6.58	CH2M HILL
MW31	105.5-120.5	09/09/09	99.19	232.67	133.48	CH2M HILL
		03/11/10	101.28	232.67	131.39	CH2M HILL
		08/30/10	102.20	232.67	130.47	CH2M HILL
		03/02/11	101.19	232.67	131.48	CH2M HILL
OW1A	62.5-77.5	05/15/01	74.19	212.50	138.31	CDM
		06/14/01	74.14	212.50	138.36	CDM
		07/24/01	74.04	212.50	138.46	CDM
		08/16/01	74.08	212.50	138.42	CDM
		09/18/01	74.33	212.50	138.17	CDM
		10/18/01	74.84	212.50	137.66	CDM
		11/15/01	74.38	212.50	138.12	CDM
		12/14/01	74.80	212.50	137.70	CDM

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		01/18/02	74.92	212.50	137.58	CDM
		02/14/02	74.86	212.50	137.64	CDM
		03/13/02	75.13	212.50	137.37	CDM
		04/19/02	75.16	212.50	137.34	CDM
		08/20/02	75.97	212.50	136.53	CDM/WESTON
		11/22/02	76.20	212.50	136.30	WESTON
		02/19/03	76.70	212.50	135.80	CDM/WESTON
		05/13/03	76.51	212.50	135.99	WESTON
		08/26/03	76.95	212.50	135.55	CDM
		02/20/04	76.97	212.50	135.53	CDM
		06/17/04	78.66	212.50	133.84	CH2M HILL
		08/26/04	78.84	212.50	133.66	CDM
		12/01/04	76.11	212.50	136.39	CH2M HILL
		02/25/05	77.22	212.50	135.28	CDM
		06/21/05	76.90	212.50	135.60	CH2M HILL
		08/25/05	76.15	212.50	136.35	CDM
		02/22/06	75.33	212.50	137.17	CDM
		08/24/06	74.94	212.50	137.56	CDM
		02/22/07	75.35	212.50	137.15	CDM
		08/23/07	76.17	212.50	136.33	CDM
		02/21/08	76.62	212.50	135.88	CDM
		09/18/08	77.82	212.50	134.68	CDM
		03/05/09	78.17	212.50	134.33	CDM
		09/03/09	82.94	212.50	129.56	CDM
		09/09/09	81.89	212.50	130.61	CDM
		09/16/09	81.97	212.50	130.53	CDM
		09/23/09	81.96	212.50	130.54	CDM
		09/30/09	81.97	212.50	130.53	CDM
		02/05/10	78.98	212.50	133.52	CDM
		02/26/10	79.16	212.50	133.34	CDM
		03/31/10	79.43	212.50	133.07	CDM
		08/31/10	79.91	212.50	132.59	CDM
		09/22/10	dry	212.50	n/a	CDM
		02/25/11	dry	212.50	n/a	CDM
		03/15/11	dry	212.50	n/a	CDM
OW1B	110-120	05/15/01	72.30	207.18	134.88	CDM
		06/14/01	72.53	207.18	134.65	CDM
		07/24/01	73.36	207.18	133.82	CDM
		08/16/01	74.18	207.18	133.00	CDM
		09/18/01	74.75	207.18	132.43	CDM
		10/18/01	74.83	207.18	132.35	CDM
		11/15/01	75.49	207.18	131.69	CDM
		12/14/01	75.05	207.18	132.13	CDM
		01/18/02	74.12	207.18	133.06	CDM
		02/14/02	73.56	207.18	133.62	CDM
		03/13/02	74.52	207.18	132.66	CDM
		08/20/02	77.04	207.18	130.14	CDM/WESTON
		11/22/02	78.15	207.18	129.03	WESTON
		02/19/03	77.04	207.18	130.14	CDM/WESTON
		05/13/03	75.72	207.18	131.46	WESTON
		08/26/03	78.75	207.18	128.43	CDM

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		02/20/04	80.93	207.18	126.25	CDM
		06/17/04	81.55	207.18	125.63	CH2M HILL
		08/26/04	82.80	207.18	124.38	CDM
		12/01/04	84.01	207.18	123.17	CH2M HILL
		02/25/05	79.95	207.18	127.23	CDM
		06/21/05	75.47	207.18	131.71	CH2M HILL
		08/25/05	75.76	207.18	131.42	CDM
		02/22/06	75.77	207.18	131.41	CDM
		08/24/06	75.00	207.18	132.18	CDM
		02/22/07	75.47	207.18	131.71	CDM
		08/23/07	77.68	207.18	129.50	CDM
		02/21/08	78.26	207.18	128.92	CDM
		09/16/08	n/a	207.18	n/a	CDM
		03/05/09	83.47	207.18	123.71	CDM
		09/03/09	87.32	207.18	119.86	CDM
		09/09/09	87.44	207.18	119.74	CDM
		09/16/09	87.66	207.18	119.52	CDM
		09/23/09	87.84	207.18	119.34	CDM
		09/30/09	88.05	207.18	119.13	CDM
		02/05/10	88.42	207.18	118.76	CDM
		02/26/10	nm	207.18	n/a	CDM
		03/31/10	87.05	207.18	120.13	CDM
		08/31/10	87.85	207.18	119.33	CDM
		09/22/10	88.14	207.18	119.04	CDM
		02/25/11	85.32	207.18	121.86	CDM
		03/15/11	84.78	207.18	122.40	CDM
OW2	60-80	05/15/01	66.47	202.30	135.83	CDM
		06/14/01	66.38	202.30	135.92	CDM
		07/24/01	66.25	202.30	136.05	CDM
		08/16/01	66.34	202.30	135.96	CDM
		09/18/01	66.66	202.30	135.64	CDM
		10/18/01	66.95	202.30	135.35	CDM
		11/15/01	66.92	202.30	135.38	CDM
		12/14/01	67.28	202.30	135.02	CDM
		01/18/02	67.40	202.30	134.90	CDM
		02/14/02	67.31	202.30	134.99	CDM
		03/13/02	67.50	202.30	134.80	CDM
		04/19/02	67.52	202.30	134.78	CDM
		08/20/02	68.30	202.30	134.00	CDM
		08/21/02	68.30	202.30	134.00	WESTON
		11/25/02	68.91	202.30	133.39	WESTON
		02/19/03	69.44	202.30	132.86	CDM
		02/19/03	69.28	202.30	133.02	WESTON
		05/13/03	68.95	202.30	133.35	WESTON
		08/26/03	69.18	202.30	133.12	CDM
		02/20/04	70.40	202.30	131.90	CDM
		06/17/04	70.92	202.30	131.38	CH2M HILL
		08/26/04	71.24	202.30	131.06	CDM
		12/01/04	71.91	202.30	130.39	CH2M HILL
		02/25/05	71.82	202.30	130.48	CDM
		06/21/05	69.69	202.30	132.61	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		08/25/05	68.77	202.30	133.53	CDM
		02/22/06	67.87	202.30	134.43	CDM
		08/24/06	67.43	202.30	134.87	CDM
		02/22/07	67.97	202.30	134.33	CDM
		08/23/07	68.60	202.30	133.70	CDM
		02/21/08	69.67	202.30	132.63	CDM
		09/18/08	71.09	202.30	131.21	CDM
		03/05/09	71.32	202.30	130.98	CDM
		09/03/09	79.12	202.30	123.18	CDM
		09/09/09	79.20	202.30	123.10	CDM
		09/16/09	77.67	202.30	124.63	CDM
		09/23/09	78.85	202.30	123.45	CDM
		09/30/09	78.75	202.30	123.55	CDM
		02/05/10	79.91	202.30	122.39	CDM
		02/26/10	dry	202.30	n/a	CDM
		03/31/10	dry	202.30	n/a	CDM
		08/31/10	dry	202.30	n/a	CDM
		09/22/10	dry	202.30	n/a	CDM
		02/25/11	dry	202.30	n/a	CDM
		03/15/11	dry	202.30	n/a	CDM
OW3A	63-83	05/15/01	62.55	198.53	135.98	CDM
		06/14/01	62.44	198.53	136.09	CDM
		07/24/01	62.29	198.53	136.24	CDM
		08/16/01	62.39	198.53	136.14	CDM
		09/18/01	62.70	198.53	135.83	CDM
		10/18/01	62.98	198.53	135.55	CDM
		11/15/01	62.95	198.53	135.58	CDM
		12/14/01	63.33	198.53	135.20	CDM
		01/18/02	63.52	198.53	135.01	CDM
		02/14/02	63.36	198.53	135.17	CDM
		03/13/02	63.58	198.53	134.95	CDM
		04/19/02	63.61	198.53	134.92	CDM
		08/20/02	64.47	198.53	134.06	CDM
		08/20/02	64.47	198.53	134.06	WESTON
		11/25/02	65.14	198.53	133.39	WESTON
		02/19/03	65.58	198.53	132.95	CDM
		02/20/03	65.50	198.53	133.03	WESTON
		05/14/03	65.25	198.53	133.28	WESTON
		08/26/03	65.54	198.53	132.99	CDM
		02/20/04	66.35	198.53	132.18	CDM
		06/17/04	66.93	198.53	131.60	CH2M HILL
		08/26/04	67.13	198.53	131.40	CDM
		12/01/04	67.70	198.53	130.83	CH2M HILL
		02/25/05	67.20	198.53	131.33	CDM
		06/21/05	65.41	198.53	133.12	CH2M HILL
		08/25/05	64.69	198.53	133.84	CDM
		02/22/06	63.90	198.53	134.63	CDM
		08/24/06	63.70	198.53	134.83	CDM
		02/22/07	64.24	198.53	134.29	CDM
		08/23/07	64.81	198.53	133.72	CDM
		02/21/08	65.65	198.53	132.88	CDM

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		09/18/08	66.46	198.53	132.07	CDM
		03/05/09	67.00	198.53	131.53	CDM
		09/03/09	74.23	198.53	124.30	CDM
		09/09/09	74.69	198.53	123.84	CDM
		09/16/09	73.11	198.53	125.42	CDM
		09/23/09	73.68	198.53	124.85	CDM
		09/30/09	73.40	198.53	125.13	CDM
		02/05/10	78.69	198.53	119.84	CDM
		02/26/10	79.32	198.53	119.21	CDM
		03/31/10	75.91	198.53	122.62	CDM
		08/31/10	80.17	198.53	118.36	CDM
		09/22/10	80.39	198.53	118.14	CDM
		02/25/11	79.44	198.53	119.09	CDM
		03/15/11	79.58	198.53	118.95	CDM
OW3B	112-122	03/13/06	73.76	197.06	123.30	CDM
		05/15/06	72.54	197.06	124.52	CH2M HILL
		05/23/06	72.82	197.06	124.24	CH2M HILL
		08/24/06	73.38	197.06	123.68	CH2M HILL
		02/22/07	73.94	197.06	123.12	CDM
		08/23/07	76.50	197.06	120.56	CDM
		02/21/08	77.12	197.06	119.94	CDM
		09/18/08	83.65	197.06	113.41	CDM
		03/05/09	85.50	197.06	111.56	CDM
		09/03/09	89.79	197.06	107.27	CDM
		09/09/09	89.61	197.06	107.45	CDM
		09/16/09	89.88	197.06	107.18	CDM
		09/23/09	90.11	197.06	106.95	CDM
		09/30/09	90.36	197.06	106.70	CDM
		02/05/10	90.02	197.06	107.04	CDM
		02/26/10	88.50	197.06	108.56	CDM
		03/31/10	87.97	197.06	109.09	CDM
		08/31/10	88.85	197.06	108.21	CDM
		09/22/10	89.22	197.06	107.84	CDM
		02/25/11	84.60	197.06	112.46	CDM
		03/15/11	83.84	197.06	113.22	CDM
OW4A	49.8-69.8	05/15/01	53.60	184.67	131.07	CDM
		06/14/01	53.36	184.67	131.31	CDM
		07/24/01	53.31	184.67	131.36	CDM
		08/16/01	53.70	184.67	130.97	CDM
		09/18/01	54.35	184.67	130.32	CDM
		10/18/01	54.76	184.67	129.91	CDM
		11/15/01	54.87	184.67	129.80	CDM
		12/14/01	55.43	184.67	129.24	CDM
		01/18/02	55.55	184.67	129.12	CDM
		02/14/02	55.21	184.67	129.46	CDM
		03/13/02	55.30	184.67	129.37	CDM
		04/19/02	55.35	184.67	129.32	CDM
		08/20/02	56.80	184.67	127.87	CDM
		08/21/02	56.80	184.67	127.87	WESTON
		11/26/02	58.15	184.67	126.52	WESTON

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		02/19/03	58.58	184.67	126.09	CDM
		02/20/03	58.51	184.67	126.16	WESTON
		05/14/03	57.49	184.67	127.18	WESTON
		08/26/03	58.13	184.67	126.54	CDM
		02/20/04	61.04	184.67	123.63	CDM
		06/15/04	61.91	184.67	122.76	CH2M HILL
		08/26/04	62.36	184.67	122.31	CDM
		11/30/04	63.80	184.67	120.87	CH2M HILL
		02/25/05	63.94	184.67	120.73	CDM
		06/21/05	61.50	184.67	123.17	CH2M HILL
		08/25/05	58.98	184.67	125.69	CDM
		02/22/06	58.03	184.67	126.64	CDM
		05/17/06	57.37	184.67	127.30	CH2M HILL
		08/24/06	56.87	184.67	127.80	CDM
		02/22/07	57.77	184.67	126.90	CDM
		08/23/07	57.88	184.67	126.79	CDM
		02/21/08	60.53	184.67	124.14	CDM
		09/18/08	62.40	184.67	122.27	CDM
		03/05/09	64.53	184.67	120.14	CDM
		09/03/09	66.93	184.67	117.74	CDM
		09/09/09	66.72	184.67	117.95	CDM
		09/16/09	66.88	184.67	117.79	CDM
		09/23/09	66.96	184.67	117.71	CDM
		09/30/09	67.05	184.67	117.62	CDM
		02/05/10	68.36	184.67	116.31	CDM
		02/26/10	68.42	184.67	116.25	CDM
		03/31/10	68.68	184.67	115.99	CDM
		08/31/10	69.33	184.67	115.34	CDM
		09/22/10	69.48	184.67	115.19	CDM
		02/25/11	69.70	184.67	114.97	CDM
		03/15/11	69.67	184.67	115.00	CDM
OW4B	112-122.3	05/15/01	57.11	184.50	127.39	CDM
		06/14/01	57.51	184.50	126.99	CDM
		07/24/01	58.82	184.50	125.68	CDM
		08/16/01	60.01	184.50	124.49	CDM
		09/18/01	60.82	184.50	123.68	CDM
		10/18/01	60.98	184.50	123.52	CDM
		11/15/01	61.67	184.50	122.83	CDM
		12/14/01	60.76	184.50	123.74	CDM
		01/18/02	59.53	184.50	124.97	CDM
		02/14/02	58.81	184.50	125.69	CDM
		03/13/02	59.34	184.50	125.16	CDM
		04/19/02	60.02	184.50	124.48	CDM
		08/20/02	63.64	184.50	120.86	CDM
		08/21/02	63.64	184.50	120.86	WESTON
		11/26/02	64.88	184.50	119.62	WESTON
		02/19/03	62.46	184.50	122.04	CDM
		02/20/03	62.61	184.50	121.89	WESTON
		05/14/03	60.42	184.50	124.08	WESTON
		08/26/03	65.67	184.50	118.83	CDM
		02/20/04	68.08	184.50	116.42	CDM

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		06/15/04	69.05	184.50	115.45	CH2M HILL
		08/26/04	71.10	184.50	113.40	CDM
		11/30/04	71.60	184.50	112.90	CH2M HILL
		02/25/05	65.97	184.50	118.53	CDM
		06/21/05	60.45	184.50	124.05	CH2M HILL
		08/25/05	61.15	184.50	123.35	CDM
		02/22/06	62.27	184.50	122.23	CDM
		05/17/06	60.46	184.50	124.04	CH2M HILL
		08/24/06	61.13	184.50	123.37	CDM
		02/22/07	62.10	184.50	122.40	CDM
		08/23/07	64.42	184.50	120.08	CDM
		02/21/08	65.82	184.50	118.68	CDM
		09/18/08	71.68	184.50	112.82	CDM
		03/05/09	73.30	184.50	111.20	CDM
		09/03/09	77.48	184.50	107.02	CDM
		09/09/09	77.38	184.50	107.12	CDM
		09/16/09	77.67	184.50	106.83	CDM
		09/23/09	77.86	184.50	106.64	CDM
		09/30/09	78.12	184.50	106.38	CDM
		02/05/10	77.91	184.50	106.59	CDM
		02/26/10	76.64	184.50	107.86	CDM
		03/31/10	75.55	184.50	108.95	CDM
		08/31/10	76.62	184.50	107.88	CDM
		09/22/10	77.07	184.50	107.43	CDM
		02/25/11	72.52	184.50	111.98	CDM
		03/15/11	71.82	184.50	112.68	CDM
OW5	30-50	08/16/01	26.14	154.16	128.02	CDM
		09/18/01	27.33	154.16	126.83	CDM
		10/18/01	27.59	154.16	126.57	CDM
		11/15/01	28.18	154.16	125.98	CDM
		12/14/01	28.24	154.16	125.92	CDM
		01/18/02	27.44	154.16	126.72	CDM
		02/14/02	26.73	154.16	127.43	CDM
		03/13/02	26.75	154.16	127.41	CDM
		04/19/02	27.12	154.16	127.04	CDM
		08/20/02	30.03	154.16	124.13	CDM
		08/22/02	30.03	154.16	124.13	WESTON
		11/25/02	31.73	154.16	122.43	WESTON
		02/19/03	30.85	154.16	123.31	CDM
		02/21/03	30.82	154.16	123.34	WESTON
		05/14/03	28.65	154.16	125.51	WESTON
		08/26/03	31.20	154.16	122.96	CDM
		02/20/04	35.21	154.16	118.95	CDM
		06/15/04	35.78	154.16	118.38	CH2M HILL
		08/26/04	36.78	154.16	117.38	CDM
		12/02/04	38.59	154.16	115.57	CH2M HILL
		02/25/05	38.17	154.16	115.99	CDM
		06/24/05	31.05	154.16	123.11	CH2M HILL
		08/25/05	29.62	154.16	124.54	CDM
		02/22/06	30.11	154.16	124.05	CDM
		05/24/06	28.55	154.16	125.61	CH2M HILL

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		08/24/06	28.99	154.16	125.17	CDM
		02/22/07	30.17	154.16	123.99	CDM
		08/23/07	30.67	154.16	123.49	CDM
		02/21/08	34.63	154.16	119.53	CDM
		09/18/08	36.38	154.16	117.78	CDM
		03/05/09	40.25	154.16	113.91	CDM
		09/03/09	43.02	154.16	111.14	CDM
		09/09/09	42.65	154.16	111.51	CDM
		09/16/09	42.81	154.16	111.35	CDM
		09/23/09	42.92	154.16	111.24	CDM
		09/30/09	42.99	154.16	111.17	CDM
OW6	38-58	08/16/01	42.54	172.74	130.20	CDM
		09/18/01	43.25	172.74	129.49	CDM
		10/18/01	43.69	172.74	129.05	CDM
		11/15/01	43.95	172.74	128.79	CDM
		12/14/01	44.41	172.74	128.33	CDM
		01/18/02	44.39	172.74	128.35	CDM
		02/14/02	44.00	172.74	128.74	CDM
		03/13/02	44.01	172.74	128.73	CDM
		04/19/02	44.12	172.74	128.62	CDM
		08/20/02	45.70	172.74	127.04	CDM
		08/21/02	45.00	172.74	127.74	WESTON
		11/26/02	47.11	172.74	125.63	WESTON
		02/19/03	47.49	172.74	125.25	CDM
		02/21/03	47.49	172.74	125.25	WESTON
		05/15/03	46.30	172.74	126.44	WESTON
		08/26/03	47.09	172.74	125.65	CDM
		02/20/04	50.24	172.74	122.50	CDM
		06/16/04	51.05	172.74	121.69	CH2M HILL
		08/26/04	51.69	172.74	121.05	CDM
		12/01/04	53.10	172.74	119.64	CH2M HILL
		02/25/05	53.58	172.74	119.16	CDM
		06/21/05	49.33	172.74	123.41	CH2M HILL
		08/25/05	47.68	172.74	125.06	CDM
		02/22/06	46.93	172.74	125.81	CDM
		05/19/06	46.15	172.74	126.59	CH2M HILL
		08/24/06	45.70	172.74	127.04	CDM
		02/22/07	46.16	172.74	126.58	CDM
		08/23/07	46.78	172.74	125.96	CDM
		02/21/08	49.70	172.74	123.04	CDM
		09/18/08	51.20	172.74	121.54	CDM
		03/05/09	54.03	172.74	118.71	CDM
		09/03/09	56.41	172.74	116.33	CDM
		09/09/09	56.27	172.74	116.47	CDM
		09/16/09	56.44	172.74	116.30	CDM
		09/23/09	56.54	172.74	116.20	CDM
		09/30/09	56.63	172.74	116.11	CDM
OW7	70.9-90.9	03/13/02	74.83	214.21	139.38	CDM
		04/19/02	74.93	214.21	139.28	CDM
		08/20/02	75.86	214.21	138.35	CDM

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		08/21/02	75.86	214.21	138.35	WESTON
		11/22/02	76.45	214.21	137.76	WESTON
		02/19/03	76.89	214.21	137.32	CDM
		02/21/03	76.80	214.21	137.41	WESTON
		05/15/03	76.70	214.21	137.51	WESTON
		08/26/03	76.90	214.21	137.31	CDM
		02/20/04	78.00	214.21	136.21	CDM
		06/16/04	78.78	214.21	135.43	CH2M HILL
		08/26/04	78.96	214.21	135.25	CDM
		11/30/04	79.71	214.21	134.50	CH2M HILL
		02/25/05	78.98	214.21	135.23	CDM
		08/25/05	75.94	214.21	138.27	CDM
		02/22/06	75.21	214.21	139.00	CDM
		05/18/06	75.10	214.21	139.11	CH2M HILL
		08/24/06	74.67	214.21	139.54	CH2M HILL
		02/22/07	75.28	214.21	138.93	CH2M HILL
		08/23/07	76.00	214.21	138.21	CDM
		02/21/08	76.38	214.21	137.83	CDM
		09/18/08	76.76	214.21	137.45	CDM
		03/05/09	78.51	214.21	135.70	CDM
		09/03/09	82.32	214.21	131.89	CDM
		09/09/09	81.81	214.21	132.40	CDM
		09/16/09	81.85	214.21	132.36	CDM
		09/23/09	82.00	214.21	132.21	CDM
		09/30/09	82.21	214.21	132.00	CDM
		02/05/10	83.91	214.21	130.30	CDM
		02/26/10	84.01	214.21	130.20	CDM
		03/31/10	84.28	214.21	129.93	CDM
		08/31/10	85.44	214.21	128.77	CDM
		09/22/10	85.71	214.21	128.50	CDM
		02/25/11	85.26	214.21	128.95	CDM
		03/15/11	85.17	214.21	129.04	CDM
OW8A	60.4-80	03/13/02	65.61	200.64	135.03	CDM
		04/19/02	65.69	200.64	134.95	CDM
		08/20/02	66.46	200.64	134.18	CDM
		08/22/02	66.46	200.64	134.18	WESTON
		11/25/02	67.07	200.64	133.57	WESTON
		02/19/03	67.37	200.64	133.27	CDM
		02/20/03	67.36	200.64	133.28	WESTON
		05/15/03	67.14	200.64	133.50	WESTON
		08/26/03	67.35	200.64	133.29	CDM
		02/20/04	68.36	200.64	132.28	CDM
		06/16/04	68.98	200.64	131.66	CH2M HILL
		08/26/04	69.15	200.64	131.49	CDM
		12/03/04	69.37	200.64	131.27	CH2M HILL
		02/25/05	69.50	200.64	131.14	CDM
		06/21/05	67.70	200.64	132.94	CH2M HILL
		08/25/05	66.87	200.64	133.77	CDM
		02/22/06	66.05	200.64	134.59	CDM
		08/24/06	65.66	200.64	134.98	CDM
		02/22/07	66.28	200.64	134.36	CDM

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		08/23/07	66.70	200.64	133.94	CDM
		02/21/08	67.55	200.64	133.09	CDM
		09/18/08	68.70	200.64	131.94	CDM
		03/05/09	69.14	200.64	131.50	CDM
		09/03/09	79.71	200.64	120.93	CDM
		09/09/09	79.62	200.64	121.02	CDM
		09/16/09	77.53	200.64	123.11	CDM
		09/23/09	77.74	200.64	122.90	CDM
		09/30/09	78.78	200.64	121.86	CDM
		02/05/10	nm	200.64	n/a	CDM
		02/26/10	dry	200.64	n/a	CDM
		03/31/10	dry	200.64	n/a	CDM
		08/31/10	dry	200.64	n/a	CDM
		09/22/10	dry	200.64	n/a	CDM
		02/25/11	dry	200.64	n/a	CDM
		03/15/11	dry	200.64	n/a	CDM
OW8B	116-126	08/25/04	86.77	200.82	114.05	CDM
		12/02/04	87.33	200.82	113.49	CH2M HILL
		02/23/05	81.55	200.82	119.27	CDM
		06/24/05	76.60	200.82	124.22	CH2M HILL
		08/23/05	76.31	200.82	124.51	CDM
		02/17/06	77.55	200.82	123.27	CDM
		05/17/06	75.76	200.82	125.06	CH2M HILL
		08/22/06	76.58	200.82	124.24	CDM
		02/20/07	77.29	200.82	123.53	CDM
		08/21/07	79.86	200.82	120.96	CDM
		02/19/08	80.94	200.82	119.88	CDM
		09/16/08	86.82	200.82	114.00	CDM
		03/03/09	88.85	200.82	111.97	CDM
		09/03/09	92.80	200.82	108.02	CDM
		09/09/09	93.00	200.82	107.82	CDM
		09/16/09	93.27	200.82	107.55	CDM
		09/23/09	93.50	200.82	107.32	CDM
		09/30/09	93.73	200.82	107.09	CDM
		02/05/10	93.35	200.82	107.47	CDM
		02/26/10	92.01	200.82	108.81	CDM
		03/31/10	91.03	200.82	109.79	CDM
		08/31/10	n/a	200.82	n/a	CDM
		09/22/10	92.48	200.82	108.34	CDM
		02/25/11	n/a	200.82	n/a	
		03/15/11	n/a	200.82	n/a	
OW9	70-90	03/05/09	69.67	195.70	126.03	CDM
		09/03/09	75.78	195.70	119.92	CDM
		09/09/09	76.40	195.70	119.30	CDM
		09/16/09	75.58	195.70	120.12	CDM
		09/23/09	76.29	195.70	119.41	CDM
		09/30/09	75.61	195.70	120.09	CDM
		02/05/10	77.93	195.70	117.77	CDM
		02/26/10	78.31	195.70	117.39	CDM
		03/31/10	77.50	195.70	118.20	CDM

TABLE 3-1a

OPOG and EPA Historical Groundwater Elevations

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		08/31/10	77.52	195.70	118.18	CDM
		09/22/10	79.42	195.70	116.28	CDM
		02/25/11	79.02	195.70	116.68	CDM
		03/15/11	79.06	195.70	116.64	CDM
OW10	69.5-89.5	03/05/09	66.24	193.17	126.93	CDM
		09/03/09	71.44	193.17	121.73	CDM
		09/09/09	71.42	193.17	121.75	CDM
		09/16/09	70.34	193.17	122.83	CDM
		09/23/09	71.05	193.17	122.12	CDM
		09/30/09	70.97	193.17	122.20	CDM
		02/05/10	71.92	193.17	121.25	CDM
		02/26/10	71.64	193.17	121.53	CDM
		03/31/10	71.06	193.17	122.11	CDM
		08/31/10	73.74	193.17	119.43	CDM
		09/22/10	73.37	193.17	119.80	CDM
		02/25/11	72.00	193.17	121.17	CDM
		03/15/11	72.10	193.17	121.07	CDM

Note:

Dry wells are flagged as dry in the Depth to Water (feet) column.

Abbreviations:

amsl = above mean sea level
bgs = below ground surface
bmp = below measuring point
n/a = not available
nm = no measurement

Table 3-1b

Other Facility Groundwater Elevations for 2010 First and Third Quarters, and 2011 First Quarter

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
Ash-EX-1	48-88	02/21/10	nm	163.49	n/a	EHS
		08/16/10	71.01	163.49	92.48	EHS
		02/28/11	nm	163.49	n/a	EHS
Ash-EX-2	48-88	02/21/10	nm	166.01	n/a	EHS
		08/16/10	75.00	166.01	91.01	EHS
		02/28/11	nm	166.01	n/a	EHS
Ash-EX-4	55-85	02/21/10	nm	165.13	n/a	EHS
		08/16/10	74.00	165.13	91.13	EHS
		02/28/11	nm	165.13	n/a	EHS
Ash-EX-5	72-102	02/21/10	nm	165.51	n/a	EHS
		08/16/10	73.20	165.51	92.31	EHS
		02/28/11	nm	165.51	n/a	EHS
Ash-EX-6	87-107	02/21/10	nm	162.32	n/a	EHS
		08/16/10	91.25	162.32	71.07	EHS
		02/28/11	nm	162.32	n/a	EHS
Ash-MW-1R	49.8-84.8	02/21/10	72.10	166.23	94.13	EHS
		08/16/10	74.39	166.23	91.84	EHS
		02/28/11	72.00	166.23	94.23	EHS
Ash-MW-2R	49.4-84.4	02/21/10	69.70	165.66	95.96	EHS
		08/16/10	71.02	165.66	94.64	EHS
		02/28/11	70.96	165.66	94.70	EHS
Ash-MW-4R	50.1-85.1	02/21/10	70.41	166.10	95.69	EHS
		08/16/10	71.31	166.10	94.79	EHS
		02/28/11	72.34	166.10	93.76	EHS
Ash-MW-5	60-85	02/21/10	73.12	164.96	91.84	EHS
		08/16/10	76.00	164.96	88.96	EHS
		02/28/11	75.39	164.96	89.57	EHS
Ash-MW-6R	49.6-84.6	02/21/10	71.80	164.19	92.39	EHS
		08/16/10	73.61	164.19	90.58	EHS
		02/28/11	73.77	164.19	90.42	EHS
Ash-MW-7	60-80	02/21/10	68.74	165.02	96.28	EHS
		08/16/10	69.40	165.02	95.62	EHS
		02/28/11	70.65	165.02	94.37	EHS
Ash-MW-12R	49.5-84.5	02/21/10	70.05	165.59	95.54	EHS
		08/16/10	70.69	165.59	94.90	EHS
		02/28/11	71.64	165.59	93.95	EHS
Ash-MW-13R	50.7-85.7	02/21/10	69.73	165.45	95.72	EHS
		08/16/10	70.38	165.45	95.07	EHS
		02/28/11	71.25	165.45	94.20	EHS

Table 3-1b

Other Facility Groundwater Elevations for 2010 First and Third Quarters, and 2011 First Quarter

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
Ash-MW-14A	53-73	02/21/10	69.49	165.35	95.86	EHS
		08/16/10	70.12	165.35	95.23	EHS
		02/28/11	70.65	165.35	94.70	EHS
Ash-MW-15A	54-74	02/21/10	nm	162.08	n/a	EHS
		08/16/10	nm	162.08	n/a	EHS
		02/28/11	nm	162.08	n/a	EHS
Ash-MW-16A	52-72	02/21/10	dry	159.70	n/a	EHS
		08/16/10	dry	159.70	n/a	EHS
		02/28/11	70.20	159.70	89.50	EHS
Ash-MW-17A	57-77	02/21/10	69.30	161.46	92.16	EHS
		08/16/10	70.30	161.46	91.16	EHS
		02/28/11	71.30	161.46	90.16	EHS
Ash-MW-21A	60-80	02/21/10	75.94	162.35	86.41	EHS
		08/16/10	77.58	162.35	84.77	EHS
		02/28/11	79.70	162.35	82.65	EHS
Ash-MW-22	47-87	02/21/10	62.44	162.24	99.80	EHS
		08/16/10	63.08	162.24	99.16	EHS
		02/28/11	62.72	162.24	99.52	EHS
Ash-MW-23	50-75	02/21/10	68.15	165.01	96.86	EHS
		08/16/10	68.79	165.01	96.22	EHS
		02/28/11	69.30	165.01	95.71	EHS
Ash-MW-24	50-75	02/21/10	68.00	164.33	96.33	EHS
		08/16/10	68.77	164.33	95.56	EHS
		02/28/11	69.69	164.33	94.64	EHS
Ash-MW-25	49.6-84.6	02/21/10	70.48	165.58	95.10	EHS
		08/16/10	72.98	165.58	92.60	EHS
		02/28/11	84.15	165.58	81.43	EHS
Ash-MW-26	50.7-85.7	02/21/10	70.38	165.14	94.76	EHS
		08/16/10	71.03	165.14	94.11	EHS
		02/28/11	71.80	165.14	93.34	EHS
Ash-MW-27	50.5-85.5	02/21/10	70.30	165.40	95.10	EHS
		08/16/10	73.61	165.40	91.79	EHS
		02/28/11	72.62	165.40	92.78	EHS
Ash-MW-28A	70-90	08/16/10	80.61	154.84	74.23	EHS
		02/28/11	79.95	154.84	74.89	EHS
Ash-MW-29A	67-87	08/16/10	81.17	157.49	76.32	EHS
		02/28/11	80.52	157.49	76.97	EHS
Ash-MW-30C1	114-119	08/16/10	86.41	162.06	75.65	EHS
		02/28/11	84.12	162.06	77.94	EHS

Table 3-1b

Other Facility Groundwater Elevations for 2010 First and Third Quarters, and 2011 First Quarter

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
Ash-MW-31A	81-91	02/28/11	89.71	151.51	61.80	EHS
CENCO-EW-1		02/26/10	103.80	144.78	40.98	BBL
		07/30/10	104.88	144.78	39.90	BBL
		01/28/11	105.98	144.78	38.80	BBL
CENCO-MW-101	70-90	02/26/10	dry	138.00	n/a	BBL
		07/30/10	dry	138.00	n/a	BBL
		01/28/11	dry	138.00	n/a	BBL
CENCO-MW-103	79-99	02/26/10	dry	139.36	n/a	BBL
		07/30/10	dry	139.36	n/a	BBL
		01/28/11	dry	139.36	n/a	BBL
CENCO-MW-104A	65-100	02/26/10	92.86	144.13	51.27	BBL
		07/30/10	93.27	144.13	50.86	BBL
		01/28/11	93.70	144.13	50.43	BBL
CENCO-MW-105	68-98	02/26/10	dry	141.16	n/a	BBL
		07/30/10	dry	141.16	n/a	BBL
		01/28/11	dry	141.16	n/a	BBL
CENCO-MW-106A	83-110	02/26/10	104.17	152.81	48.64	BBL
		07/30/10	105.68	152.81	47.13	BBL
		01/28/11	107.15	152.81	45.66	BBL
CENCO-MW-107A	83-110	02/26/10	101.82	147.02	45.20	BBL
		07/30/10	102.92	147.02	44.10	BBL
		01/28/11	104.32	147.02	42.70	BBL
CENCO-MW-201	72-102	02/26/10	dry	135.65	n/a	BBL
		07/30/10	dry	135.65	n/a	BBL
		01/28/11	dry	135.65	n/a	BBL
CENCO-MW-202	63-93	02/26/10	dry	140.62	n/a	BBL
		07/30/10	dry	140.62	n/a	BBL
		01/28/11	dry	140.62	n/a	BBL
CENCO-MW-203	77-107	02/26/10	101.50	143.71	42.21	BBL
		07/30/10	dry	143.71	n/a	BBL
		01/28/11	dry	143.71	n/a	BBL
CENCO-MW-204	73.3-103.3	02/26/10	dry	142.90	n/a	BBL
		07/30/10	dry	142.90	n/a	BBL
		01/28/11	dry	142.90	n/a	BBL
CENCO-MW-205	69.5-99.5	02/26/10	dry	140.09	n/a	BBL
		07/30/10	dry	140.09	n/a	BBL
		01/28/11	dry	140.09	n/a	BBL
CENCO-MW-501A	75-95	02/26/10	dry	130.89	n/a	BBL

Table 3-1b

Other Facility Groundwater Elevations for 2010 First and Third Quarters, and 2011 First Quarter

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
		07/30/10	dry	130.89	n/a	BBL
		01/28/11	dry	130.89	n/a	BBL
CENCO-MW-502	74-104	02/26/10	dry	131.00	n/a	BBL
		07/30/10	dry	131.00	n/a	BBL
		01/28/11	dry	131.00	n/a	BBL
CENCO-MW-503B	69-109	02/26/10	105.43	132.66	27.23	BBL
		07/30/10	106.22	132.66	26.44	BBL
		02/04/11	107.63	132.66	25.03	BBL
CENCO-MW-504	58-118	02/26/10	dry	137.18	n/a	BBL
		07/30/10	dry	137.18	n/a	BBL
		01/28/11	dry	137.18	n/a	BBL
CENCO-MW-600A		02/26/10	dry	124.26	n/a	BBL
		07/30/10	dry	124.26	n/a	BBL
		01/28/11	dry	124.26	n/a	BBL
CENCO-MW-601A	65-100	03/08/10	dry	126.53	n/a	BBL
		07/30/10	dry	126.53	n/a	BBL
		01/28/11	nm	126.53	n/a	BBL
CENCO-MW-603	70-100	02/26/10	dry	120.95	n/a	BBL
		07/30/10	dry	120.95	n/a	BBL
		01/28/11	dry	120.95	n/a	BBL
CENCO-MW-604	73-103	02/26/10	dry	140.07	n/a	BBL
		07/30/10	dry	140.07	n/a	BBL
		01/28/11	dry	140.07	n/a	BBL
CENCO-MW-605	65-95	02/26/10	dry	116.82	n/a	BBL
		07/30/10	dry	116.82	n/a	BBL
		01/28/11	dry	116.82	n/a	BBL
CENCO-MW-606	70-100	02/26/10	dry	116.06	n/a	BBL
		07/30/10	dry	116.06	n/a	BBL
		01/28/11	dry	116.06	n/a	BBL
CENCO-MW-607	77-107	02/26/10	dry	128.28	n/a	BBL
		07/30/10	dry	128.28	n/a	BBL
		01/28/11	dry	128.28	n/a	BBL
CENCO-MW-701	80-130	01/27/11	106.01	139.48	33.47	BBL
CENCO-MW-702	80-130	01/27/11	105.95	140.12	34.17	BBL
CENCO-MW-703	80-130	01/27/11	107.44	137.23	29.79	BBL
CENCO-MW-704	80-130	02/09/11	109.07	137.66	28.59	BBL
CENCO-MW-705	80-130	01/25/11	109.82	141.94	32.12	BBL

Table 3-1b

Other Facility Groundwater Elevations for 2010 First and Third Quarters, and 2011 First Quarter

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
CENCO-MW-706	80-130	01/24/11	106.22	139.30	33.08	BBL
CENCO-MW-707	80-130	01/28/11	103.75	128.43	24.68	BBL
CENCO-MW-708	80-130	02/02/11	102.85	126.26	23.41	BBL
CENCO-MW-709	80-130	02/01/11	112.56	139.78	27.22	BBL
CENCO-MW-710	80-130	02/08/11	100.65	121.99	21.34	BBL
CENCO-MW-711	80-130	02/08/11	107.79	127.84	20.05	BBL
CENCO-MW-712	80-130	02/09/11	105.00	123.31	18.31	BBL
CENCO-MW-713	80-130	02/09/11	110.49	128.15	17.66	BBL
CENCO-MW-714	80-130	02/14/11	110.25	128.87	18.62	BBL
CENCO-MW-715	80-130	02/14/11	102.55	116.22	13.67	BBL
CENCO-W-1	70-129	02/26/10	109.48	144.81	35.33	BBL
		07/30/10	110.79	144.81	34.02	BBL
		01/28/11	111.71	144.81	33.10	BBL
CENCO-W-3A		02/26/10	111.86	nm	n/a	BBL
		07/30/10	dry	nm	n/a	BBL
		01/28/11	dry	136.79	n/a	BBL
CENCO-W-4	580-600	02/26/10	111.11	142.56	31.45	BBL
		07/30/10	112.65	142.56	29.91	BBL
		01/28/11	114.24	142.56	28.32	BBL
CENCO-W-7	450-530; 600-690	02/26/10	100.69	nm	n/a	BBL
		07/30/10	101.06	nm	n/a	BBL
		01/28/11	96.11	141.97	45.86	BBL
CENCO-W-8		02/26/10	82.86	nm	n/a	BBL
		07/30/10	83.00	nm	n/a	BBL
		01/28/11	79.00	141.11	62.11	BBL
CENCO-W-9	75-110	02/26/10	90.64	139.84	49.20	BBL
		07/30/10	93.01	139.84	46.83	BBL
		01/28/11	94.47	139.84	45.37	BBL
CENCO-W-10	75-110	02/26/10	102.25	140.71	38.46	BBL
		07/30/10	103.17	140.71	37.54	BBL
		01/28/11	104.41	140.71	36.30	BBL
CENCO-W-11	75-110	02/26/10	106.78	142.10	35.32	BBL
		07/30/10	107.51	142.10	34.59	BBL
		02/02/11	108.66	142.10	33.44	BBL

Table 3-1b

Other Facility Groundwater Elevations for 2010 First and Third Quarters, and 2011 First Quarter

Well ID	Screen Interval (feet bgs)	Date	Depth to Water (feet bmp)	Measuring Point Elevation (feet amsl)	Water Level Elevation (feet amsl)	Consultant/ Source
CENCO-W-12	75-114	02/26/10	107.19	145.15	37.96	BBL
		07/30/10	108.22	145.15	36.93	BBL
		01/28/11	109.55	145.15	35.60	BBL
CENCO-W-14A	67-112	02/26/10	98.11	114.71	16.60	BBL
		07/30/10	99.12	114.71	15.59	BBL
		01/28/11	99.27	114.71	15.44	BBL
CENCO-W-15A	80-125	02/26/10	115.09	127.59	12.50	BBL
		07/30/10	115.86	127.59	11.73	BBL
		01/28/11	116.27	127.59	11.32	BBL
CENCO-W-16A	78-123	02/26/10	111.49	147.60	36.11	BBL
		07/30/10	112.92	147.60	34.68	BBL
		01/28/11	114.43	147.60	33.17	BBL
CENCO-W-17A	63-108	02/26/10	100.83	141.38	40.55	BBL
		07/30/10	101.90	141.38	39.48	BBL
		01/28/11	103.26	141.38	38.12	BBL
OFRP-MW19	53-78	03/01/11	76.77	158.24	81.47	CH2M HILL
OFRP-MW21	67-92	03/16/10	69.07	157.43	88.36	CH2M HILL
		02/28/11	70.69	157.43	86.74	CH2M HILL

Note:
Dry wells are flagged as dry in the Depth to Water (feet) column.

Abbreviations:
amsl = above mean sea level
bgs = below ground surface
bmp = below measuring point
n/a = not available
nm = no measurement

TABLE 3-2

Summary of 2010 First Quarter and Third Quarter, and 2011 First Quarter Vertical Gradients of OPOG and EPA Cluster Wells

	Screen Location		Water Level			Vertical Gradient			
Well ID	Top Screen (feet amsl)	Bottom Screen (feet amsl)	1st Quarter 2010 (feet amsl)	3rd Quarter 2010 (feet amsl)	1st Quarter 2011 (feet amsl)	Adjacent Screens	1st Quarter 2010	3rd Quarter 2010	1st Quarter 2011
MW1A	112.81	97.81	107.99	109.11	109.30	MW1A-MW1B	-0.0184	-0.0176	-0.0168
MW1B	83.10	72.70	108.45	109.56	109.73				
MW4A	104.32	94.02	107.09	107.84	108.17	MW4A-MW4B	-0.0067	-0.0044	-0.0044
MW4B	77.30	67.00	107.27	107.96	108.29	MW4B-MW4C	0.1349	0.1333	0.0790
MW4C	58.69	48.39	104.76	105.48	106.82				
MW8A	120.44	105.44	105.68	106.54	107.06	MW8A-MW8B	0.0420	0.0043	0.0019
MW8B	85.33	75.33	104.62	106.43	107.01	MW8B-MW8C	0.0547	0.0641	0.0344
MW8C	63.63	58.63	103.57	105.20	106.35	MW8C-MW8D	0.2304	0.2780	0.1471
MW8D	40.09	30.09	97.57	97.96	102.52				
MW9A	123.88	113.88	n/a	n/a	113.89	MW9A-MW9B	n/a	n/a	0.5729
MW9B	99.26	89.06	98.03	100.07	102.59				
MW13A	150.33	83.33	136.15	136.18	140.53	MW13A-MW13B	0.4435	0.4589	0.4288
MW13B	140.33	73.33	109.58	108.68	113.90				
MW16A	108.47	93.47	n/a	91.38	90.78	MW16A-MW16B	n/a	0.1001	0.0457
MW16B	47.47	37.47	84.08	86.38	88.51	MW16B-MW16C	0.0193	0.0681	0.0158
MW16C	4.47	-10.53	83.20	83.28	87.79				
MW17A	103.40	88.40	n/a	n/a	83.72	MW17A-MW17B	n/a	n/a	0.2966
MW17B	65.40	55.40	72.60	75.59	76.11	MW17B-MW17C	-0.0141	0.1885	0.0062
MW17C	-12.60	-22.60	73.70	60.89	75.63				
MW18A	88.32	73.32	102.68	102.88	104.20	MW18A-MW18B	-0.0060	-0.0048	-0.0044
MW18B	54.32	44.32	102.87	103.03	104.34	MW18B-MW18C	0.0217	0.0559	0.0120
MW18C	-1.68	-16.68	101.60	99.76	103.64				
MW20A	67.07	52.07	n/a	54.97	55.01	MW20A-MW20B	n/a	0.0148	0.0047
MW20B	20.07	10.07	52.26	54.40	54.83	MW20B-MW20C	0.1052	0.3138	0.0760
MW20C	-37.93	-47.93	46.16	36.20	50.42				
MW23A	114.07	94.07	104.82	106.05	106.65	MW23A-MW23B	0.0318	0.0358	0.0148
MW23B	67.36	52.36	103.56	104.61	106.05	MW23B-MW23C	0.0621	0.0762	0.0392
MW23C	4.36	-10.64	99.65	99.81	103.58	MW23C-MW23D	0.0625	0.0698	0.0593
MW23D	-25.64	-35.64	97.93	97.89	101.95				
MW24A	112.44	92.44	110.46	110.62	110.54	MW24A-MW24B	0.0894	0.1073	0.0166
MW24B	52.44	37.44	105.41	104.55	109.60	MW24B-MW24C	0.0095	0.0108	0.0117
MW24C	22.44	2.44	105.10	104.20	109.22	MW24C-MW24D	0.0063	0.0192	-0.0004
MW24D	-10.56	-15.56	104.94	103.71	109.23				
MW25A	103.25	83.25	90.90	92.64	94.24	MW25A-MW25B	0.0028	0.0131	-0.0084
MW25B	58.25	38.25	90.79	92.12	94.58	MW25B-MW25C	0.0384	0.0887	0.0111
MW25C	8.25	-1.75	89.06	88.13	94.08	MW25C-MW25D	0.0584	0.4503	0.0588

TABLE 3-2

Summary of 2010 First Quarter and Third Quarter, and 2011 First Quarter Vertical Gradients of OPOG and EPA Cluster Wells

	Screen Location		Water Level			Vertical Gradient			
Well ID	Top Screen (feet amsl)	Bottom Screen (feet amsl)	1st Quarter 2010 (feet amsl)	3rd Quarter 2010 (feet amsl)	1st Quarter 2011 (feet amsl)	Adjacent Screens	1st Quarter 2010	3rd Quarter 2010	1st Quarter 2011
MW25D	-45.75	-60.75	85.76	62.69	90.76				
MW26A	85.98	65.98	67.00	69.29	69.32	MW26A-MW26B	0.0109	0.0108	0.0079
MW26B	50.98	35.98	66.75	69.03	69.13	MW26B-MW26C	0.0647	0.2928	0.0313
MW26C	10.98	-4.02	64.16	57.32	67.88	MW26C-MW26D	-0.0541	0.0612	-0.0696
MW26D	-29.02	-49.02	66.46	54.72	70.84				
MW27A	49.47	29.47	44.07	44.27	43.95	MW27A-MW27B	-0.0010	-0.0019	-0.0023
MW27B	-4.53	-24.53	44.12	44.37	44.07	MW27B-MW27C	0.2726	0.4323	0.1129
MW27C	-40.53	-50.53	35.67	30.97	40.57	MW27C-MW27D	0.0425	0.1850	0.0030
MW27D	-60.53	-70.53	34.82	27.27	40.51				
OW1A	146.99	132.49	133.52	132.59	n/a	OW1A-OW1B	0.3632	0.3301	n/a
OW1B	97.37	87.37	118.76	119.33	121.86				
OW3A	136.08	116.08	119.21	118.36	119.09	OW3A-OW3B	0.2888	0.2785	0.1801
OW3B	85.77	75.77	108.56	108.21	112.46				
OW4A	135.13	115.13	116.25	115.34	114.97	OW4A-OW4B	0.1752	0.1573	0.0633
OW4B	72.95	62.65	107.86	107.88	111.98				

Note:

Monitoring well OW8A is dry, and therefore the OW8 well screen pair is not included.

Abbreviations:

amsl = above mean sea level

n/a = not available

TABLE 3-3a
Summary of Detections - First Quarter 2010
Omega Chemical Superfund Site

Analyte	Number of Locations with Detects (µg/L)	Range of Reporting Limits of NonDetects (µg/L)	Range of Detected Concentrations	Location of Maximum Detect	Screening Level (µg/L)	Number of Locations >Screening Level	Screening Level Source
1,1,1-Trichloroethane	4	0.50 to 5.00	0.13 J to 6.5 J	OW9	200	0	CA/USEPA Primary MCL
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	41	0.50 to 5.00	0.2 J to 1,500	OW9	1,200	1	CA/USEPA Primary MCL
1,1,2-Trichloroethane	4	0.50 to 5.00	0.68 to 26	OW9	5	1	CA/USEPA Primary MCL
1,1-Dichloroethane	28	0.50 to 5.00	0.12 J to 57	OW9	5	7	CA Primary MCL
1,1-Dichloroethene	40	0.50 to 1.00	0.82 to 2,200	OW9	6	34	CA Primary MCL
1,2-Dichlorobenzene	1	0.50 to 5.00	4 J	OW9	600	0	CA/USEPA Primary MCL
1,2-Dichloroethane	9	0.50 to 5.00	0.34 J to 350	OW9	0.5	7	CA Primary MCL
1,2-Dichloropropane	2	0.50 to 5.00	0.7 to 3.2	MW20A	5	0	CA/USEPA Primary MCL
1,4-Dioxane (p-dioxane)	45	0.47 to 2.00	0.15 J to 910	OW9	1	34	CA Department of Health Services State notification
Benzene	1	0.50 to 5.00	4.8 J	OW9	1	1	CA Primary MCL
Bromodichloromethane	3	0.50 to 5.00	0.13 J to 1.4	OW7	80	0	CA/USEPA Primary MCL
Bromoform	1	0.50 to 5.00	2.8	MW25A	80	0	CA/USEPA Primary MCL
Carbon disulfide	1	0.50 to 5.00	0.24 J	MW13B	160	0	CA Department of Health Services State notification
Carbon tetrachloride	14	0.50 to 5.00	0.11 J to 0.35 J	MW23D	0.5	0	CA Primary MCL
Chloroform	39	0.50 to 5.00	0.29 J to 2,000	OW9	80	4	CA/USEPA Primary MCL
cis-1,2-Dichloroethene	38	0.50 to 5.00	0.12 J to 51	MW17B	6	17	CA Primary MCL
Dibromochloromethane	2	0.50 to 5.00	0.12 J to 1.2	OW7	80	0	CA/USEPA Primary MCL
Dichlorodifluoromethane (Freon 12)	14	0.50 to 50.0	0.13 J to 1.6 J	MW23C	1,000	0	CA Department of Health Services State notification
Methyl cyclohexane	1	0.50 to 5.00	2.6	MW27A	NE	0	
Methyl tert-butyl ether	23	0.50 to 5.00	0.14 J to 4.3	OW4A	13	0	CA Primary MCL
Methylene chloride	3	0.50 to 50.0	0.11 J to 2.4 J	MW23C	5	0	CA/USEPA Primary MCL
Tetrachloroethene	54	0.50 to 2.00	0.32 J to 18,000	OW9	5	38	CA/USEPA Primary MCL
trans-1,2-Dichloroethene	23	0.50 to 5.00	0.11 J to 33	OW9	10	1	CA Primary MCL
Trichloroethene	55	0.50 to 1.00	0.063 J to 1,300	OW9	5	38	CA/USEPA Primary MCL
Trichlorofluoromethane (Freon 11)	36	0.50 to 5.00	0.31 J to 560	OW9	150	3	CA Primary MCL
Vinyl chloride	4	0.50 to 5.00	0.19 J to 1.1	MW27A	0.5	1	CA Primary MCL

Notes:

J = Estimated value
µg/L = micrograms per Liter
NE = Not Established
NA = Not Applicable

TABLE 3-3b
Summary of Detections - Third Quarter 2010
Omega Chemical Superfund Site

Analyte	Number of Locations with Detects (µg/L)	Range of Reporting Limits of NonDetects (µg/L)	Range of Detected Concentrations	Location of Maximum Detect	Screening Level (µg/L)	Number of Locations >Screening Level	Screening Level Source
1,1,1-Trichloroethane	8	0.50 to 6.30	0.031 J to 2.2 J	MW20A	200	0	CA/USEPA Primary MCL
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	41	0.50 to 5.00	0.61 to 900	OW9	1,200	0	CA/USEPA Primary MCL
1,1,2-Trichloroethane	2	0.50 to 6.30	0.98 to 1.2	MW1B	5	0	CA/USEPA Primary MCL
1,1-Dichloroethane	27	0.50 to 6.30	0.055 J to 30 J	MW20A, OW9	5	8	CA Primary MCL
1,1-Dichloroethene	43	0.50 to 4.20	0.6 to 1,500	OW9	6	39	CA Primary MCL
1,2-Dichloroethane	15	0.50 to 6.30	0.2 J to 190	OW9	0.5	14	CA Primary MCL
1,2-Dichloropropane	1	0.50 to 6.30	3.7	MW20B	5	0	CA/USEPA Primary MCL
1,4-Dioxane (p-dioxane)	30	0.47 to 2.00	0 to 930	OW9	1	26	CA Department of Health Services State notification
Benzene	1	0.50 to 6.30	0.38 J	MW1A	1	0	CA Primary MCL
Bromodichloromethane	1	0.50 to 6.30	0.07 J	MW23C	80	0	CA/USEPA Primary MCL
Carbon disulfide	5	0.50 to 6.30	0.059 J to 0.94 J	MW6	160	0	CA Department of Health Services State notification
Carbon tetrachloride	2	0.50 to 6.30	0.21 J to 0.51	MW23D	0.5	1	CA Primary MCL
Chloroform	35	0.50 to 5.00	0.25 J to 1,100	OW9	80	3	CA/USEPA Primary MCL
cis-1,2-Dichloroethene	36	0.50 to 5.00	0.12 J to 69 J	MW20A	6	16	CA Primary MCL
Dichlorodifluoromethane (Freon 12)	9	0.50 to 6.30	0.71 to 3.5	MW1A	1,000	0	CA Department of Health Services State notification
Isopropylbenzene	3	0.50 to 6.30	0.36 J to 1.6 J	MW17B	770	0	CA Department of Health Services State notification
m,p-Xylenes	1	0.50 to 6.30	2 J	MW17B	1,750	0	CA Primary MCL
Methyl tert-butyl ether	26	0.50 to 6.30	0.06 J to 2.8	MW30	13	0	CA Primary MCL
Methylene chloride	4	0.50 to 6.30	0.21 J to 0.33 J	MW1A	5	0	CA/USEPA Primary MCL
Tetrachloroethene	59	0.50 to 18.0	0.33 J to 20,000	OW9	5	43	CA/USEPA Primary MCL
trans-1,2-Dichloroethene	18	0.50 to 6.30	0.052 J to 15 J	OW9	10	1	CA Primary MCL
Trichloroethene	60	0.50 to 1.00	0.16 J to 830	OW9	5	40	CA/USEPA Primary MCL
Trichlorofluoromethane (Freon 11)	40	0.50 to 5.00	0.086 J to 350	OW9	150	3	CA Primary MCL

Notes:

J = Estimated value
µg/L = micrograms per Liter
NE = Not Established
NA = Not Applicable

TABLE 3-3c
Summary of Detections - First Quarter 2011
Omega Chemical Superfund Site

Analyte	Number of Locations with Detects (µg/L)	Range of Reporting Limits of NonDetects (µg/L)	Range of Detected Concentrations	Location of Maximum Detect	Screening Level (µg/L)	Number of Locations >Screening Level	Screening Level Source
1,1,1-Trichloroethane	2	0.50 to 50.0	0.27 J to 1.2	MW20A	200	0	CA/USEPA Primary MCL
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	43	0.50 to 5.00	0.27 J to 1,600	OW9	1,200	1	CA/USEPA Primary MCL
1,1,2-Trichloroethane	1	0.50 to 4.00	21 J	OW9	5	1	CA/USEPA Primary MCL
1,1-Dichloroethane	22	0.50 to 4.00	0.17 J to 52	OW9	5	6	CA Primary MCL
1,1-Dichloroethene	43	0.50 to 40.0	0.21 J to 2,800	OW9	6	36	CA Primary MCL
1,2-Dichloroethane	27	0.50 to 4.00	0.29 J to 320	OW9	0.5	22	CA Primary MCL
1,2-Dichloropropane	2	0.50 to 50.0	1.3 to 1.6	MW20A	5	0	CA/USEPA Primary MCL
1,4-Dioxane (p-dioxane)	30	0.47 to 0.50	0.51 to 1,600	OW9	1	25	CA Department of Health Services State notification
2-Hexanone	1	10.0 to 5.00	15 J	MW8C	NE	0	
Benzene	2	0.50 to 4.00	0.3 J to 1.7	MW30	1	1	CA Primary MCL
Carbon tetrachloride	5	0.50 to 4.00	0.2 J to 0.44 J	MW23D	0.5	0	CA Primary MCL
Chloroform	33	0.50 to 4.00	0.46 J to 2,300	OW9	80	2	CA/USEPA Primary MCL
cis-1,2-Dichloroethene	36	0.50 to 50.0	0.25 J to 69	MW1A	6	13	CA Primary MCL
Dibromochloromethane	1	0.50 to 50.0	0.68 J	OW7	80	0	CA/USEPA Primary MCL
Dichlorodifluoromethane (Freon 12)	3	0.50 to 5.00	0.17 J to 0.37 J	MW27A	1,000	0	CA Department of Health Services State notification
Isopropylbenzene	1	0.50 to 50.0	3.5	MW30	770	0	CA Department of Health Services State notification
Methyl tert-butyl ether	15	0.50 to 50.0	0.18 J to 130	MW30	13	1	CA Primary MCL
Methylene chloride	4	0.50 to 5.00	0.5 J to 1.9 J	MW31	5	0	CA/USEPA Primary MCL
Tetrachloroethene	61	0.50 to 1.00	0.34 J to 23,000	OW9	5	44	CA/USEPA Primary MCL
Toluene	1	0.50 to 50.0	0.18 J	MW24B	150	0	CA Primary MCL
trans-1,2-Dichloroethene	9	0.50 to 4.00	0.25 J to 24 J	OW9	10	1	CA Primary MCL
trans-1,3-Dichloropropene	1	0.50 to 4.00	0.29 J	MW4A	0.5	0	CA Primary MCL for 1,3-dichloropropene
Trichloroethene	60	0.50 to 1.00	0.29 J to 1,500	OW9	5	41	CA/USEPA Primary MCL
Trichlorofluoromethane (Freon 11)	37	0.50 to 4.00	0.33 J to 760	OW9	150	1	CA Primary MCL

Notes:

J = Estimated value
µg/L = micrograms per Liter
NE = Not Established
NA = Not Applicable

TABLE 3-4
Statistics of Freon 113/Freon 11 Ratios
Omega Chemical Superfund Site

Well ID	Sample Size	Statistics of Freon 113/Freon 11 Ratios								
		Minimum	Maximum	Median	Mean	Standard Deviation	95% LCL	95% UCL	COV	Trend
MW7	5	12.0	28.8	17.9	19.7	7.0	11.0	28.4	0.35	NS
OW4B	6	5.0	15.5	7.8	9.5	4.6	4.7	14.3	0.48	NS
MW27A	8	2.2	30.3	4.6	7.7	9.5	-0.2	15.6	1.23	NS
MW23B	6	2.1	25.5	3.6	7.1	9.1	-2.4	16.7	1.27	NS
MW1A	19	2.1	9.0	3.5	4.3	2.1	3.3	5.3	0.49	DEC
MW1B	17	2.3	7.3	4.0	4.1	1.3	3.4	4.8	0.33	DEC
OW2	24	1.2	6.5	3.5	3.7	1.4	3.1	4.3	0.37	NS
OW8A	23	2.1	7.1	3.0	3.4	1.3	2.9	4.0	0.39	DEC
MW25C	5	2.3	4.3	3.4	3.3	0.8	2.4	4.2	0.23	NS
OW1A	17	1.4	9.5	2.4	3.3	2.3	2.1	4.5	0.71	NS
OW5	22	1.1	5.8	3.2	3.3	1.0	2.8	3.7	0.30	DEC
MW23A	8	1.2	5.5	2.7	3.1	1.3	2.0	4.2	0.43	NS
MW16A	3	2.0	3.6	3.6	3.1	0.9	0.8	5.4	0.30	INSUF
MW24D	2	2.8	3.3	3.0	3.0	0.3	0.0	6.0	0.11	INSUF
MW12	1	3.0	3.0	3.0	3.0	n/a	3.0	3.0	1.00	INSUF
OW1B	19	1.8	4.3	2.8	2.9	0.8	2.6	3.3	0.26	DEC
MW25A	8	1.6	5.1	2.6	2.9	1.0	2.0	3.7	0.35	NS
MW4C	23	1.7	4.3	2.8	2.9	0.6	2.6	3.1	0.21	NS
MW6	6	1.7	6.3	2.1	2.8	1.8	1.0	4.7	0.62	NS
MW11	4	0.3	5.0	3.0	2.8	2.5	-1.2	6.8	0.89	INSUF
MW23C	11	1.3	3.6	2.7	2.8	0.6	2.4	3.2	0.22	NS
OW9	8	1.9	4.0	2.7	2.8	0.7	2.2	3.3	0.24	DEC
MW10	21	1.1	14.0	2.1	2.8	2.7	1.5	4.0	0.97	NS
MW25B	8	1.6	4.0	2.5	2.8	0.8	2.1	3.4	0.29	NS
MW8B	4	1.8	3.5	2.8	2.7	0.8	1.5	4.0	0.29	INSUF
MW8C	5	0.6	5.4	2.3	2.7	1.8	0.5	4.9	0.66	NS
MW5	23	1.3	4.2	2.6	2.6	0.5	2.4	2.9	0.20	NS
MW23D	5	1.8	3.5	2.8	2.6	0.6	1.8	3.4	0.24	NS
MW2	22	1.8	3.4	2.6	2.6	0.4	2.4	2.8	0.16	DEC
MW16B	11	2.0	4.2	2.5	2.6	0.6	2.2	3.0	0.23	NS
MW24A	8	1.7	3.7	2.1	2.5	0.8	1.9	3.2	0.31	NS
MW4B	23	0.2	4.1	2.5	2.5	0.8	2.1	2.8	0.35	NS
MW14	10	1.0	3.3	2.5	2.4	0.7	1.8	2.9	0.31	NS
MW24B	3	1.5	3.0	2.6	2.3	0.8	0.4	4.3	0.33	INSUF
MW15	11	1.6	2.8	2.3	2.3	0.3	2.1	2.5	0.15	NS
MW17B	11	1.6	2.9	2.2	2.2	0.4	2.0	2.5	0.18	NS
MW4A	23	0.2	4.7	2.4	2.2	1.0	1.8	2.6	0.45	NS
MW8A	2	1.4	3.0	2.2	2.2	1.1	-8.1	12.5	0.52	INSUF
MW20B	10	1.7	2.8	2.1	2.2	0.4	1.9	2.5	0.19	NS
OW4A	28	1.5	2.7	2.2	2.2	0.4	2.0	2.3	0.16	NS
MW24C	7	1.6	2.8	2.1	2.2	0.5	1.7	2.6	0.23	NS
MW8D	11	1.5	3.6	2.0	2.1	0.5	1.8	2.5	0.25	NS
MW26C	8	1.0	3.2	2.1	2.1	0.7	1.5	2.7	0.33	NS
MW17A	4	1.0	3.3	1.9	2.0	1.0	0.4	3.6	0.49	INSUF
OW6	24	1.3	3.0	1.8	2.0	0.5	1.8	2.2	0.26	NS
MW26A	7	1.6	2.8	1.8	2.0	0.5	1.5	2.5	0.26	NS
MW20A	10	1.2	2.6	2.0	2.0	0.4	1.7	2.3	0.22	DEC
MW26B	8	1.2	2.4	2.0	1.9	0.4	1.6	2.3	0.22	NS
OW10	7	1.5	2.3	1.6	1.7	0.3	1.4	2.0	0.17	NS
OW3A	29	1.1	2.1	1.6	1.6	0.2	1.5	1.7	0.14	NS
MW13A	1	1.4	1.4	1.4	1.4	n/a	1.4	1.4	1.00	INSUF
MW9B	1	1.3	1.3	1.3	1.3	n/a	1.3	1.3	1.00	INSUF
MW9A	1	1.1	1.1	1.1	1.1	n/a	1.1	1.1	1.00	INSUF
OW7	23	0.5	1.7	1.1	1.1	0.3	1.0	1.2	0.27	DEC

Note:
The table is sorted by the mean ratio.

Abbreviations:
95% LCL = Lower 95% confidence limit
95% UCL = Upper 95% confidence limit
COV = Coefficient of variation
n/a = not available
DEC = Decreasing trend
INC = Increasing trend
NS = No significant trend
NA = Data is insufficient to test for trend

TABLE 3-5
Summary Matrix of Trend Analysis
Omega Chemical Superfund Site

Well ID	TCE	DCE11	DIOXANE14	PCE	TCLME	FC113	FC11	DCE12C	TBUTMEE	DCA11	DCA12	MTLNCL	TCA111	FC12	DCE12T	CTCL	TCA112	DEC	INC	NS	NA	Total
MW15	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	NA	NA	DEC	DEC	NA	NA	13	0	0	4	17
MW2	DEC	DEC	DEC	DEC	DEC	DEC	DEC	NS	DEC	DEC	NA	NA	NA	NS	NA	NA	NA	9	0	2	6	17
MW4A	DEC	DEC	DEC	DEC	NS	DEC	DEC	DEC	DEC	DEC	NS	NA	NA	NA	NA	NA	NA	9	0	2	6	17
OW5	NS	DEC	DEC	DEC	DEC	DEC	DEC	NS	NA	DEC	DEC	NA	NA	NA	NA	NA	NA	8	0	2	7	17
MW10	DEC	DEC	NA	DEC	DEC	DEC	DEC	DEC	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	0	0	10	17
MW5	DEC	DEC	DEC	DEC	DEC	NS	NS	DEC	DEC	NS	NS	NA	NA	NA	NS	NA	NA	7	0	5	5	17
MW4B	NS	DEC	DEC	NS	DEC	NS	DEC	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	4	0	7	6	17
OW10	DEC	DEC	NA	DEC	NA	NS	DEC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	0	1	12	17
OW4A	DEC	DEC	NA	DEC	DEC	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	0	2	11	17
MW23A	DEC	NS	DEC	NS	NS	NS	NS	DEC	NA	NA	NA	NA	NA	NA	NS	NA	NA	3	0	6	8	17
MW23C	DEC	NS	NS	NS	NS	NS	NS	DEC	NS	NS	DEC	NA	NA	NS	NS	NA	NA	3	0	10	4	17
OW1A	NS	DEC	DEC	NS	NS	NA	NA	NA	NA	NA	NA	NA	DEC	NA	NA	NA	NA	3	0	3	11	17
OW1B	DEC	NS	DEC	DEC	NA	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	0	3	11	17
OW8A	NS	NS	NS	NS	DEC	NS	NS	NA	NA	NS	DEC	DEC	NA	NA	NA	NA	NS	3	0	8	6	17
OW7	NS	NA	NA	NS	NA	DEC	DEC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	0	2	13	17
MW13B	NS	NA	NA	NS	NA	NA	NA	NA	DEC	NA	NS	NA	NA	NA	NA	NA	NA	1	0	3	13	17
MW18B	DEC	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0	1	15	17
MW25C	NS	NA	NA	NS	NA	DEC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0	2	14	17
MW26B	NS	NS	NA	NS	NS	NS	NS	DEC	NA	NS	NA	NA	NA	NA	NA	NA	NA	1	0	7	9	17
MW6	NS	NS	DEC	NS	NS	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0	6	10	17
OW6	NS	NS	NA	NS	NS	DEC	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0	5	11	17
MW16B	INC	INC	NA	INC	INC	INC	INC	INC	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	7	0	10	17
MW1B	NS	INC	INC	INC	INC	INC	INC	INC	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	7	1	9	17
MW1A	NS	INC	INC	INC	INC	NS	NS	INC	NA	NS	INC	NA	NA	NA	NS	NA	NA	0	6	5	6	17
MW8B	INC	INC	NA	INC	INC	NS	NA	INC	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	5	1	11	17
MW8C	INC	INC	NA	INC	INC	NS	NA	INC	NA	NA	NA	NA	NA	NS	NA	NA	NA	0	5	2	10	17
MW8D	NS	INC	NA	INC	INC	INC	INC	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	5	2	10	17
MW20A	NS	INC	NS	NS	NS	NS	NS	INC	NA	INC	NA	NA	NA	NA	NA	NA	NA	0	3	6	8	17
MW23B	NS	INC	NA	NS	INC	INC	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	3	3	11	17
MW25B	NS	INC	NA	INC	INC	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	3	4	10	17
MW27C	INC	NA	NA	INC	NA	NA	NA	INC	NA	NS	NA	NA	NA	NA	NA	NA	NA	0	3	1	13	17
MW17C	NS	NA	NA	INC	INC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	2	1	14	17
MW20B	NS	NS	NS	NS	NS	NS	NS	INC	NA	INC	NA	NA	NA	NA	NA	NA	NA	0	2	7	8	17
MW20C	INC	INC	NA	NA	NA	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	2	1	14	17
MW23D	INC	NA	NA	INC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	2	0	15	17
MW17B	NS	NS	NS	NS	INC	NS	NS	NS	NA	NS	NA	NA	NS	NA	NA	NS	NA	0	1	10	6	17
MW21	INC	NA	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	3	13	17
MW24C	NA	NA	NA	INC	NA	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	2	14	17
MW3	NA	NA	NA	INC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	0	16	17
MW7	NS	NA	NA	NS	INC	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	3	13	17
MW8A	NS	NS	NA	NS	INC	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	4	12	17
MW9B	INC	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	2	14	17
OW4B	NA	NA	NA	INC	NA	NA	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	0	1	1	15	17
MW11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW12	NS	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	3	14	17
MW13A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW14	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	7	10	17
MW16A	NS	NS	NA	NS	NS	NA	NA	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	0	0	6	11	17
MW16C	NS	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	2	15	17
MW17A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW18A	NS	NA	NA	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	3	14	17
MW18C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW22	NS	NA	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	3	14	17
MW24A	NS	NS	NA	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	6	11	17
MW24B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW24D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW25A	NS	NS	NA	NS	NS	NS	NS	NS	NA	NS	NA	NA	NA	NA	NS	NA	NA	0	0	9	8	17
MW25D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW26A	NS	NS	NA	NS	NA	NS	NS	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	0	0	7	10	17
MW26C	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	8	9	17
MW26D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW27A	NS	NS	NA	NS	NA	NS	NS	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	0	0	7	10	17
MW27B	NS	NS	NS	NA	NA	NA	NA	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	0	0	5	12	17
MW27D	NS	NA	NA	NS	NA	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	3	14	17
MW28	NS	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	2	15	17
MW29	NS	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	2	15	17
MW30	NA	NA	NA	NA	NA	NA	NA	NS	NS	NA	NS	NA	NA	NA	NA	NA	NA	0	0	3	14	17
MW31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
MW4C	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	8	9	17
MW9A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
OW2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	17	17
OW3A	NS	NS	NS	NS	NS	NS	NS	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	0	0	8	9	17
OW3B	NA	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	1	16	17
OW8B	NA	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	1	16	17

TABLE 3-5
Summary Matrix of Trend Analysis
Omega Chemical Superfund Site

Well ID	TCE	DCE11	DIOXANE14	PCE	TCLME	FC113	FC11	DCE12C	TBUTMEE	DCA11	DCA12	MTLNCL	TCA111	FC12	DCE12T	CTCL	TCA112	DEC	INC	NS	NA	Total
OW9	NS	NS	NS	NS	NS	NS	NS	NA	NA	NS	NS	NA	NA	NA	NA	NA	NA	0	0	9	8	17
Summary																						
DEC	11	10	10	9	8	8	8	7	5	4	4	1	1	1	1	0	0	88	63	239	902	1292
INC	8	10	2	13	12	4	3	8	0	2	1	0	0	0	0	0	0	63				
NS	39	23	14	38	18	29	23	19	4	15	6	0	1	3	5	1	1	239				
NA	18	33	50	16	38	35	42	42	67	55	65	75	74	72	70	75	75	902				
Total	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	1292				

Symbol	Coding
DEC	Decreasing trend
INC	Increasing trend
NS	No significant trend
NA	Data insufficient to test for trend
	Analyte not quantified in well

This data is updated through 1st quarter 2011

Note:
The table is sorted by significant trends.

Abbreviations:
TCE = Trichloroethene; DCE11 = 1,1-DCE; DIOXANE14 = 1,4-Dioxane; PCE = Tetrachloroethene; TCLME = Trichloromethylene (Chloroform); FC113 = Freon 113; FC11 = Freon 11; DCE12C = cis-1,2-DCE; TBUTMEE = Methyl tertiary butyl ether; DCA11 = 1,1-DCA; DCA12 = 1,2-DCA; MTLNCL = Methylene chloride; TCA111 = 1,1,1-Trichloroethane; FC12 = Freon 12; DCE12T = trans-1,2-Dichloroethene; CTCL = Carbon tetrachloride; TCA112 = 1,1,2-Trichloroethane