# Groundwater Monitoring Results
# Second Semi-Annual 2008 Monitoring Period
## Cargill Salt – Alameda Facility
## Alameda, California

CRAWFORD
CONSULTING
INC.

Cargill

March 2, 2009

Alameda County Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577
Attn: Jerry Wickham

**RE: Groundwater Monitoring Results, Second Semi-Annual 2008 Monitoring Period, Cargill Salt – Alameda Facility, Alameda, California, SLIC Case No. RO0002480**

Dear Mr. Wickham,

The attached report presents the groundwater monitoring results for the Second Semi-Annual 2008 Monitoring Period for the Cargill Salt Alameda facility. This report presents the results of groundwater monitoring data collected during the third and fourth quarters of 2008. For each quarterly period, groundwater levels in the site monitoring wells were measured, groundwater samples were collected and analyzed, and the groundwater flow direction and gradient were determined.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report are true and correct to the best of my knowledge.

Should you have any questions concerning the report, please don't hesitate to call me at (510) 790-8182.

Sincerely,

Sean Riley
Environmental Manager

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# Groundwater Monitoring Results
# Second Semi-Annual 2008 Monitoring Period
## Cargill Salt – Alameda Facility
## Alameda, California

**Prepared for:**

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**Project No. CS1605**
**March 2, 2009**

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**(presented in electronic format only)**



# Electronic File

Entire report presented in electronic file format (pdf) on CD-ROM inside back cover.

# 1 Introduction

Crawford Consulting, Inc. (Crawford) has prepared this report on behalf of Cargill Salt for the Cargill Salt Dispensing Systems Division facility (hereafter, the Site) in Alameda, California.

Results of groundwater transect sampling and the initial sampling of three groundwater monitoring wells installed in November 1999 were presented in the January 31, 2000 report, *Groundwater Characterization and Monitoring Well Installation, Cargill Salt – Alameda Facility, Alameda, California* (Crawford Consulting, Inc. and Conor Pacific/EFW). The purpose of the groundwater transect sampling and the monitoring well installation and sampling was to help characterize and monitor the occurrence of volatile organic compounds (VOCs), primarily tetrachloroethene (PCE) and its breakdown product, trichloroethene (TCE), previously detected in groundwater at the Site.

One of the recommendations in the report was to confirm the groundwater analytical results of the newly installed monitoring wells (wells MW-1, MW-2, and MW-3) and the groundwater flow direction and gradient via quarterly monitoring. Cargill Salt began groundwater monitoring on a quarterly basis after the initial groundwater monitoring well sampling event in November 1999. For 2000 through 2005, reporting was performed on an annual basis. Reporting is now being performed on a semi-annual basis.

Cargill Salt conducted additional characterization activities in November and December 2001 to evaluate the off-site extent of VOCs in the soil and groundwater. Soil and groundwater samples were collected and analyzed from a neighboring residential property and along Clement Avenue, slug tests were performed in the three existing monitoring wells, and a groundwater monitoring well (MW-4) was installed in Clement Avenue.

## 1.1 Reporting Period Activities

This report presents the results of groundwater monitoring data collected during the third and fourth quarters of 2008. For each quarterly period, groundwater levels in the Site monitoring wells were measured, groundwater samples were collected and analyzed, and the groundwater flow direction and gradient were determined. The quarterly monitoring schedule for the second semi-annual 2008 monitoring period is shown below.

| Quarter of 2008 | Field Dates |
|---|---|
| Third | September 3, 2008 |
| Fourth | December 4, 2008 |

Supervision of the quarterly monitoring events was conducted for Cargill Salt by Crawford. Groundwater level measurements and collection of groundwater samples were conducted by Field Solutions, Inc. The groundwater samples for the third through fourth quarters of 2008 were analyzed by TestAmerica Laboratories, Inc., a state-certified laboratory in Pleasanton, California.

## 1.2 Background Information

A description of the Site and a summary of the development of characterization and monitoring programs for the Site are presented in this section.

### 1.2.1 Site Description

Alameda is an island on the east side of San Francisco Bay, separated from Oakland by a tidal canal (Figure 1). The Cargill Salt Dispensing Systems Division facility is located on a rectangular lot in an industrial and residential neighborhood. The facility building occupies approximately one-third of the Site and is separated from the vacant, unpaved side of the lot by an asphalt driveway (Figure 2). The Site is bordered by a sheet-metal shop and a residential lot to the northwest, an apartment complex to the southwest, and a residential lot to the southeast.

From 1951 to 1978, the Alameda facility produced salt-dispensing units, which required casting and milling aluminum parts.

Constituents of concern associated with site operations have included casting sands with elevated concentrations of metals, and solvents, machine oils, and grease used in casting and milling operations. As discussed below, previous investigations and remedial activities have investigated and remediated metals and solvents (VOCs) in vadose-zone soil.

### 1.2.2 Summary of Investigative and Remedial Activities

Cargill Salt initiated site investigative activities in 1993 to determine if facility operations had impacted site soils. Cargill Salt submitted the results of the soil sampling investigation to the Alameda County Environmental Health Services (ACEHS) in October 1993 along with a workplan for excavation and disposal of impacted soils and assessment of potential impact to groundwater (Groundworks Environmental, Inc. [Groundworks], 1993).

After approval of the workplan by ACEHS, Cargill Salt conducted several phases of soil remediation and groundwater characterization. Surficial soils impacted by metals were excavated for disposal off site. Vadose-zone soils with the highest degree of impact by VOCs were also excavated for off-site disposal (see "Soil excavation area" on Figure 2).

The results of these activities were submitted to the ACEHS in a report, *Soil and Groundwater Investigations and Remedial Activities, July 1993 – September 1994, Cargill Salt – Alameda Facility, Alameda, California* (Groundworks, 1995). Recommendations for additional work to further delineate the lateral and vertical extent of VOCs in groundwater beneath the Site were presented in the report.

A workplan for the additional delineation of VOCs in groundwater, *Workplan for Groundwater Characterization and Monitoring Well Installation, 2016 Clement Avenue, Alameda, California* (CCI), was submitted to the ACEHS in July 1999.

After approval of the workplan by the ACEHS, Cargill Salt conducted groundwater sampling and well installation activities during August and November of 1999. The results of these activities were submitted to the ACEHS in a report, *Groundwater Characterization and Monitoring Well Installation, Cargill Salt – Alameda Facility, Alameda, California* (Crawford Consulting, Inc. and

Conor Pacific/EFW, dated January 31, 2000). After the initial groundwater monitoring well sampling event in November 1999, Cargill Salt began groundwater monitoring on a quarterly basis.

A work plan for remedial investigation activities, *Workplan for Off-Site Characterization, Cargill Salt – Alameda Facility, Alameda, California* (Conor Pacific/EFW), was submitted to the ACEHS in June 2001. After approval of the workplan by the ACEHS, Cargill Salt conducted characterization activities in November and December 2001 to evaluate off-site extent of VOCs in the soil and groundwater. Soil and groundwater samples were collected and analyzed from a neighboring residential property and along Clement Avenue, slug tests were performed in the three existing monitoring wells, and a groundwater monitoring well (MW-4) was installed in Clement Avenue. The results of these activities were submitted to the ACEHS in the August 21, 2002 submittal *Off-Site Groundwater Characterization*, *Cargill Salt – Alameda Facility, Alameda, California*, prepared by Conor Pacific/EFW.

A phytoremediation project was implemented at the Site in June 2005. The project involved planting 96 bare-root hybrid poplar trees in a grid of 24 rows. The rows are generally 6 feet apart with trees on 7-foot centers on each row. Selection of the phytoremediation approach and implementation of the project were described in the October 20, 2006 report, *Groundwater Monitoring Results, First through Fourth Quarter 2005, Cargill Salt – Alameda Facility, Alameda, California* prepared by Crawford Consulting, Inc.

### 1.2.3 Source of VOC Impact

As discussed in the 1995 report, the occurrence of VOCs in soils and groundwater at the Site appears to be the result of a discharge or spill to surficial soils at a location near the rear property line at the southwestern corner of the property. The area with the highest degree of chemical impact was delineated prior to excavation and was then excavated using a backhoe and transported off-site for appropriate disposal. It is possible that the VOCs detected in soils and groundwater at this location were associated with waste products from facility operations. The VOCs may be associated with solvents previously used for degreasing operations at the facility, although there are no records indicating use of PCE. Site records indicate that the solvents used for degreasing operations were not PCE-based solvents.

It is also possible that the VOCs and oil and grease are associated with waste products discarded from neighboring properties. There is an apartment complex next to the rear property line of the facility, and the laundry room for this complex is in the utility shed immediately adjacent to the rear property line. This laundry room is only 4 feet away from the area of highest impact to soil. If PCE associated with laundry cleaning products were spilled in this laundry room, it is possible that it could have drained onto the Cargill Salt property.

# 2 Groundwater Flow Analysis

Groundwater levels were measured quarterly and groundwater contour maps were prepared for the third and fourth quarter 2008 monitoring events.

## 2.1 Water-Level Measurement

Water levels in groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-4) were measured each quarter, before any of the groundwater monitoring wells were purged for sampling for the quarterly monitoring event. The groundwater monitoring well locations are shown on Figure 2. The water levels were measured with an electric sounder. The depth to water at each well was recorded on a *Water Level Field Data* sheet (see Appendix A).

The water-level data through the fourth quarter of 2008 are shown on Table 1. The data in Table 1 include the date and time of measurement, the well casing elevation, the measured depth to groundwater, the groundwater elevation, and the change in elevation from the previous measurement. A plot of historical groundwater elevations is shown in Figure 3.

The Site groundwater monitoring wells were re-surveyed in September 2006 by CSS Environmental Services in order to provide Geotracker-compliant survey data. Results of the casing elevation survey indicate that each well is approximately 6.4 feet higher than the previous survey conducted in 1999. This difference is due to the use of different datum for the 2006 and 1999 surveys. The casing elevations from the September 2006 survey are shown on Table 1.

Groundwater levels in the on-site monitoring wells (MW-1, MW-2, and MW-3) showed a similar seasonal pattern in the second semi-annual period of 2008 as in the previous nine years (see Figure 3). Groundwater levels fell across the Site between the second and third quarter 2008 measurements, reflecting continued dissipation of winter-season discharge. Groundwater levels rose across the Site between the third and fourth quarter 2008 measurements, reflecting winter-season recharge. Groundwater levels rose in off-site well MW-4 between the second and third quarter 2008 measurements and between the third and fourth quarter 2008 measurements.

## 2.2 Groundwater Flow Direction and Gradient

Groundwater contour maps for the third and fourth quarters of 2008 based on the September and December 2008 water-level data are shown on Figures 4 and 5.

The groundwater flow direction determined for the third and fourth quarters of 2008 was to the northeast, consistent with the groundwater flow direction determined previously for the Site. The horizontal hydraulic gradient measured for the third quarter of 2008 was 0.012 and for the fourth quarter of 2008 was 0.015.

## 2.3 Groundwater Velocity

Average linear groundwater flow velocities (V) were calculated using a form of Darcy's Law,

$$V = Ki/n,$$

where “K” is the hydraulic conductivity, “i” is the horizontal hydraulic gradient, and “n” is the effective porosity. The groundwater velocity calculations for the third and fourth quarters of 2008 groundwater data are presented in Appendix B.

Using hydraulic conductivity and porosity values determined for saturated native materials at the Site [based on slug tests and laboratory soil testing, respectively (Conor Pacific/EFW, 2002)], and the horizontal hydraulic gradients determined from the third and fourth quarters 2008 groundwater contour maps, groundwater flow velocities beneath the Site are calculated to be approximately 0.8 foot per year (ft/yr) for the third quarter 2008 measurements and 0.9 ft/yr for the fourth quarter 2008 measurements.

# 3 Groundwater Sampling and Analysis

This section summarizes the sample collection and analytical methods, presents an evaluation of quality control data, and summarizes the results of the sampling events.

## 3.1 Sample Collection and Analysis

Groundwater samples were collected September 3, 2008 and December 4, 2008 from groundwater monitoring wells MW-1, MW-2, MW-3, and MW-4. Dedicated tubing was installed in wells MW-1, MW-2, and MW-3 prior to the first quarter 2000 sampling event and on December 17, 2001 in well MW-4 to facilitate sampling with a peristaltic pump. Dedicated fluorinated ethylene propylene resin (FEP)-lined polyethylene tubing was installed in each monitoring well. The tubing intake was placed about one foot above the well bottom in each of the wells. Viton® dedicated check valves were installed on the tubing intakes to prevent back-flow of water into the well. A short length of dedicated Viton® tubing was installed at the well head for use in a peristaltic pump head. Prior to sample collection for each quarterly monitoring event, the wells were purged using a peristaltic pump. Field parameters (pH, electrical conductivity, temperature, and turbidity) were measured in purged groundwater from each well prior to sampling; these data are recorded on the Sample Collection Field Data sheets presented in Appendix A. After purging, groundwater samples were collected using the peristaltic pump and the dedicated Viton® pump head discharge tubing.

The groundwater samples were analyzed for VOCs using U.S. Environmental Protection Agency (USEPA) Method 8260. Results for all Method 8010 analytes were reported. The groundwater samples for third through fourth quarter 2008 were delivered with appropriate chain-of-custody documentation to TestAmerica Laboratories, Inc., a state-certified laboratory in Pleasanton, California, for chemical analysis.

## 3.2 Analytical Results

The results of field and laboratory quality control measures and the results of the groundwater monitoring well samples are reviewed in this section. The certified analytical reports and chain-of-custody documentation are presented in Appendix C.

### 3.2.1 Quality Control

Quality control (QC) samples were analyzed as part of the sampling and analysis program to evaluate the precision and accuracy of the reported groundwater chemistry data. QC samples included both field and laboratory samples. Descriptions of the purpose of specific field and laboratory QC samples used during the sampling and analysis program and an evaluation of field and laboratory QC results are presented below.

Field Quality Control Samples

A field duplicate was used during the third through fourth quarter 2008 sampling program for the Site. A field duplicate is used to assess sampling and analytical precision. The duplicate is collected at a selected well (MW-2 [third and fourth quarters 2008]) and then submitted "blind" to the laboratory for analysis with the same batch as the regular sample for the selected well. An estimate of precision is obtained by calculating the relative percent difference (RPD) between the regular sample and the duplicate sample using the following formula:

$$RPD = \frac{[\, x - y \,]\, 100}{0.5\,(x + y)}$$

where: $[\, x - y \,]$ = the absolute value of the difference in concentration between the regular sample (x) and the duplicate sample (y).

Laboratory Quality Control Samples

The following types of laboratory QC samples were used during the third through fourth quarter 2008 analytical program for the Site:

- surrogate spikes
- matrix spikes/duplicate matrix spikes

A surrogate spike is a check standard added to a sample in a known amount prior to analysis. Surrogate spikes consist of analytes not normally found in environmental samples and not targeted by the analytical procedure. Surrogate spikes provide information on recovery efficiency by comparing the percent recovery of specific surrogate analyses to statistically derived acceptance limits developed by the USEPA or the laboratory (provided such laboratory-specific limits are stricter than those developed by the USEPA). If the recoveries fall within the acceptance limits for the analytes, the analysis exhibits an acceptable recovery efficiency. Recoveries that fall outside the acceptance limits indicate a potential problem with the recovery efficiency of analytes, which in turn indicates a potential bias with respect to the reported concentration of the environmental samples analyzed in the same batch.

Matrix spikes and duplicate matrix spikes are analyzed by the laboratory for the purpose of providing a quantitative measure of accuracy and precision, and to document the effect that the sample matrix has on the analysis. A selected sample is spiked in duplicate with known concentrations of analytes. The recoveries of the spiked analytes are compared to statistically derived acceptance limits developed by the USEPA or the laboratory (provided such laboratory-specific limits are stricter than those developed by the USEPA). If the recoveries fall within the acceptance limits for the analytes, the analysis has no statistically significant bias (i.e., the analysis is accurate). Recoveries that fall outside of the acceptance limits have a positive or negative bias, depending on whether the recovery is greater or less than the upper or lower acceptance limit, respectively. Analyses where analyte recoveries fall outside the acceptance limits should be regarded as estimates only.

Precision for matrix spikes is measured by calculating the relative percent differences (RPDs) between the measured concentration of analytes in the matrix and the duplicate matrix spike. The following equation is used for matrix spikes:

$$RPD = \frac{[\ MS - MSD\ ]\ 100}{0.5\ (MS + MSD)}$$

where: [ MS - MSD ] = the absolute value of the difference in concentration between the matrix spike (MS) and the matrix spike duplicate (MSD)

Third Quarter 2008 Field QC Results

One field duplicate (DUP-1) was analyzed as part of the third quarter 2008 sampling event at the Site. The duplicate sample was collected at groundwater monitoring well MW-2 and was analyzed for halogenated VOCs using USEPA Method 8260B (8010 list). Table 2 summarizes the calculated RPDs for MW-2 and MW-2 duplicate (DUP-1). The one parameter (PCE) for which RPDs could be calculated (see Table 2) exhibits a medium RPD value (i.e., 11-25%) indicative of fair precision.

Fourth Quarter 2008 Field QC Results

One field duplicate (DUP-1) was analyzed as part of the fourth quarter 2008 sampling event at the Site. The duplicate sample was collected at groundwater monitoring well MW-2 and was analyzed for halogenated VOCs using USEPA Method 8260B (8010 list). Table 2 summarizes the calculated RPDs for MW-2 and MW-2 duplicate (DUP-1). The one parameter (PCE) for which RPDs could be calculated (see Table 2) exhibits a low RPD value (i.e., less than 10%) indicative of good precision.

Third through Fourth Quarter 2008 Laboratory QC Results

A review of the third through fourth quarter 2008 field data sheets and laboratory reports (presented in Appendices A and C, respectively) indicates that all analyses were performed within USEPA or California Department of Health Services (DHS) recommended maximum sample holding times.

QC data on surrogate spike recoveries and matrix spike recoveries are presented in the laboratory reports. These data indicate: (1) no surrogate spike recoveries were outside of the laboratory's acceptance limits; (2) RPD values for the matrix spikes and duplicate matrix spikes indicate a high overall degree of analytical precision.

No matrix spike or duplicate matrix spike recoveries were outside of the laboratory's control limits.

The laboratory QC data indicate that the results reported herein are of adequate quality for evaluation of site groundwater conditions.

### 3.2.2 Groundwater Results

The results of VOC analyses for each quarter for 2000 through fourth quarter 2008 are summarized in Table 3, which also shows the VOC results for the initial sampling event for monitoring wells MW-1, MW-2, and MW-3 in November 1999. The results for the third and fourth quarter 2008 monitoring events are also shown on Figures 6 and 7.

Consistent with previous monitoring events, PCE and its breakdown products TCE and 1,1-dichloroethene (DCE) were detected in Site groundwater samples from the third and fourth quarter 2008 monitoring events.

For the third and fourth quarters of 2008, the concentrations of PCE detected were:

- 620 and 320 micrograms per liter ($\mu$g/L) in monitoring well MW-1
- 1,600 and 2,000 $\mu$g/L in MW-2
- not detected and 1.2 $\mu$g/L in MW-3
- 0.84 and 0.65 $\mu$g/L in MW-4.

The concentrations of TCE detected were 65 and 42 $\mu$g/L in monitoring well MW-1. TCE was not detected in MW-2, MW-3 or MW-4.

DCE was detected in monitoring well MW-3 at 0.79 and 0.59 $\mu$g/L for the third and fourth quarters of 2008. DCE was not detected in MW-1, MW-2, or MW-4.

## 3.3 Discussion

Variations in VOC concentrations at monitoring well MW-2, the well with the highest reported PCE concentrations at the site, generally correlate with variations in groundwater elevations at the Site. An increase in VOC concentrations generally follows a rise in groundwater elevations, and a decrease in VOC concentration generally follows a fall in groundwater levels (see Figure 8). The variations in VOC concentrations sometimes lag one quarter behind the variations in groundwater elevation.

The results for the third through fourth quarter 2008 quarterly monitoring events are generally similar to the results reported since the second quarter of 2006 (see Figure 7).

The average seasonal concentration of PCE reported for groundwater monitoring well MW-2 has been lower since the second quarter of 2006 (June 2006 event) compared to results reported since monitoring began in 1999. The concentration of PCE reported for MW-2 decreased from 5,200 $\mu$g/L in March 2006 to 1,600 $\mu$g/L in June 2006. The concentrations of PCE reported for MW-2 for the June 2006, September 2006, December 2006, March 2007, December 2007, and September 2008 sampling events have been the lowest PCE concentrations reported for the well since the initial sampling event in November 1999, and the annual highs have been lower in 2007 and 2008 than in the previous years.

The PCE concentrations reported for MW-2 for the last eleven quarters appear to be an indication that the phytoremediation project implemented in June 2005 has reduced the average seasonal concentration of PCE at the site. However, continued monitoring will be required to assess the effectiveness of the phytoremediation project in further reducing the PCE concentrations in groundwater.

# 4 Phytoremediation Project Status Update

A phytoremediation project was implemented at the Site in June 2005. The project involved planting 96 bare-root hybrid poplar trees in a grid on the unpaved portion of the site. Selection of the phytoremediation approach and implementation of the project were described in the report, *Groundwater Monitoring Results, First through Fourth Quarter 2005, Cargill Salt – Alameda Facility, Alameda, California* (Crawford Consulting, Inc., October 20, 2006).

A tree monitoring and maintenance program is being conducted by a landscaping contractor. This program involves monthly inspection of the trees during the growing season, inspection and maintenance of the drip irrigation system, and weed control.

The trees were 4-ft-tall, bare-root poles with no foliage when planted in June 2005. During the first two years of growth, the trees developed foliage and most grew 3 to 10 additional feet in height. Photos comparing the appearance of the trees just after planting in 2005 and in June 2007 are show below and on the next page. After three years, most of the trees had grown to heights of 10 to 25 feet. In April 2008, seven additional saplings were planted in the rear of the property near monitoring well MW-2.

As discussed in Section 3.3, the PCE concentrations reported for monitoring well MW-2 for the last nine quarters appear to be an indication that the phytoremediation project has been effective at reducing the average seasonal VOC concentration in groundwater at the site. Tree growth and VOC concentrations will be monitored and evaluated to determine the effectiveness of the phytoremediation project in further reducing VOC concentrations.

Bare-root trees planted in June 2005 - View towards rear of property

June 2007 - View from gate towards rear of property

June 2007 - View of front planting strip at Clement Avenue

# Professional Certification

**Groundwater Monitoring Results**
**Second Semi-Annual 2008 Monitoring Period**
**Cargill Salt – Alameda Facility**
**Alameda, California**

This report has been prepared by CRAWFORD CONSULTING, INC. with the professional certification of the California professional geologist whose signature appears below.

Dana C. Johnston
Project Manager


Mark C. Wheeler
Principal Geologist
P.G. 4563

# References


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# Limitations

This report and the evaluations presented herein have been prepared in accordance with generally accepted professional standards and is based solely on the scope of work and services described herein. This report has been prepared solely for the use of Cargill Salt for the purposes noted herein. Any use of this report, in whole or in part, by a third party for other than the purposes noted herein is at such party's sole risk.

Table 1. Groundwater Level Data

| Well/ Piezometer | Date | Time | Casing Elevation (feet, MSL) | Depth to Water (feet) | Water Elevation (feet, MSL) | Elev. Change from Last Measurement (feet) |
|---|---|---|---|---|---|---|
| MW-1 | 11/16/1999 | 09:56 | 13.16 | 3.75 | 9.41 | NA |
| MW-1 | 3/30/2000 | 10:09 | 13.16 | 2.81 | 10.35 | 0.94 |
| MW-1 | 5/16/2000 | 09:43 | 13.16 | 3.32 | 9.84 | -0.51 |
| MW-1 | 7/28/2000 | 09:11 | 13.16 | 3.58 | 9.58 | -0.26 |
| MW-1 | 11/30/2000 | 08:36 | 13.16 | 3.52 | 9.64 | 0.06 |
| MW-1 | 3/26/2001 | 08:47 | 13.16 | 3.15 | 10.01 | 0.37 |
| MW-1 | 6/25/2001 | 10:19 | 13.16 | 3.53 | 9.63 | -0.38 |
| MW-1 | 9/28/2001 | 09:32 | 13.16 | 3.96 | 9.20 | -0.43 |
| MW-1 | 12/17/2001 | 10:47 | 13.16 | 3.23 | 9.93 | 0.73 |
| MW-1 | 3/21/2002 | 07:28 | 13.16 | 2.89 | 10.27 | 0.34 |
| MW-1 | 6/6/2002 | 08:03 | 13.16 | 3.50 | 9.66 | -0.61 |
| MW-1 | 9/20/2002 | 08:30 | 13.16 | 3.86 | 9.30 | -0.36 |
| MW-1 | 12/19/2002 | 08:38 | 13.16 | 3.13 | 10.03 | 0.73 |
| MW-1 | 3/4/2003 | 10:31 | 13.16 | 3.08 | 10.08 | 0.05 |
| MW-1 | 6/9/2003 | 08:32 | 13.16 | 3.29 | 9.87 | -0.21 |
| MW-1 | 9/8/2003 | 10:02 | 13.16 | 3.79 | 9.37 | -0.50 |
| MW-1 | 12/1/2003 | 10:16 | 13.16 | 3.78 | 9.38 | 0.01 |
| MW-1 | 3/4/2004 | 09:31 | 13.16 | 2.88 | 10.28 | 0.90 |
| MW-1 | 6/2/2004 | 08:42 | 13.16 | 3.45 | 9.71 | -0.57 |
| MW-1 | 9/14/2004 | 08:01 | 13.16 | 3.87 | 9.29 | -0.42 |
| MW-1 | 12/8/2004 | 07:44 | 13.16 | 3.23 | 9.93 | 0.64 |
| MW-1 | 3/3/2005 | 08:07 | 13.16 | 2.01 | 11.15 | 1.22 |
| MW-1 | 6/10/2005 | 07:05 | 13.16 | 2.90 | 10.26 | -0.89 |
| MW-1 | 9/16/2005 | 08:00 | 13.16 | 3.62 | 9.54 | -0.72 |
| MW-1 | 12/6/2005 | 08:00 | 13.16 | 3.28 | 9.88 | 0.34 |
| MW-1 | 3/10/2006 | 07:40 | 13.16 | 2.28 | 10.88 | 1.00 |
| MW-1 | 6/9/2006 | 09:45 | 13.16 | 3.09 | 10.07 | -0.81 |
| MW-1 | 9/11/2006 | 10:24 | 13.16 | 3.70 | 9.46 | -0.61 |
| MW-1 | 12/15/2006 | 07:34 | 13.16 | 2.94 | 10.22 | 0.76 |
| MW-1 | 3/6/2007 | 09:18 | 13.16 | 2.87 | 10.29 | 0.07 |
| MW-1 | 6/15/2007 | 07:29 | 13.16 | 3.30 | 9.86 | -0.43 |
| MW-1 | 9/11/2007 | 08:05 | 13.16 | 3.85 | 9.31 | -0.55 |
| MW-1 | 12/4/2007 | 08:53 | 13.16 | 3.58 | 9.58 | 0.27 |
| MW-1 | 3/20/2008 | 08:13 | 13.16 | 3.00 | 10.16 | 0.58 |
| MW-1 | 6/18/2008 | 08:22 | 13.16 | 3.73 | 9.43 | -0.73 |
| MW-1 | 9/3/2008 | 08:06 | 13.16 | 3.93 | 9.23 | -0.20 |
| MW-1 | 12/4/2008 | 08:12 | 13.16 | 3.71 | 9.45 | 0.22 |
| | | | | | | |
| MW-2 | 11/16/1999 | 11:15 | 16.22 | 5.22 | 11.00 | NA |
| MW-2 | 3/30/2000 | 10:05 | 16.22 | 2.80 | 13.42 | 2.42 |
| MW-2 | 5/16/2000 | 09:35 | 16.22 | 4.13 | 12.09 | -1.33 |
| MW-2 | 7/28/2000 | 09:17 | 16.22 | 4.85 | 11.37 | -0.72 |
| MW-2 | 11/30/2000 | 08:32 | 16.22 | 4.75 | 11.47 | 0.10 |
| MW-2 | 3/26/2001 | 08:40 | 16.22 | 3.28 | 12.94 | 1.47 |
| MW-2 | 6/25/2001 | 12:12 | 16.22 | 4.75 | 11.47 | -1.47 |
| MW-2 | 9/28/2001 | 12:20 | 16.22 | 5.41 | 10.81 | -0.66 |
| MW-2 | 12/17/2001 | 10:44 | 16.22 | 4.07 | 12.15 | 1.34 |
| MW-2 | 3/28/2002 | 09:37 | 16.22 | 3.40 | 12.82 | 0.67 |
| MW-2 | 6/6/2002 | 08:11 | 16.22 | 4.70 | 11.52 | -1.30 |
| MW-2 | 9/20/2002 | 08:34 | 16.22 | 5.28 | 10.94 | -0.58 |
| MW-2 | 12/19/2002 | 08:45 | 16.22 | 3.37 | 12.85 | 1.91 |

Table 1. Groundwater Level Data

| Well/ Piezometer | Date | Time | Casing Elevation (feet, MSL) | Depth to Water (feet) | Water Elevation (feet, MSL) | Elev. Change from Last Measurement (feet) |
|---|---|---|---|---|---|---|
| MW-2 | 3/4/2003 | 10:26 | 16.22 | 3.11 | 13.11 | 0.26 |
| MW-2 | 6/9/2003 | 08:31 | 16.22 | 4.16 | 12.06 | -1.05 |
| MW-2 | 9/8/2003 | 10:08 | 16.22 | 5.26 | 10.96 | -1.10 |
| MW-2 | 12/1/2003 | 10:20 | 16.22 | 5.05 | 11.17 | 0.21 |
| MW-2 | 3/4/2004 | 09:34 | 16.22 | 2.86 | 13.36 | 2.19 |
| MW-2 | 6/2/2004 | 08:53 | 16.22 | 4.47 | 11.75 | -1.61 |
| MW-2 | 9/14/2004 | 07:59 | 16.22 | 5.26 | 10.96 | -0.79 |
| MW-2 | 12/8/2004 | 08:00 | 16.22 | 4.20 | 12.02 | 1.06 |
| MW-2 | 3/3/2005 | 08:04 | 16.22 | 1.90 | 14.32 | 2.30 |
| MW-2 | 6/10/2005 | 07:09 | 16.22 | 3.74 | 12.48 | -1.84 |
| MW-2 | 9/16/2005 | 08:08 | 16.22 | 4.92 | 11.30 | -1.18 |
| MW-2 | 12/6/2005 | 10:58 | 16.22 | 4.39 | 11.83 | 0.53 |
| MW-2 | 3/10/2006 | 07:47 | 16.22 | 2.13 | 14.09 | 2.26 |
| MW-2 | 6/9/2006 | 10:03 | 16.22 | 3.75 | 12.47 | -1.62 |
| MW-2 | 9/11/2006 | 10:22 | 16.22 | 4.94 | 11.28 | -1.19 |
| MW-2 | 12/15/2006 | 07:32 | 16.22 | 4.08 | 12.14 | 0.86 |
| MW-2 | 3/6/2007 | 09:13 | 16.22 | 3.27 | 12.95 | 0.81 |
| MW-2 | 6/15/2007 | 07:31 | 16.22 | 4.57 | 11.65 | -1.30 |
| MW-2 | 9/11/2007 | 08:07 | 16.22 | 5.60 | 10.62 | -1.03 |
| MW-2 | 12/4/2007 | 08:47 | 16.22 | 4.99 | 11.23 | 0.61 |
| MW-2 | 3/20/2008 | 08:17 | 16.22 | 3.48 | 12.74 | 1.51 |
| MW-2 | 6/18/2008 | 08:27 | 16.22 | 4.93 | 11.29 | -1.45 |
| MW-2 | 9/3/2008 | 08:08 | 16.22 | 5.58 | 10.64 | -0.65 |
| MW-2 | 12/4/2008 | 08:14 | 16.22 | 5.07 | 11.15 | 0.51 |
| | | | | | | |
| MW-3 | 11/16/1999 | 15:43 | 13.34 | 4.34 | 9.00 | NA |
| MW-3 | 3/30/2000 | 10:01 | 13.34 | 2.77 | 10.57 | 1.57 |
| MW-3 | 5/16/2000 | 09:46 | 13.34 | 3.44 | 9.90 | -0.67 |
| MW-3 | 7/28/2000 | 09:05 | 13.34 | 3.72 | 9.62 | -0.28 |
| MW-3 | 11/30/2000 | 08:34 | 13.34 | 3.73 | 9.61 | -0.01 |
| MW-3 | 3/26/2001 | 08:54 | 13.34 | 3.51 | 9.83 | 0.22 |
| MW-3 | 6/25/2001 | 10:21 | 13.34 | 3.65 | 9.69 | -0.14 |
| MW-3 | 9/28/2001 | 09:30 | 13.34 | 3.96 | 9.38 | -0.31 |
| MW-3 | 12/17/2001 | 10:38 | 13.34 | 3.28 | 10.06 | 0.68 |
| MW-3 | 3/21/2002 | 07:28 | 13.34 | 3.10 | 10.24 | 0.18 |
| MW-3 | 6/6/2002 | 08:07 | 13.34 | 3.63 | 9.71 | -0.53 |
| MW-3 | 9/20/2002 | 08:25 | 13.34 | 3.82 | 9.52 | -0.19 |
| MW-3 | 12/19/2002 | 08:42 | 13.34 | 3.10 | 10.24 | 0.72 |
| MW-3 | 3/4/2003 | 10:36 | 13.34 | 3.29 | 10.05 | -0.19 |
| MW-3 | 6/9/2003 | 08:28 | 13.34 | 3.41 | 9.93 | -0.12 |
| MW-3 | 9/8/2003 | 10:00 | 13.34 | 3.85 | 9.49 | -0.44 |
| MW-3 | 12/1/2003 | 10:30 | 13.34 | 3.90 | 9.44 | -0.05 |
| MW-3 | 3/4/2004 | 09:22 | 13.34 | 3.11 | 10.23 | 0.79 |
| MW-3 | 6/2/2004 | 08:46 | 13.34 | 3.53 | 9.81 | -0.42 |
| MW-3 | 9/14/2004 | 08:05 | 13.34 | 4.07 | 9.27 | -0.54 |
| MW-3 | 12/8/2004 | 07:40 | 13.34 | 3.73 | 9.61 | 0.34 |
| MW-3 | 3/3/2005 | 07:53 | 13.34 | 2.36 | 10.98 | 1.37 |
| MW-3 | 6/10/2005 | 07:14 | 13.34 | 3.15 | 10.19 | -0.79 |
| MW-3 | 9/16/2005 | 08:04 | 13.34 | 3.90 | 9.44 | -0.75 |
| MW-3 | 12/6/2005 | 08:04 | 13.34 | 3.35 | 9.99 | 0.55 |
| MW-3 | 3/10/2006 | 07:43 | 13.34 | 2.89 | 10.45 | 0.46 |

Table 1. Groundwater Level Data

| Well/ Piezometer | Date | Time | Casing Elevation (feet, MSL) | Depth to Water (feet) | Water Elevation (feet, MSL) | Elev. Change from Last Measurement (feet) |
|---|---|---|---|---|---|---|
| MW-3 | 6/9/2006 | 09:33 | 13.34 | 3.26 | 10.08 | -0.37 |
| MW-3 | 9/11/2006 | 10:19 | 13.34 | 3.70 | 9.64 | -0.44 |
| MW-3 | 12/15/2006 | 07:37 | 13.34 | 3.10 | 10.24 | 0.60 |
| MW-3 | 3/6/2007 | 09:16 | 13.34 | 3.04 | 10.30 | 0.06 |
| MW-3 | 6/15/2007 | 07:27 | 13.34 | 3.60 | 9.74 | -0.56 |
| MW-3 | 9/11/2007 | 08:03 | 13.34 | 3.87 | 9.47 | -0.27 |
| MW-3 | 12/4/2007 | 08:50 | 13.34 | 3.62 | 9.72 | 0.25 |
| MW-3 | 3/20/2008 | 08:15 | 13.34 | 3.13 | 10.21 | 0.49 |
| MW-3 | 6/18/2008 | 08:24 | 13.34 | 3.90 | 9.44 | -0.77 |
| MW-3 | 9/3/2008 | 08:02 | 13.34 | 3.92 | 9.42 | -0.02 |
| MW-3 | 12/4/2008 | 08:10 | 13.34 | 3.59 | 9.75 | 0.33 |
| | | | | | | |
| MW-4 | 12/17/2001 | 10:40 | 12.43 | 2.55 | 9.88 | NA |
| MW-4 | 3/28/2002 | 08:05 | 12.43 | 3.06 | 9.37 | -0.51 |
| MW-4 | 6/6/2002 | 07:57 | 12.43 | 2.85 | 9.58 | 0.21 |
| MW-4 | 9/20/2002 | 08:28 | 12.43 | 3.21 | 9.22 | -0.36 |
| MW-4 | 12/19/2002 | 08:53 | 12.43 | 3.70 | 8.73 | -0.49 |
| MW-4 | 3/4/2003 | 10:34 | 12.43 | 3.14 | 9.29 | 0.56 |
| MW-4 | 6/9/2003 | 08:29 | 12.43 | 2.82 | 9.61 | 0.32 |
| MW-4 | 9/8/2003 | 10:04 | 12.43 | 3.43 | 9.00 | -0.61 |
| MW-4 | 12/1/2003 | 10:14 | 12.43 | 3.12 | 9.31 | 0.31 |
| MW-4 | 3/4/2004 | 09:27 | 12.43 | 2.81 | 9.62 | 0.31 |
| MW-4 | 6/2/2004 | 08:44 | 12.43 | 3.34 | 9.09 | -0.53 |
| MW-4 | 9/14/2004 | 08:03 | 12.43 | 3.51 | 8.92 | -0.17 |
| MW-4 | 12/8/2004 | 07:36 | 12.43 | 3.10 | 9.33 | 0.41 |
| MW-4 | 3/3/2005 | 07:44 | 12.43 | 2.48 | 9.95 | 0.62 |
| MW-4 | 6/10/2005 | 07:02 | 12.43 | 2.47 | 9.96 | 0.01 |
| MW-4 | 9/16/2005 | 08:12 | 12.43 | 3.23 | 9.20 | -0.76 |
| MW-4 | 12/6/2005 | 07:50 | 12.43 | 3.17 | 9.26 | 0.06 |
| MW-4 | 3/10/2006 | 07:37 | 12.43 | 3.77 | 8.66 | -0.60 |
| MW-4 | 6/9/2006 | 07:30 | 12.43 | 2.49 | 9.94 | 1.28 |
| MW-4 | 9/11/2006 | 10:17 | 12.43 | 3.19 | 9.24 | -0.70 |
| MW-4 | 12/21/2006 | NR | 12.43 | 2.90 | 9.53 | 0.29 |
| MW-4 | 3/6/2007 | 09:20 | 12.43 | 2.54 | 9.89 | 0.36 |
| MW-4 | 6/15/2007 | 07:33 | 12.43 | 3.03 | 9.40 | -0.49 |
| MW-4 | 9/11/2007 | 08:11 | 12.43 | 3.27 | 9.16 | -0.24 |
| MW-4 | 12/4/2007 | 08:55 | 12.43 | 3.25 | 9.18 | 0.02 |
| MW-4 | 3/20/2008 | 08:20 | 12.43 | 2.65 | 9.78 | 0.60 |
| MW-4 | 6/18/2008 | 08:31 | 12.43 | 3.35 | 9.08 | -0.70 |
| MW-4 | 9/3/2008 | 07:58 | 12.43 | 3.28 | 9.15 | 0.07 |
| MW-4 | 12/4/2008 | 08:17 | 12.43 | 3.12 | 9.31 | 0.16 |

**Key:**

NA = Not available

feet, MSL = feet, relative to Mean Sea Level

Casing elevations for all wells were resurveyed on September 6, 2006 by CSS Environmental Services for Geotracker compliance.

Table 2.
Relative Percent Difference Based on Duplicate Samples

| | Second Quarter 2008 | | | Fourth Quarter 2008 | | |
|---|---|---|---|---|---|---|
| Analysis | Well MW-2 Results | Duplicate (DUP-1) Results | RPD[1] (%) | Well MW-2 Results | Duplicate (DUP-1) Results | RPD[1] (%) |
| **Volatile Organic Compounds (µg/L)** | | | | | | |
| Trichloroethene (TCE) | <20 | 23 | NM | <20 | <20 | NM |
| Tetrachloroethene (PCE) | 1,600 | 2,000 | 22.2 | 2,000 | 1,900 | 5.1 |

[1] RPD = relative percent difference

[2] NM = not meaningful; RPD cannot be accurately calculated where one or both values are below the method reporting limit.

All other 8010 list analytes not detected (by 8260).

Table 3. Summary of Groundwater Monitoring Well Data

Results measured in micrograms per liter (µg/L)

| Well No. | MW-1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Field Date | 11/16/99 | 3/30/00 | 5/16/00 | 7/28/00 | 11/30/00 | 3/26/01 | 6/25/01 | 9/28/01 | 12/17/01 | 3/21/02 | 6/6/02 | 9/20/02 | 12/19/02 | 3/4/03 | 6/9/03 | 9/8/03 | 12/1/03 | 3/4/04 | 6/2/04 | 9/14/04 | 12/8/04 | 3/3/05 | 6/10/05 | 9/16/05 | 12/6/05 | 3/10/06 | 6/9/06 | 9/11/06 | 12/15/06 | 3/6/07 | 6/15/07 | 9/11/07 | 12/4/07 | 3/20/08 | 6/18/08 | 9/3/08 | 12/4/08 | MCL[1] |
| DCE[2] | <50.0 | **13** | <10 | **15** | **14** | <13 | **14** | **15** | <13 | <13 | <13 | <13 | <13 | <10 | **12** | **5.2** | **8.4** | <5.0 | **5.8** | **6.6** | <5.0 | <5.0 | <2.0 | <5.0 | <2.0 | <0.5 | <2.0 | **3.3** | <2.0 | <2.0 | **3.0** | <5.0 | <5.0 | <2.0 | <5.0 | <5.0 | <5.0 | 6 |
| CFC 113[3] | na[4] | **1.4** | <10 | <10 | <8.3 | <50 | <50 | <50 | <50 | <13 | <13 | <13 | <13 | <10 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <2.0 | <5.0 | <2.0 | <0.5 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <5.0 | <5.0 | <2.0 | <5.0 | <5.0 | <5.0 | ne[5] |
| DCA[6] | <50.0 | **0.8** | <10 | <10 | <4.2 | <13 | <13 | <13 | <13 | <13 | <13 | <13 | <13 | <10 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <2.0 | <5.0 | <2.0 | <0.5 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <5.0 | <5.0 | <2.0 | <5.0 | <5.0 | <5.0 | 5 |
| Chloroform | <50.0 | **0.6*** | <10 | <10 | <8.3 | <13 | <13 | <13 | <13 | <13 | <13 | <13 | <13 | <10 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <2.0 | <10 | <4.0 | **1.4** | <4.0 | <4.0 | <4.0 | <4.0 | <4.0 | <10 | <10 | <4.0 | <10 | <10 | <10 | ne |
| TCA[7] | <50.0 | **1.6** | <10 | <10 | <4.2 | <13 | <13 | <13 | <13 | <13 | <13 | <13 | <13 | <10 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <2.0 | <5.0 | <2.0 | <0.5 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <5.0 | <5.0 | <2.0 | <5.0 | <5.0 | <5.0 | 200 |
| TCE[8] | **178** | **150** | **190** | **170** | **130** | **180** | **250** | **210** | **190** | **160** | **140** | **190** | **68** | **97** | **90** | **110** | **130** | **53** | **72** | **81** | **39** | **15** | **23** | **34** | **16** | **3.4** | **22** | **47** | **20** | **17** | **38** | **51** | **29** | **18** | **42** | **65** | **42** | 5 |
| PCE[9] | **906** | **1,400** | **1,900** | **1,200** | **880** | **1,000** | **1,400** | **1,000** | **1,400** | **1,100** | **980** | **1,100** | **600** | **730** | **770** | **780** | **850** | **370** | **490** | **620** | **380** | **160** | **180** | **240** | **140** | **39** | **140** | **400** | **210** | **170** | **310** | **430** | **330** | **170** | **390** | **620** | **320** | 5 |
| Other analytes[10] | nd[11] | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | -- |

| Well No. | MW-2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Field Date | 11/16/99 | 3/30/00 | 5/16/00 | 7/28/00 | 11/30/00 | 3/26/01 | 6/25/01 | 9/28/01 | 12/17/01 | 3/28/02 | 6/6/02 | 9/20/02 | 12/30/02 | 3/4/03 | 6/9/03 | 9/8/03 | 12/1/03 | 3/4/04 | 6/2/04 | 9/14/04 | 12/8/04 | 3/3/05 | 6/10/05 | 9/16/05 | 12/6/05 | 3/10/06 | 6/9/06 | 9/11/06 | 12/15/06 | 3/6/07 | 6/15/07 | 9/11/07 | 12/4/07 | 3/20/08 | 6/18/08 | 9/3/08 | 12/4/08 | MCL[1] |
| DCE[2] | <50.0 | <0.5 | <25 | <25 | <8.3 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <25 | <25 | <20 | <50 | <25 | <20 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | 6 |
| CFC 113[3] | na | <0.5 | <25 | <25 | <17 | <100 | <100 | <100 | <100 | <25 | <25 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <25 | <25 | <20 | <50 | <25 | <20 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | ne[5] |
| DCA[6] | <50.0 | <0.5 | <25 | <25 | <8.3 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <25 | <25 | <20 | <50 | <25 | <20 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | 5 |
| Chloroform | <50.0 | <0.5 | <25 | <25 | <17 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <25 | <25 | <20 | <50 | <25 | <40 | <50 | <50 | <40 | <20 | <40 | <40 | <40 | <40 | <40 | <40 | <40 | <40 | <40 | ne |
| TCA[7] | <50.0 | **5.0** | <25 | <25 | <8.3 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <25 | <25 | <20 | <50 | <25 | <20 | <25 | <25 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | 200 |
| TCE[8] | <50 | **29** | **53** | <25 | **20** | **40** | **78** | <25 | <25 | **49** | **52** | **32** | <25 | **58** | **41** | **28** | **25** | **39** | **49** | **37** | **30** | **78** | **43** | **29** | **45** | **59** | <20 | <20 | <20 | <20 | **22** | **31** | <20 | <20 | **21** | <20 | <20 | 5 |
| PCE[9] | **840** | **3,600** | **3,200** | **3,300** | **1,700** | **2,200** | **4,400** | **1,700** | **1,700** | **3,500** | **3,800** | **2,100** | **1,800** | **3,900** | **3,800** | **2,500** | **2,500** | **3,000** | **4,100** | **3,800** | **2,800** | **7,300** | **3,600** | **2,500** | **3,300** | **5,200** | **1,600** | **990** | **1,000** | **1,600** | **2,400** | **1,700** | **1,100** | **2,900** | **1,700** | **1,600** | **2,000** | 5 |
| Other analytes[10] | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | -- |

Notes:

[1] MCL = California Primary Drinking Water Standard - Maximum Contaminant Level (in micrograms per liter [µg/L])

[2] DCE = 1,1-Dichloroethene

[3] CFC 113 = Trichlorotrifluoroethane (1,1,2-Trichloro-1,2,2-trifluoroethane)

[4] na = not analyzed

[5] ne = not established or none applicable

[6] DCA = 1,1-Dichloroethane

[7] TCA = 1,1,1-Trichloroethane

[8] TCE = Trichloroethene

[9] PCE = Tetrachloroethene

[10] All other 8010 list analytes

[11] nd = not detected above laboratory reporting limit

* Chloroform detected in equipment blank at 1.6 µg/L for 3/30/00 event.

Table 3. Summary of Groundwater Monitoring Well Data

Results measured in micrograms per liter (µg/L)

| Well No. | MW-3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Field Date | 11/16/99 | 3/30/00 | 5/16/00 | 7/28/00 | 11/30/00 | 3/26/01 | 6/25/01 | 9/28/01 | 12/17/01 | 3/21/02 | 6/6/02 | 9/20/02 | 12/19/02 | 3/4/03 | 6/9/03 | 9/8/03 | 12/1/03 | 3/4/04 | 6/2/04 | 9/14/04 | 12/8/04 | 3/3/05 | 6/10/05 | 9/16/05 | 12/6/05 | 3/10/06 | 6/9/06 | 9/11/06 | 12/15/06 | 3/6/07 | 6/15/07 | 9/11/07 | 12/4/07 | 3/20/08 | 6/18/08 | 9/3/08 | 12/4/08 | MCL[1] |
| DCE[2] | <0.500 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | **0.51** | <0.5 | **0.81** | <0.5 | <0.5 | **0.68** | **2.4** | **1.5** | **1.1** | **0.86** | **4.3** | **2.8** | **1.6** | **1.5** | **2.4** | **1.4** | **1.1** | **1.0** | **1.4** | **0.79** | **0.59** | 6 |
| CFC 113[3] | na | <0.5 | <0.5 | <0.5 | <1.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ne[5] |
| DCA[6] | <0.500 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | **0.50** | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 5 |
| Chloroform | <0.500 | <0.5 | <0.5 | <0.5 | <1.0 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | ne |
| TCA[7] | <0.500 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | **1.0** | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 200 |
| TCE[8] | <0.500 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 5 |
| PCE[9] | <0.500 | <0.5 | <0.5 | **0.8** | <0.5 | <0.5 | <0.5 | <0.5 | **0.81** | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | **0.90** | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | **0.56** | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | **1.2** | 5 |
| Other analytes[10] | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | -- |

| Well No. | MW-4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Field Date | 12/17/01 | 3/28/02 | 6/6/02 | 9/20/02 | 12/19/02 | 3/4/03 | 6/9/03 | 9/8/03 | 12/1/03 | 3/4/04 | 6/2/04 | 9/14/04 | 12/8/04 | 3/3/05 | 6/10/05 | 9/16/05 | 12/6/05 | 3/10/06 | 6/9/06 | 9/11/06 | 12/21/06 | 3/6/07 | 6/15/07 | 9/11/07 | 12/4/07 | 3/20/08 | 6/18/08 | 9/3/08 | 12/4/08 | MCL[1] |
| DCE[2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 6 |
| CFC 113[3] | <2.0 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ne[5] |
| DCA[6] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 5 |
| Chloroform | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | ne |
| TCA[7] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 200 |
| TCE[8] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 5 |
| PCE[9] | **2.6** | **2.8** | **2.0** | **2.5** | **1.1** | **2.1** | **2.1** | **1.6** | **1.6** | **1.7** | **1.4** | **1.3** | **1.2** | **0.93** | **0.98** | **0.8** | **1.1** | **0.79** | **0.64** | **0.70** | **0.63** | **0.70** | **0.75** | **0.86** | **0.92** | **0.91** | **0.86** | **0.84** | **0.65** | 5 |
| Other analytes[10] | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | -- |

Notes:

[1] MCL = California Primary Drinking Water Standard - Maximum Contaminant Level (in micrograms per liter [µg/L])

[2] DCE = 1,1-Dichloroethene

[3] CFC 113 = Trichlorotrifluoroethane (1,1,2-Trichloro-1,2,2-trifluoroethane)

[4] na = not analyzed

[5] ne = not established or none applicable

[6] DCA = 1,1-Dichloroethane

[7] TCA = 1,1,1-Trichloroethane

[8] TCE = Trichloroethene

[9] PCE = Tetrachloroethene

[10] All other 8010 list analytes

[11] nd = not detected above laboratory reporting limit


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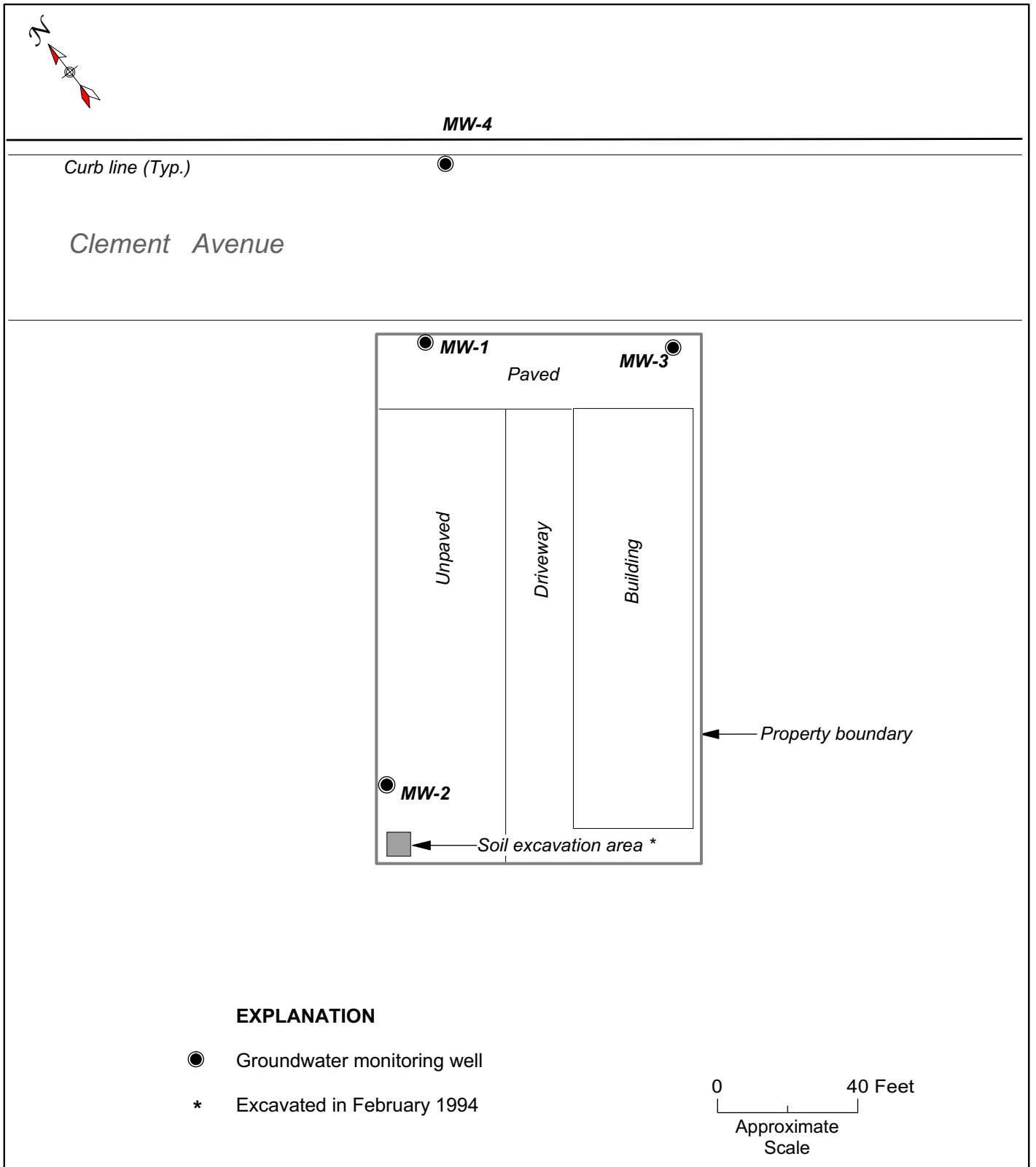
Project No. CS1605
Cargill Salt Dispensing Systems Division
2016 Clement Avenue, Alameda, California
**Figure 1. Site Location**

1605fig104.dsf 12/8/04




1605fig207Q4.dsf 2/22/08

Base map from Conor Pacific/EFW, Off-Site Groundwater Characterization, August 21, 2002.

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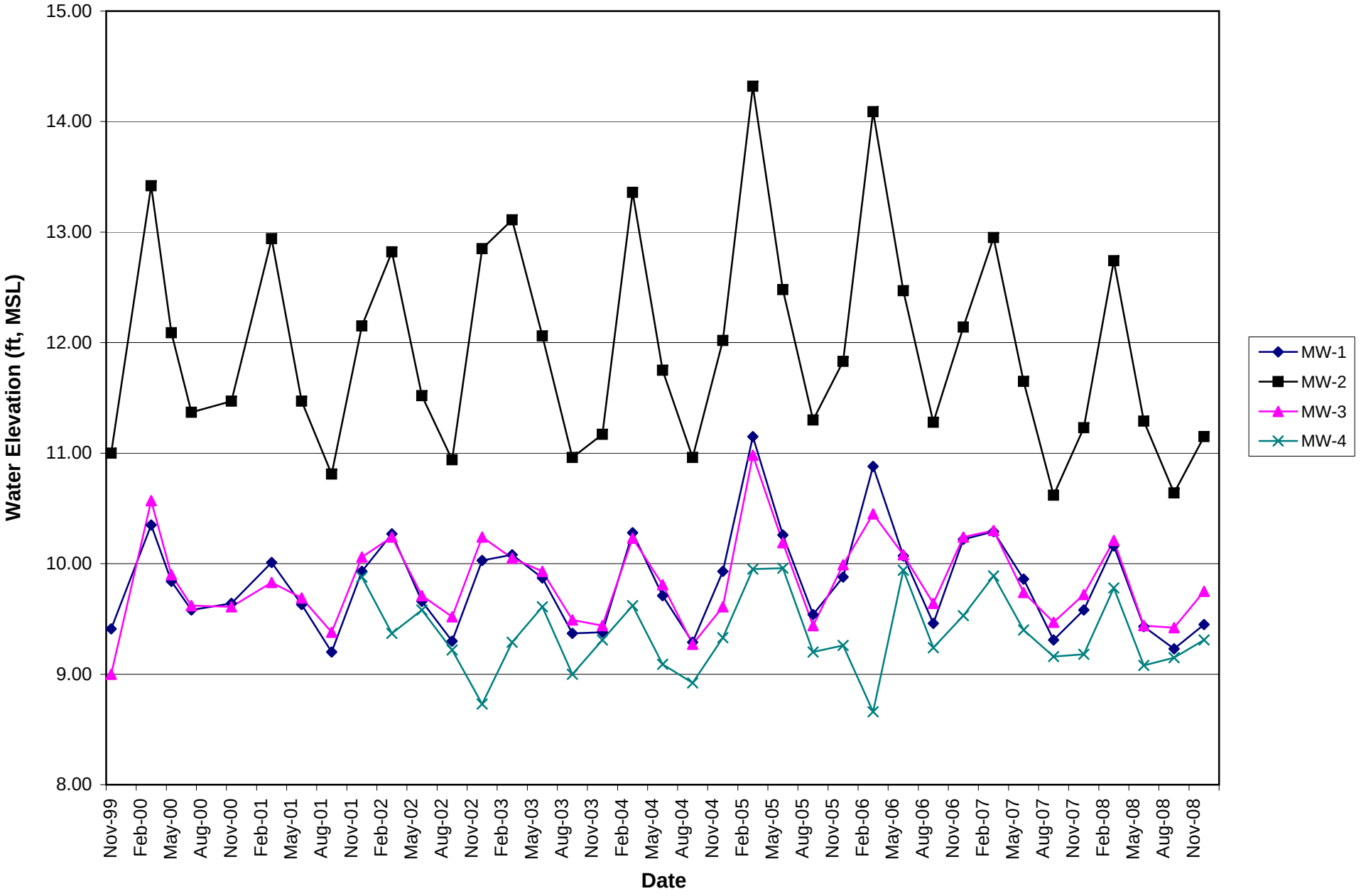
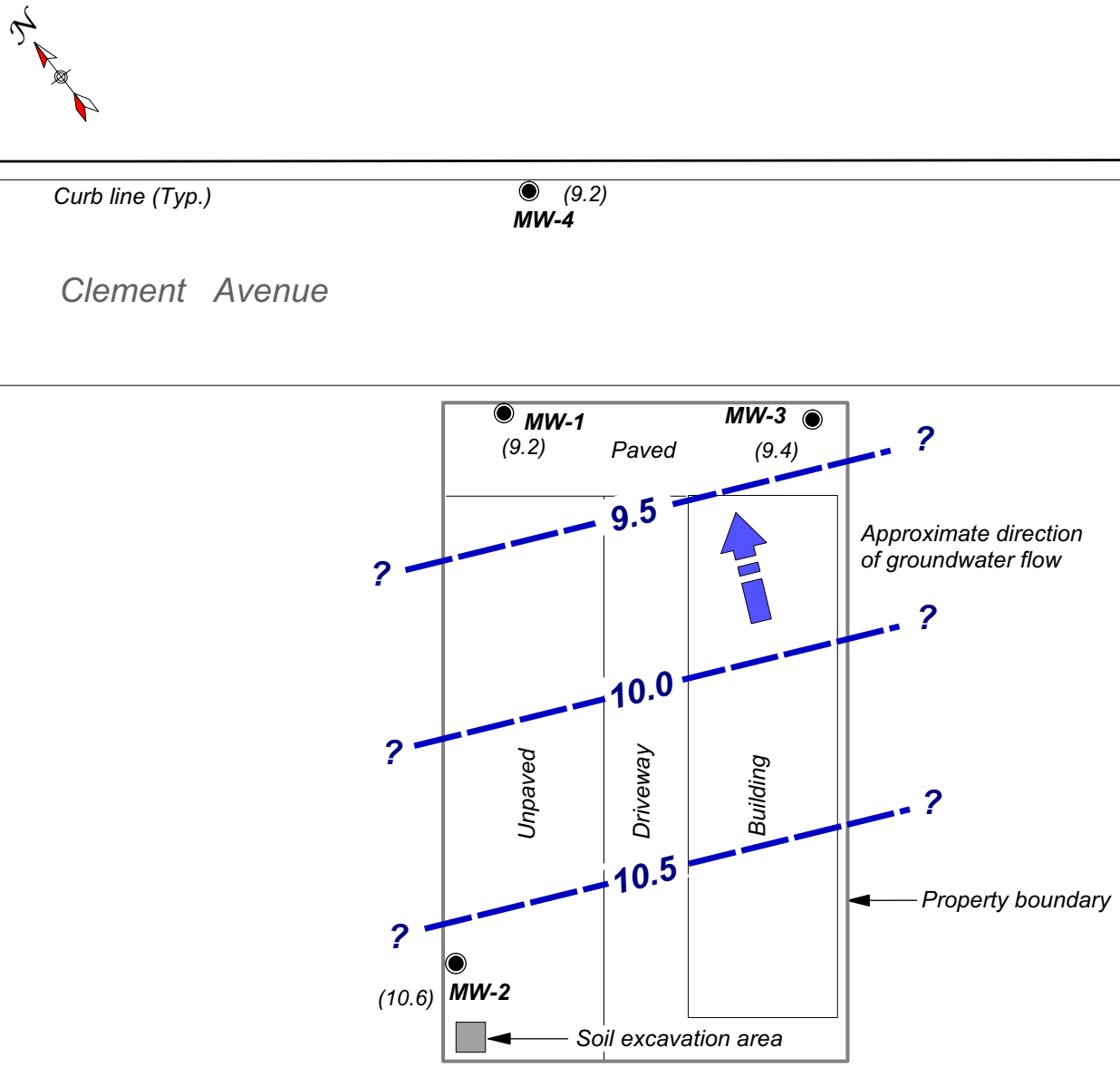
2016 Clement Avenue, Alameda, California
**Figure 2. Groundwater Monitoring Well Locations**

## Figure 3. Graphical Summary of Groundwater Elevations






**EXPLANATION**

- Monitoring well
- (9.3) Groundwater elevation (Ft.-MSL); measured 9/3/08
- ?—10— Groundwater elevation contour (Ft.-MSL)

0 40 Feet
Approximate Scale

1605fig408Q4.dsf 3/2/09

Base map from Conor Pacific/EFW, Off-Site Groundwater Characterization, August 21, 2002.

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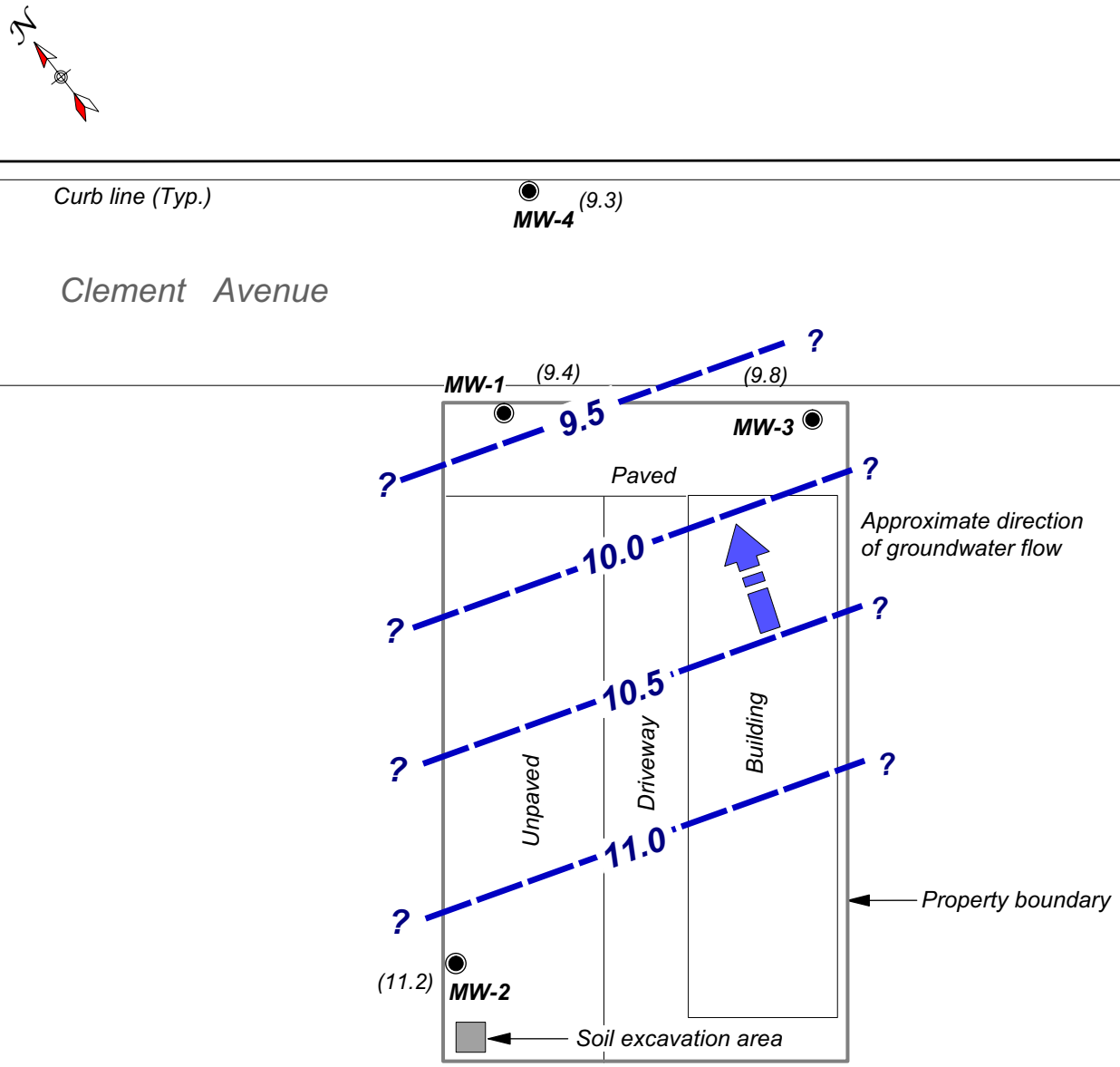
**Figure 4. Groundwater Elevation Contours - September 2008**




**EXPLANATION**

◉ Monitoring well

(9.9) Groundwater elevation (Ft.-MSL); measured 12/4/08

? — 11 — Groundwater elevation contour (Ft.-MSL)

0 40 Feet

Approximate Scale

1605fig508Q4.dsf 3/2/09

Base map from Conor Pacific/EFW, Off-Site Groundwater Characterization, August 21, 2002.

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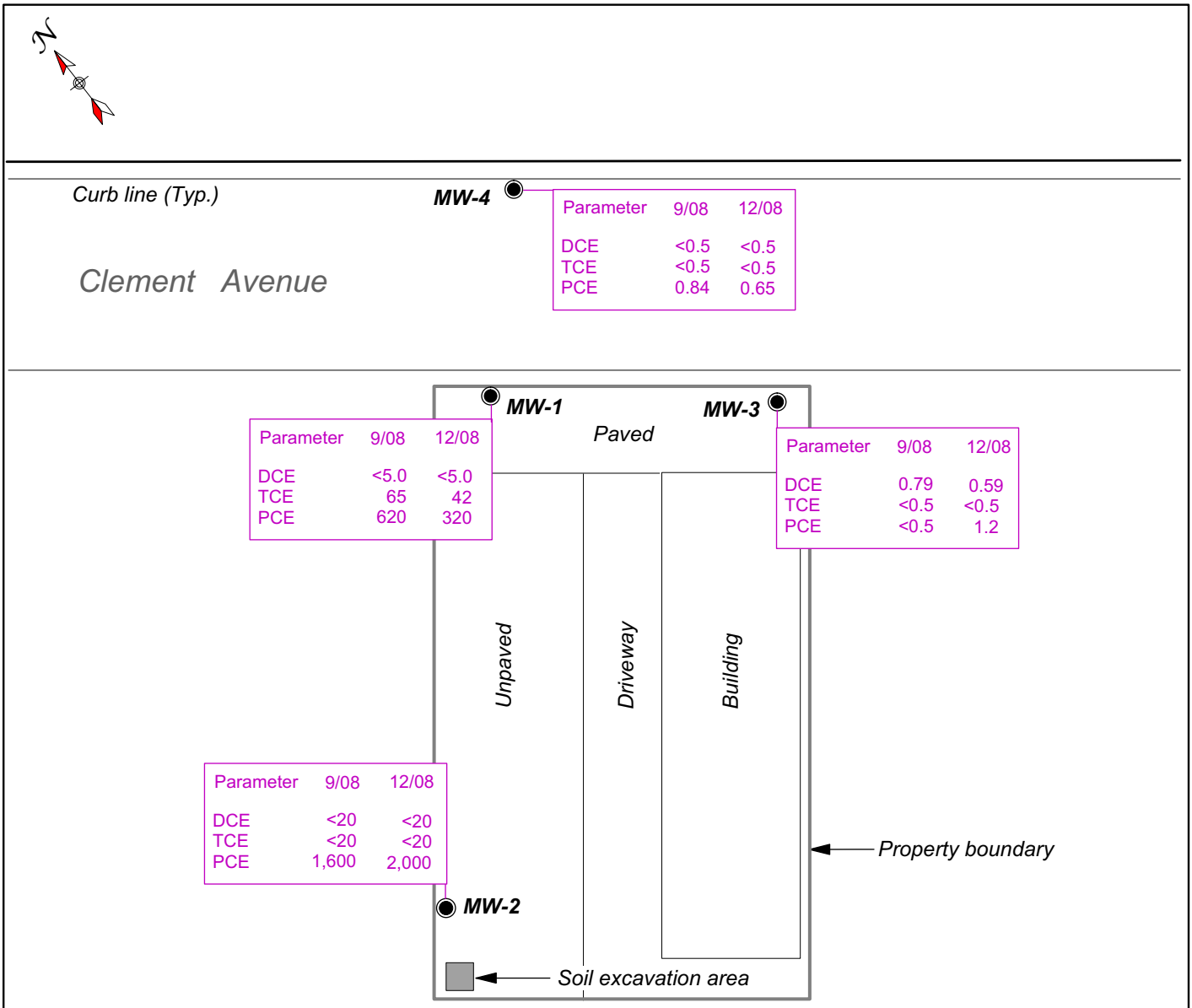
2016 Clement Avenue, Alameda, California
**Figure 5. Groundwater Elevation Contours - December 2008**




**EXPLANATION**

Groundwater monitoring well location

DCE <5.0
TCE 65
PCE 620

Analyte concentration

Analytical parameter

All concentrations reported in micrograms per liter (µg/L), in groundwater.
All other 8010 list analytes were below detection limits.

DCE = 1,1-Dichloroethene
PCE = Tetrachloroethene
TCE = Trichloroethene
VOCs = Volatile organic compounds

0 40 Feet
Approximate Scale

1605fig608Q4.dsf 2/25/09

Base map from Conor Pacific/EFW, Off-Site Groundwater Characterization, August 21, 2002.

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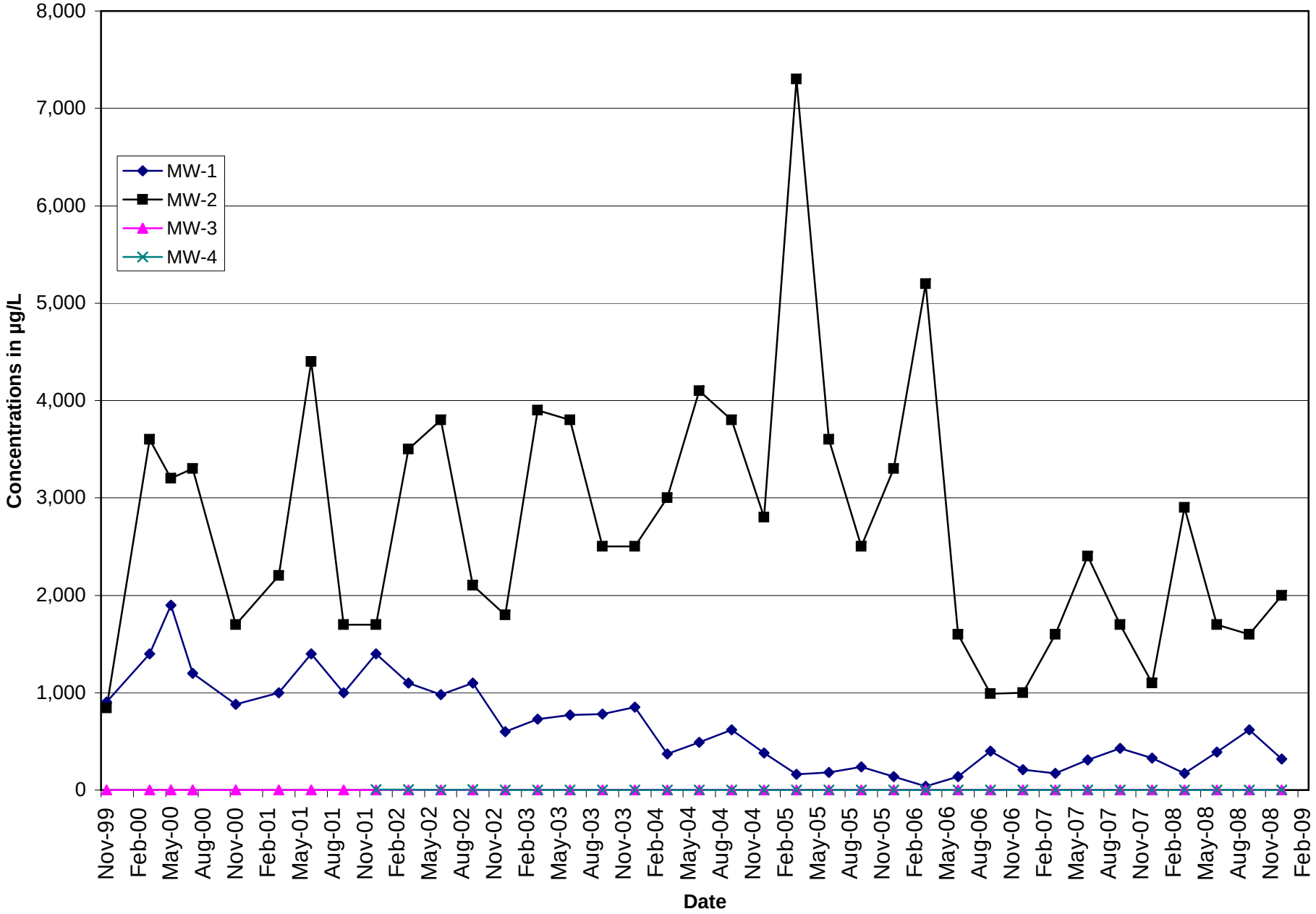
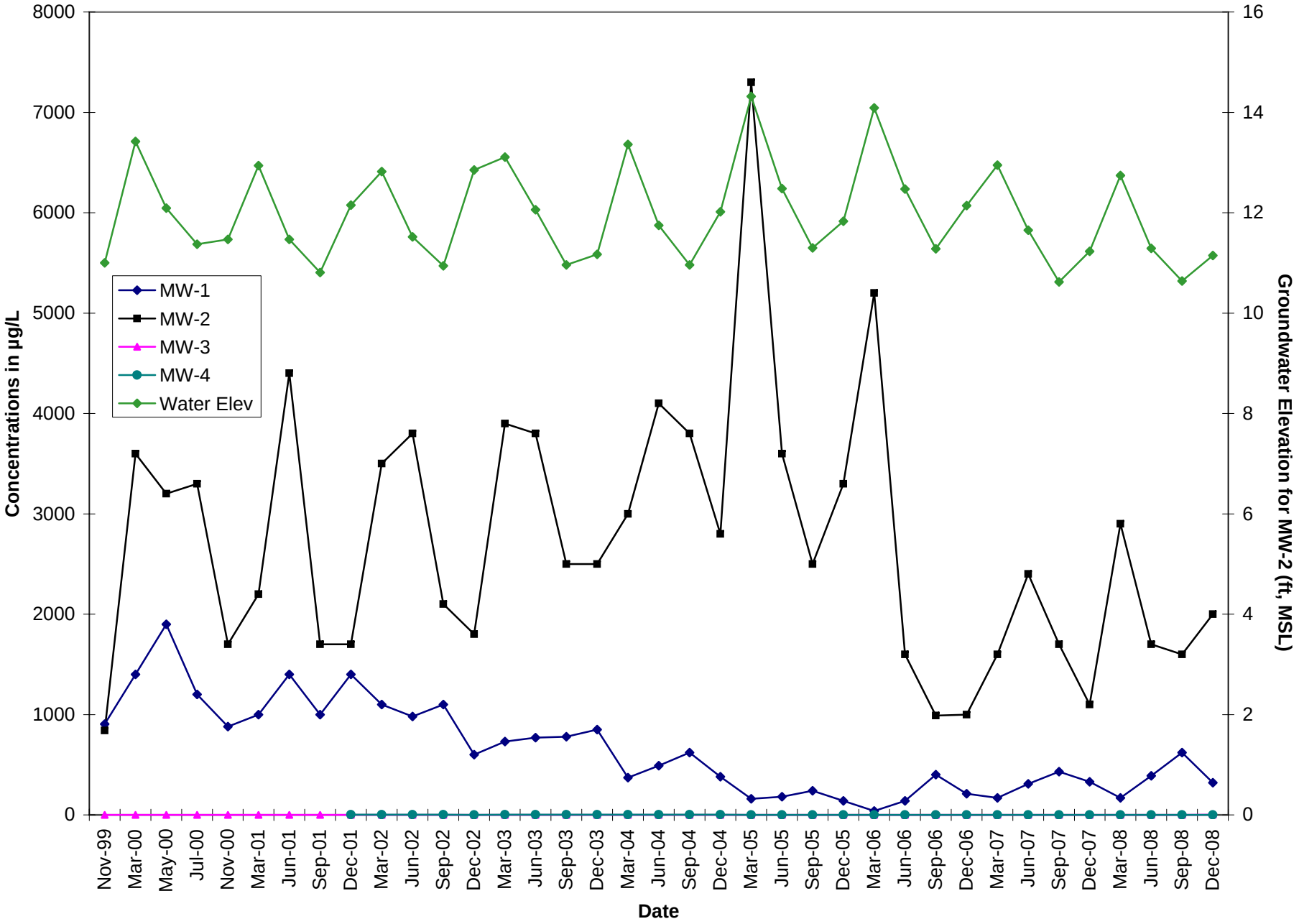
2016 Clement Avenue, Alameda, California

**Figure 6. VOC Concentrations in Groundwater – September and December 2008**

## Figure 7. Graphical Summary of PCE Concentrations



## Figure 8. PCE Concentrations vs. Groundwater Elevation



# Appendix A

# Field Data Sheets

**Third Quarter 2008**

# WATER LEVEL FIELD DATA

Cargill Salt
Alameda Facility
Alameda, California
Project No. CS1605

| Well ID | Date | Time | Depth to Water (1st Msmt.) (feet) | Depth to Water (2nd Msmt.) (feet) | Comments |
|---|---|---|---|---|---|
| MW-1 | 9/3/08 | 0806 | 3.93 | 3.93 | |
| MW-2 | 9/3/08 | 0809 | 5.58 | 5.58 | |
| MW-3 | 9/3/08 | 0802 | 3.92 | 3.92 | |
| MW-4 | 9/3/08 | 0758 | 3.28 | 3.28 | |

**Data Collection**

Field measurements by:
Print: Ruben Guevara
Signature:
Date: 9/3/08

Reviewed by:
Print: J. Butera
Signature:
Date: 9/4/08

# SAMPLE COLLECTION FIELD DATA



Project No.: CS1605
Project Name: Alameda Facility
Location: Alameda, CA
Client: Cargill Salt

Well ID: MW-1
Sample ID: MW-1
Start Date: 9/3/08
Finish Date: 9/3/08

WELL INFORMATION

Casing diameter (in.): 1.0 Depth to water (ft): 3.98 Well depth (ft): 8.3
One casing volume (gal.): 0.58 Calculated purge volume (gal.) *(3 x casing volume)*: 1.76
*One casing volume = π x [casing radius (in.) x 1 ft/12 in.]$^2$ x [well depth (ft) - depth to water (ft)] x 7.48 gal/ft$^3$*
*Gallons per linear ft for casing diameter of: 1" = 0.041 2" = 0.16 4." = 0.65 5" = 1.0 6" = 1.5 8" = 2.6*
Floating product thickness (ft): ND Method for checking: Interface probe X Clear bailer

WELL PURGING

Date purged: 9/3/08 Start time: 0911 End time: 0947
Purging equipment: Submersible pump ___ Bladder pump ___ Peristaltic pump X
PVC bailer ___ Teflon bailer ___ Other
Purge rate: 0.5gpm Well yield (H/M/L): low (recovered)
Purge water disposal: STORED ONSITE IN A 55gal. DRUM

| Time (2400 hr) | Cumulative Vol. Purged ~~(gal.)~~ L | pH (units) | EC (µS/cm) | T (° C) | Color (Visual) | Turbidity (Visual or NTU) |
|---|---|---|---|---|---|---|
| 0925 | 2.2 | 7.24 | 485 | 20.1 | clear | 3.28 |
| 0935 | 4.4 | 6.87 | 444 | 20.0 | clear | 2.31 |
| 0947 | 6.7 | 6.81 | 437 | 20.1 | clear | 3.91 |

Total Purged (gal.): 1.77

WELL SAMPLING

Date sampled: 9/3/08 Start time: 0948 End time: 0952
Depth to water (ft) before sampling: 5.42
Sampling equipment: Peristaltic pump X Bladder pump ___ Teflon bailer ___
PVC bailer ___ Other ___

Weather conditions: clear Sunny Ambient temperature (° F): 70
Well condition/Remarks: well OK

All Samples collected

Meter calibration: EC SEE MW-4 pH ___
Temperature ___ Turbidity ___

Purged and sampled by (print): R. Quevara
Signature: [signature] Reviewed by: [signature]

# SAMPLE COLLECTION FIELD DATA



Project No.: CS1605
Project Name: Alameda Facility
Location: Alameda, CA
Client: Cargill Salt

Well ID: MW-2
Sample ID: MW-2
Start Date: 9/3/08
Finish Date: 9/3/08

**WELL INFORMATION**

Casing diameter (in.): 1.0 Depth to water (ft): 5.75 Well depth (ft): 17.5
One casing volume (gal.): 0.48 Calculated purge volume (gal.) *(3 x casing volume)*: 1.44
*One casing volume = π x [casing radius (in.) x 1 ft/12 in.]$^2$ x [well depth (ft) - depth to water (ft)] x 7.48 gal/ft$^3$*
*Gallons per linear ft for casing diameter of: 1" = 0.041 2" = 0.16 4." = 0.65 5" = 1.0 6" = 1.5 8" = 2.6*
Floating product thickness (ft): ND Method for checking: Interface probe X Clear bailer

**WELL PURGING**

Date purged: 9/3/08 Start time: 11:35 End time: 12:05
Purging equipment: Submersible pump Bladder pump Peristaltic pump X
PVC bailer Teflon bailer Other
Purge rate: .05 GPM Well yield (H/M/L): High Yielding well
Purge water disposal: Stored onsite in a 55gal Drum

| Time (2400 hr) | Cumulative Vol. Purged (gal.) L | pH (units) | EC (µS/cm) | T (° C) | Color (Visual) | Turbidity (Visual or NTU) |
|---|---|---|---|---|---|---|
| 1146 | 1.8 | 6.83 | 446 | 21.4 | clear | 16.4 |
| 1155 | 3.6 | 6.71 | 466 | 20.7 | ↓ | 7.13 |
| 1205 | 5.5 | 6.73 | 473 | 20.6 | ↓ | 4.05 |

Total Purged (gal.): 1.45

**WELL SAMPLING**

Date sampled: 9/3/08 Start time: 12:06 End time: 1214
Depth to water (ft) before sampling: 6.51
Sampling equipment: Peristaltic pump X Bladder pump Teflon bailer
PVC bailer Other

Weather conditions: clear, sunny Ambient temperature (° F): 80
Well condition/Remarks: Dup-1 collected All samples collected

Meter calibration: EC SEE MW4 pH
Temperature Turbidity

Purged and sampled by (print): R. Guevara
Signature: Reviewed by:

# SAMPLE COLLECTION FIELD DATA



Project No.: CS1605
Project Name: Alameda Facility
Location: Alameda, CA
Client: Cargill Salt

Well ID: MW-3
Sample ID: MW-3
Start Date: 9/3/08
Finish Date: 9/3/08

**WELL INFORMATION**

Casing diameter (in.): 1.0 Depth to water (ft): 3.93 Well depth (ft): 17.6
One casing volume (gal.): 0.56 Calculated purge volume (gal.) *(3 x casing volume)*: 1.68
*One casing volume = π x [casing radius (in.) x 1 ft/12 in.]$^2$ x [well depth (ft) - depth to water (ft)] x 7.48 gal/ft$^3$*
*Gallons per linear ft for casing diameter of: 1" = 0.041 2" = 0.16 4." = 0.65 5" = 1.0 6" = 1.5 8" = 2.6*
Floating product thickness (ft): ND Method for checking: Interface probe X Clear bailer

**WELL PURGING**

Date purged: 9/3/08 Start time: 1006 End time: 11:09
Purging equipment: Submersible pump Bladder pump Peristaltic pump X
PVC bailer Teflon bailer Other
Purge rate: 0.03 gpm Well yield (H/M/L): Low Flow well
Purge water disposal: STORED ONSITE IN 55gal DRUM

| Time (2400 hr) | Cumulative Vol. Purged (gal.) (L) | pH (units) | EC (µS/cm) | T (° C) | Color (Visual) | Turbidity (Visual or NTU) |
|---|---|---|---|---|---|---|
| 1029 | 2.1 | 7.32 | 594 | 20.8 | clear | 9.92 |
| 1049 | 4.2 | 7.40 | 595 | 20.9 | clear | 5.5 |
| 11:09 | 6.4 | 7.48 | 592 | 21.0 | clear | 3.85 |

Total Purged (gal.): 1.69

**WELL SAMPLING**

Date sampled: 9/3/08 Start time: 11:10 End time: 11:18
Depth to water (ft) before sampling: 15.18
Sampling equipment: Peristaltic pump X Bladder pump Teflon bailer
PVC bailer Other

Weather conditions: OK Ambient temperature (° F): 80
Well condition/Remarks: OK. All Samples Collected

Meter calibration: EC SEE MW4 pH
Temperature Turbidity

Purged and sampled by (print): R Sweeney
Signature: Reviewed by:

# SAMPLE COLLECTION FIELD DATA



Project No.: CS1605
Project Name: Alameda Facility
Location: Alameda, CA
Client: Cargill Salt

Well ID: MW-4
Sample ID: MW-4
Start Date: 9/3/08
Finish Date: 9/3/08

**WELL INFORMATION**

Casing diameter (in.): 1.0 Depth to water (ft): 3.28 Well depth (ft): 19.0
One casing volume (gal.): .77 Calculated purge volume (gal.) *(3 x casing volume)*: 2.31
*One casing volume = π x [casing radius (in.) x 1 ft/12 in.]$^2$ x [well depth (ft) - depth to water (ft)] x 7.48 gal/ft$^3$*
*Gallons per linear ft for casing diameter of: 1" = 0.041 2" = 0.16 4." = 0.65 5" = 1.0 6" = 1.5 8" = 2.6*
Floating product thickness (ft): NP Method for checking: Interface probe X Clear bailer

**WELL PURGING**

Date purged: 9/3/08 Start time: 0759 End time: 0850
Purging equipment: Submersible pump ___ Bladder pump ___ Peristaltic pump X
PVC bailer ___ Teflon bailer ___ Other ___
Purge rate: .4 gpm Well yield (H/M/L): Medium Yield well
Purge water disposal: Stored onsite 55gal Drum

| Time (2400 hr) | Cumulative Vol. Purged ~~(gal.)~~ L | pH (units) | EC (µS/cm) | T (° C) | Color (Visual) | Turbidity (Visual or NTU) |
|---|---|---|---|---|---|---|
| 0823 | 2.9 | 6.48 | 624 | 20.3 | clear | 6.37 |
| 0835 | 5.8 | 7.16 | 622 | 20.4 | clear | 5.32 |
| 0850 | 8.8 | 7.22 | 621 | 20.3 | clear | 3.13 |

Total Purged (gal.): 2.3

**WELL SAMPLING**

Date sampled: 9/3/08 Start time: 0851 End time: 0857
Depth to water (ft) before sampling: 12.45
Sampling equipment: Peristaltic pump X Bladder pump ___ Teflon bailer ___
PVC bailer ___ Other ___

Weather conditions: clear Sunny Ambient temperature (° F): 70
Well condition/Remarks: Well ok
All Samples collected

Meter calibration: EC 15,150 , 15,000 pH (7.06, 7.00), (9.99, 10.00) (3.78, 4.00)
Temperature 17.5 Turbidity 1.09 , 1.0

Purged and sampled by (print): R. Guevara
Signature: [signature] Reviewed by: [signature]

# Fourth Quarter 2008

# WATER LEVEL FIELD DATA

Cargill Salt
Alameda Facility
Alameda, California
Project No. CS1605

| Well ID | Date | Time | Depth to Water (1st Msmt.) (feet) | Depth to Water (2nd Msmt.) (feet) | Comments |
|---|---|---|---|---|---|
| MW-1 | 12/4/08 | 0812 | 3.71 | 3.71 | |
| MW-2 | 12/4/08 | 0814 | 5.07 | 5.07 | |
| MW-3 | 12/4/08 | 0810 | 3.59 | 3.59 | Water in box |
| MW-4 | 12/4/08 | 0817 | 3.12 | 3.12 | |

**Data Collection**

Field measurements by:
Print: Ruben Guevara
Signature:
Date: 12/4/08

Reviewed by:
Print: J. Butler
Signature: J Butler
Date: 12/4/08

# SAMPLE COLLECTION FIELD DATA



Project No.: CS1605
Project Name: Alameda Facility
Location: Alameda, CA
Client: Cargill Salt

Well ID: MW-1
Sample ID: MW-11
Start Date: 12/4/08
Finish Date: 12/4/08

## WELL INFORMATION

Casing diameter (in.): 1.0 Depth to water (ft): 3.73 Well depth (ft): 18.3
One casing volume (gal.): .59 Calculated purge volume (gal.) *(3 x casing volume)*: 1.79
*One casing volume = π x [casing radius (in.) x 1 ft/12 in.]$^2$ x [well depth (ft) - depth to water (ft)] x 7.48 gal/ft$^3$*
*Gallons per linear ft for casing diameter of: 1" = 0.041 2" = 0.16 4." = 0.65 5" = 1.0 6" = 1.5 8" = 2.6*
Floating product thickness (ft): ND Method for checking: Interface probe X Clear bailer

## WELL PURGING

Date purged: 12/4/08 Start time: 0929 End time: 1002
Purging equipment: Submersible pump ___ Bladder pump ___ Peristaltic pump +
PVC bailer ___ Teflon bailer ___ Other ___
Purge rate: .05 spm Well yield (H/L): Low yield well
Purge water disposal: Drummed on site — in 5-gallon bucket

| Time (2400 hr) | Cumulative Vol. Purged (gal.) | pH (units) | EC (µS/cm) | T (° C) | Color (Visual) | Turbidity (Visual or NTU) |
|---|---|---|---|---|---|---|
| 0939 | 2.2 | 7.03 | 489 | 16.3 | clear | 60.2 |
| 0951 | 4.4 | 6.74 | 438 | 16.3 | clear | 29.3 |
| 1002 | 6.8 | 6.72 | 436 | 16.3 | clear | 14.3 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Total Purged (gal.): 1.79

## WELL SAMPLING

Date sampled: 12/4/08 Start time: 1003 End time: 1007
Depth to water (ft) before sampling: 5.27
Sampling equipment: Peristaltic pump + Bladder pump ___ Teflon bailer ___
PVC bailer ___ Other ___

Weather conditions: clear windy Ambient temperature (° F): 60
Well condition/Remarks: well OK
All samples collected

Meter calibration: EC SEE MW4 pH ___
Temperature ___ Turbidity ___

Purged and sampled by (print): R. Guevara
Signature: [signature] Reviewed by: [signature]

# SAMPLE COLLECTION FIELD DATA



Project No.: CS1605
Project Name: Alameda Facility
Location: Alameda, CA
Client: Cargill Salt

Well ID: MW-2
Sample ID: MW-2
Start Date: 12/4/08
Finish Date: 12/4/08

## WELL INFORMATION

Casing diameter (in.): 1.0 Depth to water (ft): 5.06 Well depth (ft): 17.5
One casing volume (gal.): .95 Calculated purge volume (gal.) *(3 x casing volume)*: 1.53
*One casing volume = π x [casing radius (in.) x 1 ft/12 in.]$^2$ x [well depth (ft) - depth to water (ft)] x 7.48 gal/ft$^3$*
*Gallons per linear ft for casing diameter of: 1" = 0.041 2" = 0.16 4." = 0.65 5" = 1.0 6" = 1.5 8" = 2.6*
Floating product thickness (ft): ND Method for checking: Interface probe X Clear bailer

## WELL PURGING

Date purged: 12/4/08 Start time: 11.21 End time: 1156
Purging equipment: Submersible pump ___ Bladder pump ___ Peristaltic pump X
PVC bailer ___ Teflon bailer ___ Other ___
Purge rate: .021 gpm Well yield (H/L): Moderate/Low
Purge water disposal: Stored on site in storage drum - and 5-gallon bucket

| Time (2400 hr) | Cumulative Vol. Purged (~~gal.~~) L | pH (units) | EC (µS/cm) | T (° C) | Color (Visual) | Turbidity (Visual or NTU) |
|---|---|---|---|---|---|---|
| 1133 | 1.9 | 6.97 | 436 | 16.1 | Cloudy/brown | 66.2 |
| 1144 | 3.8 | 6.71 | 445 | 16.3 | cloudy/tan | 77.5 |
| 1156 | 5.8 | 6.71 | 447 | 16.2 | cloudy/tan | 72.2 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Total Purged (gal.): 1.5

## WELL SAMPLING

Date sampled: 12/4/08 Start time: 1157 End time: 1204
Depth to water (ft) before sampling: 5.94
Sampling equipment: Peristaltic pump X Bladder pump ___ Teflon bailer ___
PVC bailer ___ Other ___

Weather conditions: clear Ambient temperature (° F): 65
Well condition/Remarks:
DUP-1 collected All samples collected

Meter calibration: EC SEE MW-4 pH ___
Temperature ___ Turbidity ___

Purged and sampled by (print): Ruben Guevara
Signature: [signature] Reviewed by: [signature]

# SAMPLE COLLECTION FIELD DATA



Project No.: CS1605
Project Name: Alameda Facility
Location: Alameda, CA
Client: Cargill Salt

Well ID: MW-3
Sample ID: MW-3
Start Date: 12/4/08
Finish Date: 12/4/08

## WELL INFORMATION

Casing diameter (in.): 1.0 Depth to water (ft): 3.72 Well depth (ft): 17.6
One casing volume (gal.): .56 Calculated purge volume (gal.) *(3 x casing volume)*: 1.70
*One casing volume = π x [casing radius (in.) x 1 ft/12 in.]$^2$ x [well depth (ft) - depth to water (ft)] x 7.48 gal/ft$^3$*
*Gallons per linear ft for casing diameter of: 1" = 0.041 2" = 0.16 4." = 0.65 5" = 1.0 6" = 1.5 8" = 2.6*
Floating product thickness (ft): ND Method for checking: Interface probe ✓ Clear bailer

## WELL PURGING

Date purged: 12/4/08 Start time: 1021 End time: 1108
Purging equipment: Submersible pump ____ Bladder pump ____ Peristaltic pump +
PVC bailer ____ Teflon bailer ____ Other ____
Purge rate: .03 Well yield (H/L): Low Yield Well
Purge water disposal: STORED & DRUMMED ON SITE-IN 5-gallon bucket

| Time (2400 hr) | Cumulative Vol. Purged (gal.) ✓ | pH (units) | EC (µS/cm) | T (° C) | Color (Visual) | Turbidity (Visual or ~~NTU~~) |
|---|---|---|---|---|---|---|
| 1035 | 2.1 | 7.22 | 589 | 15.7 | clear | 11.0 |
| 1051 | 4.2 | 7.21 | 550 | 16.6 | clear | 15.4 |
| 1108 | 6.4 | 7.24 | 593 | 16.4 | clear | 55.0 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Total Purged (gal.): 1.7

## WELL SAMPLING

Date sampled: 12/4/08 Start time: 1109 End time: 1111
Depth to water (ft) before sampling: 16.48
Sampling equipment: Peristaltic pump ✓ Bladder pump ____ Teflon bailer ____
PVC bailer ____ Other ____

Weather conditions: Clear, Windy Ambient temperature (° F): 60
Well condition/Remarks: Water in Box, All samples collected

Meter calibration: EC SEE MW-4 pH ____
Temperature ____ Turbidity ____

Purged and sampled by (print): R. Guevara
Signature: [signature] Reviewed by: [signature]

# SAMPLE COLLECTION FIELD DATA



Project No.: CS1605
Project Name: Alameda Facility
Location: Alameda, CA
Client: Cargill Salt

Well ID: MW-4
Sample ID: MW-4
Start Date: 12/4/08
Finish Date: 12/4/08

## WELL INFORMATION

Casing diameter (in.): 1.0 Depth to water (ft): 3.12 Well depth (ft): 19.0
One casing volume (gal.): 0.65 Calculated purge volume (gal.) *(3 x casing volume)*: 1.95
*One casing volume = π x [casing radius (in.) x 1 ft/12 in.]$^2$ x [well depth (ft) - depth to water (ft)] x 7.48 gal/ft$^3$*
*Gallons per linear ft for casing diameter of: 1" = 0.041 2" = 0.16 4." = 0.65 5" = 1.0 6" = 1.5 8" = 2.6*
Floating product thickness (ft): ND Method for checking: Interface probe + Clear bailer

## WELL PURGING

Date purged: 12/4/08 Start time: 0827 End time: 0914
Purging equipment: Submersible pump ___ Bladder pump ___ Peristaltic pump +
PVC bailer ___ Teflon bailer ___ Other ___
Purge rate: .04 gpm Well yield (H/L): Low Yield
Purge water disposal: Drummed onsite in 5 gallon barrel

| Time (2400 hr) | Cumulative Vol. Purged (gal.) | pH (units) | EC (µS/cm) | T (° C) | Color (Visual) | Turbidity (Visual or NTU) |
|---|---|---|---|---|---|---|
| 0844 | 2.5 | 6.78 | 609 | 18.1 | clear | 1.59 |
| 0858 | 5.0 | 7.06 | 599 | 18.3 | clear | 0.99 |
| 0914 | 7.4 | 7.14 | 600 | 18.4 | clear | 0.82 |

Total Purged (gal.): 1.95

## WELL SAMPLING

Date sampled: 12/4/08 Start time: 0915 End time: 0918
Depth to water (ft) before sampling: 9.82
Sampling equipment: Peristaltic pump X Bladder pump ___ Teflon bailer ___
PVC bailer ___ Other ___

Weather conditions: clear Ambient temperature (° F): 50
Well condition/Remarks: well OK,
All Samples collected

Meter calibration: EC 15,100 , 15,000 pH (6.98 7.00) (10.02 ,000) (3.99,4.00)
Temperature 8.0 Turbidity 9.95/10.00

Purged and sampled by (print): R. Gullberg
Signature: [signature] Reviewed by: [signature]

# Appendix B

# Groundwater Velocity Calculations

# APPENDIX B
# GROUNDWATER VELOCITY CALCULATIONS

FOR CARGILL ALAMEDA SITE

## GROUNDWATER VELOCITY FORMULA

$V = Ki/n$ where:

V = average linear groundwater velocity — i = hydraulic gradient
K = hydraulic conductivity — n = effective porosity

## PARAMETERS

Range of hydraulic conductivity values (K) from slug tests:

| Material | Well | K (cm/sec) |
|---|---|---|
| Silty sand (SM) and Clayey sand (SC) | MW-1 | 0.00002 |
| Silty sand (SM) and Clayey sand (SC) | MW-2 | 0.00002 |
| Silty sand (SM) and Clayey sand (SC) | MW-3 | 0.000003 |
| | Highest measured K = | 0.00002 |

Porosity (n) = 33% (from laboratory analysis of boring B21 soil sample)

Hydraulic gradient (i) calculated from groundwater contours:

| | |
|---|---|
| September 2008 | 0.012 |
| December 2008 | 0.015 |

## UNIT CONVERSIONS

| | |
|---|---|
| 1 day = 86,400 sec | 1 cm/sec = 2,834.65 ft/day |
| 1 foot = 30.48 cm | 1 cm/sec = 1,034,645.67 ft/yr |

## CALCULATED VELOCITIES

| Measurement Event | Flow Direction | K (cm/sec) | i (ft/ft) | n | V (ft/yr) |
|---|---|---|---|---|---|
| September 2008 | NE | 0.00002 | 0.012 | 0.33 | 0.8 |
| December 2008 | NE | 0.00002 | 0.015 | 0.33 | 0.9 |

Calculations and assumptions prepared by: Mark C. Wheeler

Date: 12/17/2008

# Appendix C

# Certified Analytical Reports and Chain-of-Custody Documentation

**Third Quarter 2008**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 720-15821-1

Job Description: Alameda Facility  CS 1605

For:
Crawford Consulting Inc
2 North First Street 4th Floor
San Jose, CA  95113-1212

Attention:  Dana Johnston

Melissa Brewer
Project Manager I
melissa.brewer@testamericainc.com
09/10/2008

cc:  Mark Wheeler

**Comments**
No additional comments.

**Receipt**
All samples were received in good condition within temperature requirements.

**GC/MS VOA**
No analytical or quality issues were noted.

# EXECUTIVE SUMMARY - Detections

Client: Crawford Consulting Inc

Job Number: 720-15821-1

| Lab Sample ID<br>Analyte | Client Sample ID | Result / Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|
| **720-15821-1** | **MW-1** | | | | |
| Trichloroethene | | 65 | 5.0 | ug/L | 8260B |
| Tetrachloroethene | | 620 | 5.0 | ug/L | 8260B |
| **720-15821-2** | **MW-2** | | | | |
| Tetrachloroethene | | 1600 | 20 | ug/L | 8260B |
| **720-15821-3** | **MW-3** | | | | |
| 1,1-Dichloroethene | | 0.79 | 0.50 | ug/L | 8260B |
| **720-15821-4** | **MW-4** | | | | |
| Tetrachloroethene | | 0.84 | 0.50 | ug/L | 8260B |
| **720-15821-5** | **DUP-1** | | | | |
| Trichloroethene | | 23 | 20 | ug/L | 8260B |
| Tetrachloroethene | | 2000 | 20 | ug/L | 8260B |

# METHOD SUMMARY

Client: Crawford Consulting Inc

Job Number: 720-15821-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Volatile Organic Compounds by GC/MS (Low Level) | TAL SF | SW846 8260B | |
| Purge-and-Trap | TAL SF | | SW846 5030B |

**Lab References:**

TAL SF = TestAmerica San Francisco

**Method References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

# SAMPLE SUMMARY

Client: Crawford Consulting Inc

Job Number: 720-15821-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 720-15821-1 | MW-1 | Water | 09/03/2008 0948 | 09/03/2008 1305 |
| 720-15821-2 | MW-2 | Water | 09/03/2008 1206 | 09/03/2008 1305 |
| 720-15821-3 | MW-3 | Water | 09/03/2008 1110 | 09/03/2008 1305 |
| 720-15821-4 | MW-4 | Water | 09/03/2008 0851 | 09/03/2008 1305 |
| 720-15821-5 | DUP-1 | Water | 09/03/2008 0000 | 09/03/2008 1305 |
| 720-15821-6TB | TB-1 | Water | 09/03/2008 0000 | 09/03/2008 1305 |

Client: Crawford Consulting Inc

Job Number: 720-15821-1

**Client Sample ID:** **MW-1**

Lab Sample ID: 720-15821-1
Client Matrix: Water

Date Sampled: 09/03/2008 0948
Date Received: 09/03/2008 1305

**8260B Volatile Organic Compounds by GC/MS (Low Level)**

Method: 8260B
Preparation: 5030B
Dilution: 10
Date Analyzed: 09/08/2008 1937
Date Prepared: 09/08/2008 1937

Analysis Batch: 720-40959

Instrument ID: Varian 3900F
Lab File ID: c:\saturnws\data\200809\09
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 5.0 |
| 1,1-Dichloroethane | ND | | 5.0 |
| Dichlorodifluoromethane | ND | | 5.0 |
| Vinyl chloride | ND | | 5.0 |
| Chloroethane | ND | | 10 |
| Trichlorofluoromethane | ND | | 10 |
| Methylene Chloride | ND | | 50 |
| trans-1,2-Dichloroethene | ND | | 5.0 |
| cis-1,2-Dichloroethene | ND | | 5.0 |
| Chloroform | ND | | 10 |
| 1,1,1-Trichloroethane | ND | | 5.0 |
| Carbon tetrachloride | ND | | 5.0 |
| 1,2-Dichloroethane | ND | | 5.0 |
| Trichloroethene | 65 | | 5.0 |
| 1,2-Dichloropropane | ND | | 5.0 |
| Dichlorobromomethane | ND | | 5.0 |
| trans-1,3-Dichloropropene | ND | | 5.0 |
| cis-1,3-Dichloropropene | ND | | 5.0 |
| 1,1,2-Trichloroethane | ND | | 5.0 |
| Tetrachloroethene | 620 | | 5.0 |
| Chlorodibromomethane | ND | | 5.0 |
| Chlorobenzene | ND | | 5.0 |
| Bromoform | ND | | 10 |
| 1,1,2,2-Tetrachloroethane | ND | | 5.0 |
| 1,3-Dichlorobenzene | ND | | 5.0 |
| 1,4-Dichlorobenzene | ND | | 5.0 |
| 1,2-Dichlorobenzene | ND | | 5.0 |
| Chloromethane | ND | | 10 |
| Bromomethane | ND | | 10 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 5.0 |
| EDB | ND | | 5.0 |
| 1,2,4-Trichlorobenzene | ND | | 10 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 101 | 82 - 120 |
| 4-Bromofluorobenzene | 98 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 96 | 88 - 119 |

Client: Crawford Consulting Inc | Job Number: 720-15821-1

**Client Sample ID:** **MW-2**

Lab Sample ID: 720-15821-2 | Date Sampled: 09/03/2008 1206
Client Matrix: Water | Date Received: 09/03/2008 1305

**8260B Volatile Organic Compounds by GC/MS (Low Level)**

Method: 8260B | Analysis Batch: 720-40959 | Instrument ID: Varian 3900F
Preparation: 5030B | Lab File ID: c:\saturnws\data\200809\09
Dilution: 40 | Initial Weight/Volume: 40 mL
Date Analyzed: 09/08/2008 1903 | Final Weight/Volume: 40 mL
Date Prepared: 09/08/2008 1903

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 20 |
| 1,1-Dichloroethane | ND | | 20 |
| Dichlorodifluoromethane | ND | | 20 |
| Vinyl chloride | ND | | 20 |
| Chloroethane | ND | | 40 |
| Trichlorofluoromethane | ND | | 40 |
| Methylene Chloride | ND | | 200 |
| trans-1,2-Dichloroethene | ND | | 20 |
| cis-1,2-Dichloroethene | ND | | 20 |
| Chloroform | ND | | 40 |
| 1,1,1-Trichloroethane | ND | | 20 |
| Carbon tetrachloride | ND | | 20 |
| 1,2-Dichloroethane | ND | | 20 |
| Trichloroethene | ND | | 20 |
| 1,2-Dichloropropane | ND | | 20 |
| Dichlorobromomethane | ND | | 20 |
| trans-1,3-Dichloropropene | ND | | 20 |
| cis-1,3-Dichloropropene | ND | | 20 |
| 1,1,2-Trichloroethane | ND | | 20 |
| Tetrachloroethene | 1600 | | 20 |
| Chlorodibromomethane | ND | | 20 |
| Chlorobenzene | ND | | 20 |
| Bromoform | ND | | 40 |
| 1,1,2,2-Tetrachloroethane | ND | | 20 |
| 1,3-Dichlorobenzene | ND | | 20 |
| 1,4-Dichlorobenzene | ND | | 20 |
| 1,2-Dichlorobenzene | ND | | 20 |
| Chloromethane | ND | | 40 |
| Bromomethane | ND | | 40 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 20 |
| EDB | ND | | 20 |
| 1,2,4-Trichlorobenzene | ND | | 40 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 99 | 82 - 120 |
| 4-Bromofluorobenzene | 95 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 100 | 88 - 119 |

Client: Crawford Consulting Inc | Job Number: 720-15821-1

**Client Sample ID:** **MW-3**

Lab Sample ID: 720-15821-3 | Date Sampled: 09/03/2008 1110
Client Matrix: Water | Date Received: 09/03/2008 1305

**8260B Volatile Organic Compounds by GC/MS (Low Level)**

Method: 8260B | Analysis Batch: 720-40959 | Instrument ID: Varian 3900F
Preparation: 5030B | Lab File ID: c:\saturnws\data\200809\09
Dilution: 1.0 | Initial Weight/Volume: 40 mL
Date Analyzed: 09/08/2008 1757 | Final Weight/Volume: 40 mL
Date Prepared: 09/08/2008 1757

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | 0.79 | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | ND | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 103 | 82 - 120 |
| 4-Bromofluorobenzene | 97 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 105 | 88 - 119 |

Client: Crawford Consulting Inc | Job Number: 720-15821-1

**Client Sample ID: MW-4**

Lab Sample ID: 720-15821-4 | Date Sampled: 09/03/2008 0851
Client Matrix: Water | Date Received: 09/03/2008 1305

**8260B Volatile Organic Compounds by GC/MS (Low Level)**

Method: 8260B | Analysis Batch: 720-40959 | Instrument ID: Varian 3900F
Preparation: 5030B | Lab File ID: c:\saturnws\data\200809\09
Dilution: 1.0 | Initial Weight/Volume: 40 mL
Date Analyzed: 09/08/2008 1830 | Final Weight/Volume: 40 mL
Date Prepared: 09/08/2008 1830

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | 0.84 | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 103 | 82 - 120 |
| 4-Bromofluorobenzene | 102 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 103 | 88 - 119 |

Client: Crawford Consulting Inc | Job Number: 720-15821-1

**Client Sample ID:** **DUP-1**

Lab Sample ID: 720-15821-5 | Date Sampled: 09/03/2008 0000
Client Matrix: Water | Date Received: 09/03/2008 1305

**8260B Volatile Organic Compounds by GC/MS (Low Level)**

Method: 8260B | Analysis Batch: 720-41022 | Instrument ID: Varian 3900G
Preparation: 5030B | Lab File ID: c:\saturnws\data\200809\09
Dilution: 40 | Initial Weight/Volume: 40 mL
Date Analyzed: 09/09/2008 1803 | Final Weight/Volume: 40 mL
Date Prepared: 09/09/2008 1803

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 20 |
| 1,1-Dichloroethane | ND | | 20 |
| Dichlorodifluoromethane | ND | | 20 |
| Vinyl chloride | ND | | 20 |
| Chloroethane | ND | | 40 |
| Trichlorofluoromethane | ND | | 40 |
| Methylene Chloride | ND | | 200 |
| trans-1,2-Dichloroethene | ND | | 20 |
| cis-1,2-Dichloroethene | ND | | 20 |
| Chloroform | ND | | 40 |
| 1,1,1-Trichloroethane | ND | | 20 |
| Carbon tetrachloride | ND | | 20 |
| 1,2-Dichloroethane | ND | | 20 |
| Trichloroethene | 23 | | 20 |
| 1,2-Dichloropropane | ND | | 20 |
| Dichlorobromomethane | ND | | 20 |
| trans-1,3-Dichloropropene | ND | | 20 |
| cis-1,3-Dichloropropene | ND | | 20 |
| 1,1,2-Trichloroethane | ND | | 20 |
| Tetrachloroethene | 2000 | | 20 |
| Chlorodibromomethane | ND | | 20 |
| Chlorobenzene | ND | | 20 |
| Bromoform | ND | | 40 |
| 1,1,2,2-Tetrachloroethane | ND | | 20 |
| 1,3-Dichlorobenzene | ND | | 20 |
| 1,4-Dichlorobenzene | ND | | 20 |
| 1,2-Dichlorobenzene | ND | | 20 |
| Chloromethane | ND | | 40 |
| Bromomethane | ND | | 40 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 20 |
| EDB | ND | | 20 |
| 1,2,4-Trichlorobenzene | ND | | 40 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 97 | 82 - 120 |
| 4-Bromofluorobenzene | 105 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 98 | 88 - 119 |

Client: Crawford Consulting Inc | Job Number: 720-15821-1

**Client Sample ID:** **TB-1**

Lab Sample ID: 720-15821-6TB | Date Sampled: 09/03/2008 0000
Client Matrix: Water | Date Received: 09/03/2008 1305

**8260B Volatile Organic Compounds by GC/MS (Low Level)**

Method: 8260B | Analysis Batch: 720-40959 | Instrument ID: Varian 3900F
Preparation: 5030B | Lab File ID: c:\saturnws\data\200809\09
Dilution: 1.0 | Initial Weight/Volume: 40 mL
Date Analyzed: 09/08/2008 1650 | Final Weight/Volume: 40 mL
Date Prepared: 09/08/2008 1650

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | ND | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 105 | 82 - 120 |
| 4-Bromofluorobenzene | 100 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 107 | 88 - 119 |

# DATA REPORTING QUALIFIERS

| Lab Section | Qualifier | Description |
|---|---|---|

Client: Crawford Consulting Inc

Job Number: 720-15821-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:720-40959** | | | | | |
| LCS 720-40959/4 | Lab Control Spike | T | Water | 8260B | |
| LCSD 720-40959/1 | Lab Control Spike Duplicate | T | Water | 8260B | |
| MB 720-40959/5 | Method Blank | T | Water | 8260B | |
| 720-15821-1 | MW-1 | T | Water | 8260B | |
| 720-15821-2 | MW-2 | T | Water | 8260B | |
| 720-15821-3 | MW-3 | T | Water | 8260B | |
| 720-15821-4 | MW-4 | T | Water | 8260B | |
| 720-15821-6TB | TB-1 | T | Water | 8260B | |
| **Analysis Batch:720-41022** | | | | | |
| LCS 720-41022/2 | Lab Control Spike | T | Water | 8260B | |
| LCSD 720-41022/1 | Lab Control Spike Duplicate | T | Water | 8260B | |
| MB 720-41022/3 | Method Blank | T | Water | 8260B | |
| 720-15821-5 | DUP-1 | T | Water | 8260B | |

**Report Basis**
T = Total

Client: Crawford Consulting Inc

Job Number: 720-15821-1

**Method Blank - Batch: 720-40959**

**Method: 8260B**
**Preparation: 5030B**

Lab Sample ID: MB 720-40959/5
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/08/2008 1255
Date Prepared: 09/08/2008 1255

Analysis Batch: 720-40959
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900F
Lab File ID: c:\saturnws\data\200809\0
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result | Qual | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | ND | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 106 | 82 - 120 |
| 4-Bromofluorobenzene | 107 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 104 | 88 - 119 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Crawford Consulting Inc

Job Number: 720-15821-1

**Lab Control Spike/**
**Lab Control Spike Duplicate Recovery Report - Batch: 720-40959**

**Method: 8260B**
**Preparation: 5030B**

LCS Lab Sample ID: LCS 720-40959/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/08/2008 1148
Date Prepared: 09/08/2008 1148

Analysis Batch: 720-40959
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900F
Lab File ID: c:\saturnws\data\200809\0
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

LCSD Lab Sample ID: LCSD 720-40959/1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/08/2008 1222
Date Prepared: 09/08/2008 1222

Analysis Batch: 720-40959
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900F
Lab File ID: c:\saturnws\data\200809\090
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 98 | 94 | 70 - 130 | 4 | 20 | | |
| Trichloroethene | 91 | 88 | 70 - 130 | 3 | 20 | | |
| Chlorobenzene | 101 | 101 | 70 - 130 | 1 | 20 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 99 | 93 | 82 - 120 |
| 4-Bromofluorobenzene | 98 | 92 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 100 | 92 | 88 - 119 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Crawford Consulting Inc

Job Number: 720-15821-1

**Method Blank - Batch: 720-41022**

**Method: 8260B**
**Preparation: 5030B**

Lab Sample ID: MB 720-41022/3
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/09/2008 1119
Date Prepared: 09/09/2008 1119

Analysis Batch: 720-41022
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200809\0
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result | Qual | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | ND | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 98 | 82 - 120 |
| 4-Bromofluorobenzene | 106 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 102 | 88 - 119 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Crawford Consulting Inc

Job Number: 720-15821-1

**Lab Control Spike/**
**Lab Control Spike Duplicate Recovery Report - Batch: 720-41022**

**Method: 8260B**
**Preparation: 5030B**

LCS Lab Sample ID: LCS 720-41022/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/09/2008 1011
Date Prepared: 09/09/2008 1011

Analysis Batch: 720-41022
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200809\0
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

LCSD Lab Sample ID: LCSD 720-41022/1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/09/2008 1045
Date Prepared: 09/09/2008 1045

Analysis Batch: 720-41022
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200809\090
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 90 | 89 | 70 - 130 | 2 | 20 | | |
| Trichloroethene | 81 | 79 | 70 - 130 | 3 | 20 | | |
| Chlorobenzene | 110 | 106 | 70 - 130 | 3 | 20 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 97 | 95 | 82 - 120 |
| 4-Bromofluorobenzene | 110 | 106 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 101 | 100 | 88 - 119 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Test America
1220 Quarry Lane, Pleasanton, CA 94566
(925) 484-1919 FAX (925) 484-1096

# CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

720-15821

Date: 9/3/08

117258

| | |
|---|---|
| **Project Name:** | Alameda Facility |
| **Project Number:** | CS1605 |
| **Project Manager:** | Dana Johnston |
| **Company/Address:** | Crawford Consulting, Inc.<br>2 North First St. 4th Floor<br>San Jose, CA 95113 |
| **Phone:** | (408) 287-9934 |
| **Fax:** | (408) 287-9937 |

**Sampler's Signature:**

| Sample I.D. | Date | Time | LAB I.D. | Sample Matrix | Number of Containers | Volatile Organics (VOCs) (EPA 8021B) | Pb (7421); As (7060) Same as Metals | COD, TKN 500 ml plastic $H_2SO_4$ | Chloride, Nitrate 500 ml plastic NP | pH, Conductivity 500 ml plastic NP | Total Phenols 2 x 500 ml glass $H_2SO_4$ | **Volatile Organics (8010) 3 x 40 ml vial** | TPHg/BTEX 2 x 40 ml vial HCl | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 9/3/08 | 0948 | | water | 3 | | | | | | | X | | | | |
| MW-2 | 9/3/08 | 1200 | | | 3 | | | | | | | X | | | | |
| MW-3 | 9/3/08 | 1110 | | water | 3 | | | | | | | X | | | | |
| MW-4 | 9/3/08 | 0851 | | Water | 3 | | | | | | | X | | | | |
| DUP-1 | 9/3/08 | — | | water | 3 | | | | | | | X | | | | |
| TB-1 | 9/3/08 | — | | Water | 2 | | | | | | | X | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| Relinquished By | Received By |
|---|---|
| Signature: RGuevara | Signature: Soren Mullen |
| Printed Name: R Guevara | Printed Name: Soren Mullen |
| Firm: P.S.I. | Firm: Test America |
| Date/Time: 9/3/08 1305 | Date/Time: 9-03-08 1305 |
| Relinquished By | Received By |
| Signature: | Signature: |
| Printed Name: | Printed Name: |
| Firm: | Firm: |
| Date/Time: | Date/Time: |

**TURNAROUND REQUIREMENTS**

- ___ 24 hr ___ 48 hr ___ 5 day
- x Standard (5 working days)
- ___ Provide Verbal Preliminary Results
- x Provide pdf Results

Due Date: ___

**REPORT REQUIREMENTS**

- ___ I Routine Report
- x II Report (includes DUP, MS, MSD, as required, may be charged as samples)
- ___ III. Data Validation Report (includes All Raw Data)
- ___ RWQCB

(MDLs/PQLs/TRACE#)

**INVOICE INFORMATION**

P.O. #: ___

Bill to: ___

**SAMPLE RECEIPT**

Shipping VIA: ___

Shipping #: ___

Condition: ___

**Special Instructions/Comments:**

Please report MRLs only

3.7°C

Please pdf results to: Dana Johnston at dana@crawfordconsulting.com

Please provide EDF for Geotracker. Global ID is SL0600177511

09/10/2008

Page 18 of 19

# Login Sample Receipt Check List

Client: Crawford Consulting Inc

Job Number: 720-15821-1

**Login Number: 15821**
**List Source: TestAmerica San Francisco**
**Creator: Mullen, Joan**
**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |

# Fourth Quarter 2008

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 720-17192-1

Job Description: Alameda Facility CS 1605

For:
Crawford Consulting Inc
2 North First Street 4th Floor
San Jose, CA 95113-1212

Attention: Mark Wheeler

Approved for release.
Melissa Brewer
Project Manager I
12/9/2008 3:30 PM

Melissa Brewer
Project Manager I
melissa.brewer@testamericainc.com
12/09/2008

cc: Dana Johnston

**Comments**
No additional comments.

**Receipt**
All samples were received in good condition within temperature requirements.

**GC/MS VOA**
No analytical or quality issues were noted.

# EXECUTIVE SUMMARY - Detections

Client: Crawford Consulting Inc

Job Number: 720-17192-1

| Lab Sample ID<br>Analyte | Client Sample ID | Result / Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|
| **720-17192-1** | **MW-1** | | | | |
| Trichloroethene | | 42 | 5.0 | ug/L | 8260B |
| Tetrachloroethene | | 320 | 5.0 | ug/L | 8260B |
| **720-17192-2** | **MW-2** | | | | |
| Tetrachloroethene | | 2000 | 20 | ug/L | 8260B |
| **720-17192-3** | **MW-3** | | | | |
| 1,1-Dichloroethene | | 0.59 | 0.50 | ug/L | 8260B |
| Tetrachloroethene | | 1.2 | 0.50 | ug/L | 8260B |
| **720-17192-4** | **MW-4** | | | | |
| Tetrachloroethene | | 0.65 | 0.50 | ug/L | 8260B |
| **720-17192-5FD** | **DUP-1** | | | | |
| Tetrachloroethene | | 1900 | 20 | ug/L | 8260B |

# METHOD SUMMARY

Client: Crawford Consulting Inc

Job Number: 720-17192-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL SF | SW846 8260B | |
| Purge and Trap | TAL SF | | SW846 5030B |

**Lab References:**

TAL SF = TestAmerica San Francisco

**Method References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

# SAMPLE SUMMARY

Client: Crawford Consulting Inc

Job Number: 720-17192-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 720-17192-1 | MW-1 | Water | 12/04/2008 1003 | 12/04/2008 1300 |
| 720-17192-2 | MW-2 | Water | 12/04/2008 1157 | 12/04/2008 1300 |
| 720-17192-3 | MW-3 | Water | 12/04/2008 1109 | 12/04/2008 1300 |
| 720-17192-4 | MW-4 | Water | 12/04/2008 0915 | 12/04/2008 1300 |
| 720-17192-5FD | DUP-1 | Water | 12/04/2008 0000 | 12/04/2008 1300 |
| 720-17192-6TB | TB-1 | Water | 12/04/2008 0000 | 12/04/2008 1300 |

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Client Sample ID:** **MW-1**

Lab Sample ID: 720-17192-1
Client Matrix: Water

Date Sampled: 12/04/2008 1003
Date Received: 12/04/2008 1300

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B
Preparation: 5030B
Dilution: 10
Date Analyzed: 12/05/2008 1306
Date Prepared: 12/05/2008 1306

Analysis Batch: 720-44686

Instrument ID: Varian 3900G
Lab File ID: e:\data\200812\120508\SA-
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 5.0 |
| 1,1-Dichloroethane | ND | | 5.0 |
| Dichlorodifluoromethane | ND | | 5.0 |
| Vinyl chloride | ND | | 5.0 |
| Chloroethane | ND | | 10 |
| Trichlorofluoromethane | ND | | 10 |
| Methylene Chloride | ND | | 50 |
| trans-1,2-Dichloroethene | ND | | 5.0 |
| cis-1,2-Dichloroethene | ND | | 5.0 |
| Chloroform | ND | | 10 |
| 1,1,1-Trichloroethane | ND | | 5.0 |
| Carbon tetrachloride | ND | | 5.0 |
| 1,2-Dichloroethane | ND | | 5.0 |
| Trichloroethene | 42 | | 5.0 |
| 1,2-Dichloropropane | ND | | 5.0 |
| Dichlorobromomethane | ND | | 5.0 |
| trans-1,3-Dichloropropene | ND | | 5.0 |
| cis-1,3-Dichloropropene | ND | | 5.0 |
| 1,1,2-Trichloroethane | ND | | 5.0 |
| Tetrachloroethene | 320 | | 5.0 |
| Chlorodibromomethane | ND | | 5.0 |
| Chlorobenzene | ND | | 5.0 |
| Bromoform | ND | | 10 |
| 1,1,2,2-Tetrachloroethane | ND | | 5.0 |
| 1,3-Dichlorobenzene | ND | | 5.0 |
| 1,4-Dichlorobenzene | ND | | 5.0 |
| 1,2-Dichlorobenzene | ND | | 5.0 |
| Chloromethane | ND | | 10 |
| Bromomethane | ND | | 10 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 5.0 |
| EDB | ND | | 5.0 |
| 1,2,4-Trichlorobenzene | ND | | 10 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 102 | 82 - 120 |
| 4-Bromofluorobenzene | 102 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 106 | 76 - 132 |

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Client Sample ID: MW-2**

Lab Sample ID: 720-17192-2
Client Matrix: Water

Date Sampled: 12/04/2008 1157
Date Received: 12/04/2008 1300

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B
Preparation: 5030B
Dilution: 40
Date Analyzed: 12/05/2008 1447
Date Prepared: 12/05/2008 1447

Analysis Batch: 720-44686

Instrument ID: Varian 3900G
Lab File ID: e:\data\200812\120508\SA-
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 20 |
| 1,1-Dichloroethane | ND | | 20 |
| Dichlorodifluoromethane | ND | | 20 |
| Vinyl chloride | ND | | 20 |
| Chloroethane | ND | | 40 |
| Trichlorofluoromethane | ND | | 40 |
| Methylene Chloride | ND | | 200 |
| trans-1,2-Dichloroethene | ND | | 20 |
| cis-1,2-Dichloroethene | ND | | 20 |
| Chloroform | ND | | 40 |
| 1,1,1-Trichloroethane | ND | | 20 |
| Carbon tetrachloride | ND | | 20 |
| 1,2-Dichloroethane | ND | | 20 |
| Trichloroethene | ND | | 20 |
| 1,2-Dichloropropane | ND | | 20 |
| Dichlorobromomethane | ND | | 20 |
| trans-1,3-Dichloropropene | ND | | 20 |
| cis-1,3-Dichloropropene | ND | | 20 |
| 1,1,2-Trichloroethane | ND | | 20 |
| Tetrachloroethene | 2000 | | 20 |
| Chlorodibromomethane | ND | | 20 |
| Chlorobenzene | ND | | 20 |
| Bromoform | ND | | 40 |
| 1,1,2,2-Tetrachloroethane | ND | | 20 |
| 1,3-Dichlorobenzene | ND | | 20 |
| 1,4-Dichlorobenzene | ND | | 20 |
| 1,2-Dichlorobenzene | ND | | 20 |
| Chloromethane | ND | | 40 |
| Bromomethane | ND | | 40 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 20 |
| EDB | ND | | 20 |
| 1,2,4-Trichlorobenzene | ND | | 40 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 98 | 82 - 120 |
| 4-Bromofluorobenzene | 101 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 110 | 76 - 132 |

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Client Sample ID: MW-3**

Lab Sample ID: 720-17192-3
Client Matrix: Water

Date Sampled: 12/04/2008 1109
Date Received: 12/04/2008 1300

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 12/05/2008 1159
Date Prepared: 12/05/2008 1159

Analysis Batch: 720-44686

Instrument ID: Varian 3900G
Lab File ID: e:\data\200812\120508\SA-
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | 0.59 | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | 1.2 | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 97 | 82 - 120 |
| 4-Bromofluorobenzene | 96 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 110 | 76 - 132 |

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Client Sample ID: MW-4**

Lab Sample ID: 720-17192-4
Client Matrix: Water

Date Sampled: 12/04/2008 0915
Date Received: 12/04/2008 1300

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 12/05/2008 1232
Date Prepared: 12/05/2008 1232

Analysis Batch: 720-44686

Instrument ID: Varian 3900G
Lab File ID: e:\data\200812\120508\SA-
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | 0.65 | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 101 | 82 - 120 |
| 4-Bromofluorobenzene | 106 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 104 | 76 - 132 |

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Client Sample ID: DUP-1**

Lab Sample ID: 720-17192-5FD
Client Matrix: Water

Date Sampled: 12/04/2008 0000
Date Received: 12/04/2008 1300

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B
Preparation: 5030B
Dilution: 40
Date Analyzed: 12/05/2008 1521
Date Prepared: 12/05/2008 1521

Analysis Batch: 720-44686

Instrument ID: Varian 3900G
Lab File ID: e:\data\200812\120508\SA-
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 20 |
| 1,1-Dichloroethane | ND | | 20 |
| Dichlorodifluoromethane | ND | | 20 |
| Vinyl chloride | ND | | 20 |
| Chloroethane | ND | | 40 |
| Trichlorofluoromethane | ND | | 40 |
| Methylene Chloride | ND | | 200 |
| trans-1,2-Dichloroethene | ND | | 20 |
| cis-1,2-Dichloroethene | ND | | 20 |
| Chloroform | ND | | 40 |
| 1,1,1-Trichloroethane | ND | | 20 |
| Carbon tetrachloride | ND | | 20 |
| 1,2-Dichloroethane | ND | | 20 |
| Trichloroethene | ND | | 20 |
| 1,2-Dichloropropane | ND | | 20 |
| Dichlorobromomethane | ND | | 20 |
| trans-1,3-Dichloropropene | ND | | 20 |
| cis-1,3-Dichloropropene | ND | | 20 |
| 1,1,2-Trichloroethane | ND | | 20 |
| Tetrachloroethene | 1900 | | 20 |
| Chlorodibromomethane | ND | | 20 |
| Chlorobenzene | ND | | 20 |
| Bromoform | ND | | 40 |
| 1,1,2,2-Tetrachloroethane | ND | | 20 |
| 1,3-Dichlorobenzene | ND | | 20 |
| 1,4-Dichlorobenzene | ND | | 20 |
| 1,2-Dichlorobenzene | ND | | 20 |
| Chloromethane | ND | | 40 |
| Bromomethane | ND | | 40 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 20 |
| EDB | ND | | 20 |
| 1,2,4-Trichlorobenzene | ND | | 40 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 100 | 82 - 120 |
| 4-Bromofluorobenzene | 106 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 101 | 76 - 132 |

Client: Crawford Consulting Inc | Job Number: 720-17192-1

**Client Sample ID:** **TB-1**

Lab Sample ID: 720-17192-6TB | Date Sampled: 12/04/2008 0000
Client Matrix: Water | Date Received: 12/04/2008 1300

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B | Analysis Batch: 720-44686 | Instrument ID: Varian 3900G
Preparation: 5030B | Lab File ID: e:\data\200812\120508\SA-
Dilution: 1.0 | Initial Weight/Volume: 40 mL
Date Analyzed: 12/05/2008 1125 | Final Weight/Volume: 40 mL
Date Prepared: 12/05/2008 1125

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | ND | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | %Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 107 | 82 - 120 |
| 4-Bromofluorobenzene | 102 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 108 | 76 - 132 |

# DATA REPORTING QUALIFIERS

| Lab Section | Qualifier | Description |
|---|---|---|

Client: Crawford Consulting Inc

Job Number: 720-17192-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:720-44686** | | | | | |
| LCS 720-44686/4 | Lab Control Spike | T | Water | 8260B | |
| LCSD 720-44686/2 | Lab Control Spike Duplicate | T | Water | 8260B | |
| MB 720-44686/5 | Method Blank | T | Water | 8260B | |
| 720-17192-1 | MW-1 | T | Water | 8260B | |
| 720-17192-2 | MW-2 | T | Water | 8260B | |
| 720-17192-3 | MW-3 | T | Water | 8260B | |
| 720-17192-3MS | Matrix Spike | T | Water | 8260B | |
| 720-17192-3MSD | Matrix Spike Duplicate | T | Water | 8260B | |
| 720-17192-4 | MW-4 | T | Water | 8260B | |
| 720-17192-5FD | DUP-1 | T | Water | 8260B | |
| 720-17192-6TB | TB-1 | T | Water | 8260B | |

**Report Basis**
T = Total

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Method Blank - Batch: 720-44686**

**Method: 8260B**
**Preparation: 5030B**

Lab Sample ID: MB 720-44686/5
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/05/2008 1052
Date Prepared: 12/05/2008 1052

Analysis Batch: 720-44686
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: e:\data\200812\120508\MB
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | Result | Qual | RL |
|---|---|---|---|
| 1,1-Dichloroethene | ND | | 0.50 |
| 1,1-Dichloroethane | ND | | 0.50 |
| Dichlorodifluoromethane | ND | | 0.50 |
| Vinyl chloride | ND | | 0.50 |
| Chloroethane | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| trans-1,2-Dichloroethene | ND | | 0.50 |
| cis-1,2-Dichloroethene | ND | | 0.50 |
| Chloroform | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 0.50 |
| Carbon tetrachloride | ND | | 0.50 |
| 1,2-Dichloroethane | ND | | 0.50 |
| Trichloroethene | ND | | 0.50 |
| 1,2-Dichloropropane | ND | | 0.50 |
| Dichlorobromomethane | ND | | 0.50 |
| trans-1,3-Dichloropropene | ND | | 0.50 |
| cis-1,3-Dichloropropene | ND | | 0.50 |
| 1,1,2-Trichloroethane | ND | | 0.50 |
| Tetrachloroethene | ND | | 0.50 |
| Chlorodibromomethane | ND | | 0.50 |
| Chlorobenzene | ND | | 0.50 |
| Bromoform | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.50 |
| 1,3-Dichlorobenzene | ND | | 0.50 |
| 1,4-Dichlorobenzene | ND | | 0.50 |
| 1,2-Dichlorobenzene | ND | | 0.50 |
| Chloromethane | ND | | 1.0 |
| Bromomethane | ND | | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.50 |
| EDB | ND | | 0.50 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 103 | 82 - 120 |
| 4-Bromofluorobenzene | 103 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 109 | 76 - 132 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Lab Control Spike/**
**Lab Control Spike Duplicate Recovery Report - Batch: 720-44686**

**Method: 8260B**
**Preparation: 5030B**

LCS Lab Sample ID: LCS 720-44686/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/05/2008 0945
Date Prepared: 12/05/2008 0945

Analysis Batch: 720-44686
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: e:\data\200812\120508\LS·
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

LCSD Lab Sample ID: LCSD 720-44686/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/05/2008 1018
Date Prepared: 12/05/2008 1018

Analysis Batch: 720-44686
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: e:\data\200812\120508\LD-V
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 83 | 90 | 70 - 130 | 8 | 20 | | |
| Trichloroethene | 78 | 83 | 70 - 130 | 6 | 20 | | |
| Chlorobenzene | 102 | 106 | 70 - 130 | 4 | 20 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 99 | 91 | 82 - 120 |
| 4-Bromofluorobenzene | 108 | 105 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 106 | 105 | 76 - 132 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 720-44686**

**Method: 8260B**
**Preparation: 5030B**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 720-17192-3 | Analysis Batch: 720-44686 | Instrument ID: Varian 3900G |
| Client Matrix: | Water | Prep Batch: N/A | Lab File ID: e:\data\200812\120508\S |
| Dilution: | 1.0 | | Initial Weight/Volume: 40 mL |
| Date Analyzed: | 12/05/2008 1340 | | Final Weight/Volume: 40 mL |
| Date Prepared: | 12/05/2008 1340 | | |

| | | | |
|---|---|---|---|
| MSD Lab Sample ID: | 720-17192-3 | Analysis Batch: 720-44686 | Instrument ID: Varian 3900G |
| Client Matrix: | Water | Prep Batch: N/A | Lab File ID: e:\data\200812\120508\SA |
| Dilution: | 1.0 | | Initial Weight/Volume: 40 mL |
| Date Analyzed: | 12/05/2008 1413 | | Final Weight/Volume: 40 mL |
| Date Prepared: | 12/05/2008 1413 | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 1,1-Dichloroethene | 86 | 91 | 70 - 130 | 5 | 20 | | |
| Trichloroethene | 85 | 88 | 70 - 130 | 4 | 20 | | |
| Chlorobenzene | 104 | 112 | 70 - 130 | 7 | 20 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 99 | 94 | 82 - 120 |
| 4-Bromofluorobenzene | 100 | 98 | 74 - 131 |
| 1,2-Dichloroethane-d4 (Surr) | 104 | 101 | 76 - 132 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Test America
1220 Quarry Lane, Pleasanton, CA 94566
(925) 484-1919 FAX (925) 484-1096

720-17192

# CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Service Request: 113663 Date: 12/4/08

12/09/2008

**Project Name:** Alameda Facility
**Project Number:** CS1605
**Project Manager:** Dana Johnston
**Company/Address:** Crawford Consulting, Inc.
2 North First St, 4th Floor
San Jose, CA 95113
**Phone:** (408) 287-9934
**Fax:** (408) 287-9937

**Sampler's Signature:**

| Sample I.D. | Date | Time | LAB I.D. | Sample Matrix | Number of Containers | Volatile Organics (VOCs) (EPA 8021B) | Pb (7421); As (7060) Same as Metals | COD, TKN 500 ml plastic $H_2SO_4$ | Chloride, Nitrate 500 ml plastic NP | pH, Conductivity 500 ml plastic NP | Total Phenols 2 x 500 ml glass $H_2SO_4$ | Volatile Organics (8010) 3 x 40 ml vial | TPHgBTEX 2 x 40 ml vial HCl | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 12/4/08 | 1003 | 1 | Water | 3 | | | | | | | X | | | | |
| MW-2 | 12/4/08 | 1157 | 2 | Water | 3 | | | | | | | X | | | | |
| MW-3 | 12/4/08 | 1109 | 3 | Water | 3 | | | | | | | X | | | | |
| MW-4 | 12/4/08 | 0915 | 4 | water | 3 | | | | | | | X | | | | |
| DUP-1 | 12/4/08 | — | 5 | Water | 3 | | | | | | | X | | | | |
| TB-1 | 12/4/08 | — | 6 | water | 2 | | | | | | | X | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

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| Relinquished By | Received By |
|---|---|
| Signature | Signature |
| Printed Name: Ruben Gutierrez | Printed Name: T Bullock |
| Firm: E.S.I. | Firm: TAL-SF |
| Date/Time: 12/4/08, 1300 | Date/Time: 12/4/08 13:00 |
| Relinquished By | Received By |
| Signature | Signature |
| Printed Name | Printed Name |
| Firm | Firm |
| Date/Time | Date/Time |

**TURNAROUND REQUIREMENTS**
___ 24 hr ___ 48 hr ___ 5 day
x Standard (5 working days)
___ Provide Verbal Preliminary Results
x Provide pdf Results
Due Date: _____

**REPORT REQUIREMENTS**
___ I. Routine Report
x II. Report (includes DUP, MS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ RWQCB
(MDLs/PQLs/TRACE#)

**INVOICE INFORMATION**
P.O. #: _____
Bill to: _____

**SAMPLE RECEIPT**
Shipping VIA: _____
Shipping #: _____
Condition: _____

**Special Instructions/Comments:**

Please report MRLs only

3.8°C

Please pdf results to: Dana Johnston at dana@crawfordconsulting.com

Please provide EDF for Geotracker. Global ID is SL0600177511

# Login Sample Receipt Check List

Client: Crawford Consulting Inc

Job Number: 720-17192-1

**Login Number: 17192**
**List Source: TestAmerica San Francisco**
**Creator: Bullock, Tracy**
**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |