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**Groundwater Monitoring Results**  
**Second Semi-Annual 2007 Monitoring Period**  
**Cargill Salt - Alameda Facility**  
**Alameda, California**



CRAWFORD  
CONSULTING  
INC.



February 27, 2008

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 2007 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 2007 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 2007. 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) 790-8625.

Sincerely,

Sean D. Riley  
Environmental Manager

**Groundwater Monitoring Results  
Second Semi-Annual 2007 Monitoring Period  
Cargill Salt – Alameda Facility  
Alameda, California**

**Prepared for:  
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**Project No. CS1605  
February 27, 2008**

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**(presented in electronic format only)**

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## **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 2007. 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 2007 monitoring period is shown below.

Quarter of 2007	Field Dates
Third	September 11, 2007
Fourth	December 4, 2007

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 2007 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 2007 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 2007 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 2007 as in the previous eight years (see Figure 3). Groundwater levels fell across the Site between the second quarter 2007 and third quarter 2007 measurements, reflecting dissipation of winter-season discharge winter-season recharge. Groundwater levels rose between the third and fourth quarter 2007 measurements, reflecting winter-season recharge. The groundwater level in off-site monitoring well MW-4 showed a similar seasonal pattern as the on-site wells during the second two quarters of 2007.

### 2.2 Groundwater Flow Direction and Gradient

Groundwater contour maps for the third and fourth quarters of 2007 based on the September and December 2007 water-level data are shown on Figures 4 and 5.

The groundwater flow direction determined for the third and fourth quarters of 2007 was to the northeast, consistent with the groundwater flow direction determined previously for the Site. The horizontal hydraulic gradient measured for both the third and fourth quarters of 2007 was 0.001.

## 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 2007 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 2007 groundwater contour maps, groundwater flow velocities beneath the Site are calculated to be approximately 0.1 foot per year.

## **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 11, 2007 and December 4, 2007 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<sup>®</sup> dedicated check valves were installed on the tubing intakes to prevent back-flow of water into the well. A short length of dedicated Viton<sup>®</sup> 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<sup>®</sup> 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 first through second quarter 2007 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 2007 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 2007]) 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:

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

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 2007 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:

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

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

### Third Quarter 2007 Field QC Results

One field duplicate (DUP-1) was analyzed as part of the third quarter 2007 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). Of the two parameters which RPDs could be calculated (see Table 2) TCE exhibits a medium RPD value (i.e., 11-25%) indicative of fair precision and a PCE exhibits a low RPD value (i.e., less than 10%) indicative of good precision.

### Fourth Quarter 2007 Field QC Results

One field duplicate (DUP-1) was analyzed as part of the fourth quarter 2007 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.

### Third through Fourth Quarter 2007 Laboratory QC Results

A review of the third through fourth quarter 2007 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, with the exception in the Third and Fourth Quarter 2007 laboratory reports the MS or MSD exceeded the control limits for trichloroethene.

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 2007 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 2007 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 2007 monitoring events.

For the third and fourth quarters of 2007, the concentrations of PCE detected were 430 and 330 µg/L in monitoring well MW-1, 1,700 and 1,100 µg/L in MW-2, not detected in MW-3, and 0.86 and 0.92 µg/L in MW-4.

The concentrations of TCE detected were 51 and 29 µg/L in monitoring well MW-1 and 31 µg/L and not detected in MW-2. TCE was not detected in MW-3 or MW-4.

DCE was detected in monitoring well MW-1 at 1.4 and 1.1 µg/L for the third and fourth quarters 2007. DCE was not detected in MW-2, MW-3 or MW-4.

### **3.3 Discussion**

The results for the third through fourth quarter 2007 quarterly monitoring events are generally similar to the results reported for the years 2000 through second quarter 2007 quarterly monitoring programs (see Figure 7). 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 concentrations of PCE reported for groundwater monitoring well MW-2 for the June 2006, September 2006, December 2006, and March 2007 sampling events were the lowest PCE concentrations reported for the well since the initial sampling event in November 1999. The PCE concentration reported for MW-2 for June 2007 was the lowest “seasonal high” reported since the initial sampling event in 1999. After the seasonal high in June 2007, the PCE concentration reported for the third and fourth quarters of 2007 fell again to levels similar to those reported for June 2006 through March 2007. The PCE concentrations reported for MW-2 for the last seven quarters appear to be an indication that the phytoremediation project is beginning to be effective at reducing VOC concentrations in groundwater at the site. However, it may be premature to correlate these PCE concentrations to the effectiveness of the phytoremediation project as the trees have only been growing for two and a half years (see Section 4). Continued monitoring will be required before a definitive correlation can be made.

## 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 end of the first semi-annual monitoring period of 2007 marks the first 30 months of the phytoremediation project. 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.

As discussed in Section 3.3, the PCE concentrations reported for MW-2 for the last seven quarters appear to be an indication that the phytoremediation project is beginning to be effective at reducing 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.



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





June 2007 - View from gate towards rear of property



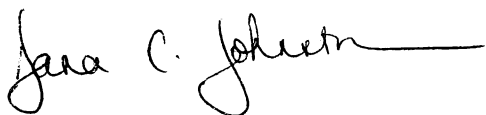
June 2007 - View of front planting strip at Clement Avenue



## Professional Certification

**Groundwater Monitoring Results  
Second Semi-Annual 2007 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



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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-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
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

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	3/4/2004	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-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
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

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-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

**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

Analysis	Third Quarter 2007			Fourth Quarter 2007		
	Well MW-2 Results	Duplicate (DUP-1) Results	RPD <sup>1</sup> (%)	Well MW-2 Results	Duplicate (DUP-1) Results	RPD <sup>1</sup> (%)
<b>Volatile Organic Compounds (µg/L)</b>						
1,1-Dichloroethene (DCE)	<20	<20	NM <sup>2</sup>	<20	<20	NM
1,1,1-Trichloroethane (TCA)	<20	<20	NM	<20	<20	NM
Trichloroethene (TCE)	31	27	13.8	<20	<20	NM
Tetrachloroethene (PCE)	1,700	1,700	0	1,100	950	14.6
<sup>1</sup> RPD = relative percent difference <sup>2</sup> 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																													MCL <sup>1</sup>				
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	MCL <sup>1</sup>
DCE <sup>2</sup>	<50.0	<b>13</b>	<10	<b>15</b>	<b>14</b>	<13	<b>14</b>	<b>15</b>	<13	<13	<13	<13	<13	<10	<b>12</b>	<b>5.2</b>	<b>8.4</b>	<5.0	<b>5.8</b>	<b>6.6</b>	<5.0	<5.0	<2.0	<5.0	<2.0	<0.5	<2.0	<b>3.3</b>	<2.0	<2.0	<b>3.0</b>	<5.0	<5.0	6
CFC 113 <sup>3</sup>	na <sup>4</sup>	<b>1.4</b>	<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	ne <sup>5</sup>
DCA <sup>6</sup>	<50.0	<b>0.8</b>	<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	5
Chloroform	<50.0	<b>0.6*</b>	<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	<b>1.4</b>	<4.0	<4.0	<4.0	<4.0	<4.0	<10	<10	ne
TCA <sup>7</sup>	<50.0	<b>1.6</b>	<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	200
TCE <sup>8</sup>	<b>178</b>	<b>150</b>	<b>190</b>	<b>170</b>	<b>130</b>	<b>180</b>	<b>250</b>	<b>210</b>	<b>190</b>	<b>160</b>	<b>140</b>	<b>190</b>	<b>68</b>	<b>97</b>	<b>90</b>	<b>110</b>	<b>130</b>	<b>53</b>	<b>72</b>	<b>81</b>	<b>39</b>	<b>15</b>	<b>23</b>	<b>34</b>	<b>16</b>	<b>3.4</b>	<b>22</b>	<b>47</b>	<b>20</b>	<b>17</b>	<b>38</b>	<b>51</b>	<b>29</b>	5
PCE <sup>9</sup>	<b>906</b>	<b>1,400</b>	<b>1,900</b>	<b>1,200</b>	<b>880</b>	<b>1,000</b>	<b>1,400</b>	<b>1,000</b>	<b>1,400</b>	<b>1,100</b>	<b>980</b>	<b>1,100</b>	<b>600</b>	<b>730</b>	<b>770</b>	<b>780</b>	<b>850</b>	<b>370</b>	<b>490</b>	<b>620</b>	<b>380</b>	<b>160</b>	<b>180</b>	<b>240</b>	<b>140</b>	<b>39</b>	<b>140</b>	<b>400</b>	<b>210</b>	<b>170</b>	<b>310</b>	<b>430</b>	<b>330</b>	5
Other analytes <sup>10</sup>	nd <sup>11</sup>	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																													MCL <sup>1</sup>					
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	MCL <sup>1</sup>	
DCE <sup>2</sup>	<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	6
CFC 113 <sup>3</sup>	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	ne <sup>5</sup>
DCA <sup>6</sup>	<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	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	ne	
TCA <sup>7</sup>	<50.0	<b>5.0</b>	<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	200	
TCE <sup>8</sup>	<50	<b>29</b>	<b>53</b>	<25	<b>20</b>	<b>40</b>	<b>78</b>	<25	<25	<b>49</b>	<b>52</b>	<b>32</b>	<25	<b>58</b>	<b>41</b>	<b>28</b>	<b>25</b>	<b>39</b>	<b>49</b>	<b>37</b>	<b>30</b>	<b>78</b>	<b>43</b>	<b>29</b>	<b>45</b>	<b>59</b>	<20	<20	<20	<20	<b>22</b>	<b>31</b>	<20	5	
PCE <sup>9</sup>	<b>840</b>	<b>3,600</b>	<b>3,200</b>	<b>3,300</b>	<b>1,700</b>	<b>2,200</b>	<b>4,400</b>	<b>1,700</b>	<b>1,700</b>	<b>3,500</b>	<b>3,800</b>	<b>2,100</b>	<b>1,800</b>	<b>3,900</b>	<b>3,800</b>	<b>2,500</b>	<b>2,500</b>	<b>3,000</b>	<b>4,100</b>	<b>3,800</b>	<b>2,800</b>	<b>7,300</b>	<b>3,600</b>	<b>2,500</b>	<b>3,300</b>	<b>5,200</b>	<b>1,600</b>	<b>990</b>	<b>1,000</b>	<b>1,600</b>	<b>2,400</b>	<b>1,700</b>	<b>1,100</b>	5	
Other analytes <sup>10</sup>	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:

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

<sup>2</sup> DCE = 1,1-Dichloroethene

<sup>3</sup> CFC 113 = Trichlorotrifluoroethane (1,1,2-Trichloro-1,2,2-trifluoroethane)

<sup>4</sup> na = not analyzed

<sup>5</sup> ne = not established or none applicable

<sup>6</sup> DCA = 1,1-Dichloroethane

<sup>7</sup> TCA = 1,1,1-Trichloroethane

<sup>8</sup> TCE = Trichloroethene

<sup>9</sup> PCE = Tetrachloroethene

<sup>10</sup> All other 8010 list analytes

<sup>11</sup> 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																												MCL <sup>1</sup>						
Field Date	#####	3/30/00	5/16/00	7/28/00	#####	3/26/01	6/25/01	9/28/01	#####	3/21/02	6/6/02	9/20/02	#####	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	#####	3/6/07	6/15/07	9/11/07	12/4/07	MCL <sup>1</sup>	
DCE <sup>2</sup>	<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	<b>0.51</b>	<0.5	<b>0.81</b>	<0.5	<0.5	<b>0.68</b>	<b>2.4</b>	<b>1.5</b>	<b>1.1</b>	<b>0.86</b>	<b>4.3</b>	<b>2.8</b>	<b>1.6</b>	<b>1.5</b>	<b>2.4</b>	<b>1.4</b>	<b>1.1</b>	6	
CFC 113 <sup>3</sup>	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	ne <sup>5</sup>
DCA <sup>6</sup>	<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	<b>0.50</b>	<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	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	ne	
TCA <sup>7</sup>	<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	<b>1.0</b>	<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 <sup>8</sup>	<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	5	
PCE <sup>9</sup>	<0.500	<0.5	<0.5	<b>0.8</b>	<0.5	<0.5	<0.5	<0.5	<b>0.81</b>	<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	
Other analytes <sup>10</sup>	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																								MCL <sup>1</sup>	
Field Date	#####	3/28/02	6/6/02	9/20/02	#####	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	#####	3/6/07	6/15/07	9/11/07	12/4/07	MCL <sup>1</sup>
DCE <sup>2</sup>	<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 <sup>3</sup>	<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	ne <sup>5</sup>
DCA <sup>6</sup>	<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	ne
TCA <sup>7</sup>	<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 <sup>8</sup>	<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 <sup>9</sup>	<b>2.6</b>	<b>2.8</b>	<b>2.0</b>	<b>2.5</b>	<b>1.1</b>	<b>2.1</b>	<b>2.1</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.4</b>	<b>1.3</b>	<b>1.2</b>	<b>0.93</b>	<b>0.98</b>	<b>0.8</b>	<b>1.1</b>	<b>0.79</b>	<b>0.64</b>	<b>0.70</b>	<b>0.63</b>	<b>0.70</b>	<b>0.75</b>	<b>0.86</b>	<b>0.92</b>	5
Other analytes <sup>10</sup>	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:

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

<sup>2</sup> DCE = 1,1-Dichloroethene

<sup>3</sup> CFC 113 = Trichlorotrifluoroethane (1,1,2-Trichloro-1,2,2-trifluoroethane)

<sup>4</sup> na = not analyzed

<sup>5</sup> ne = not established or none applicable

<sup>6</sup> DCA = 1,1-Dichloroethane

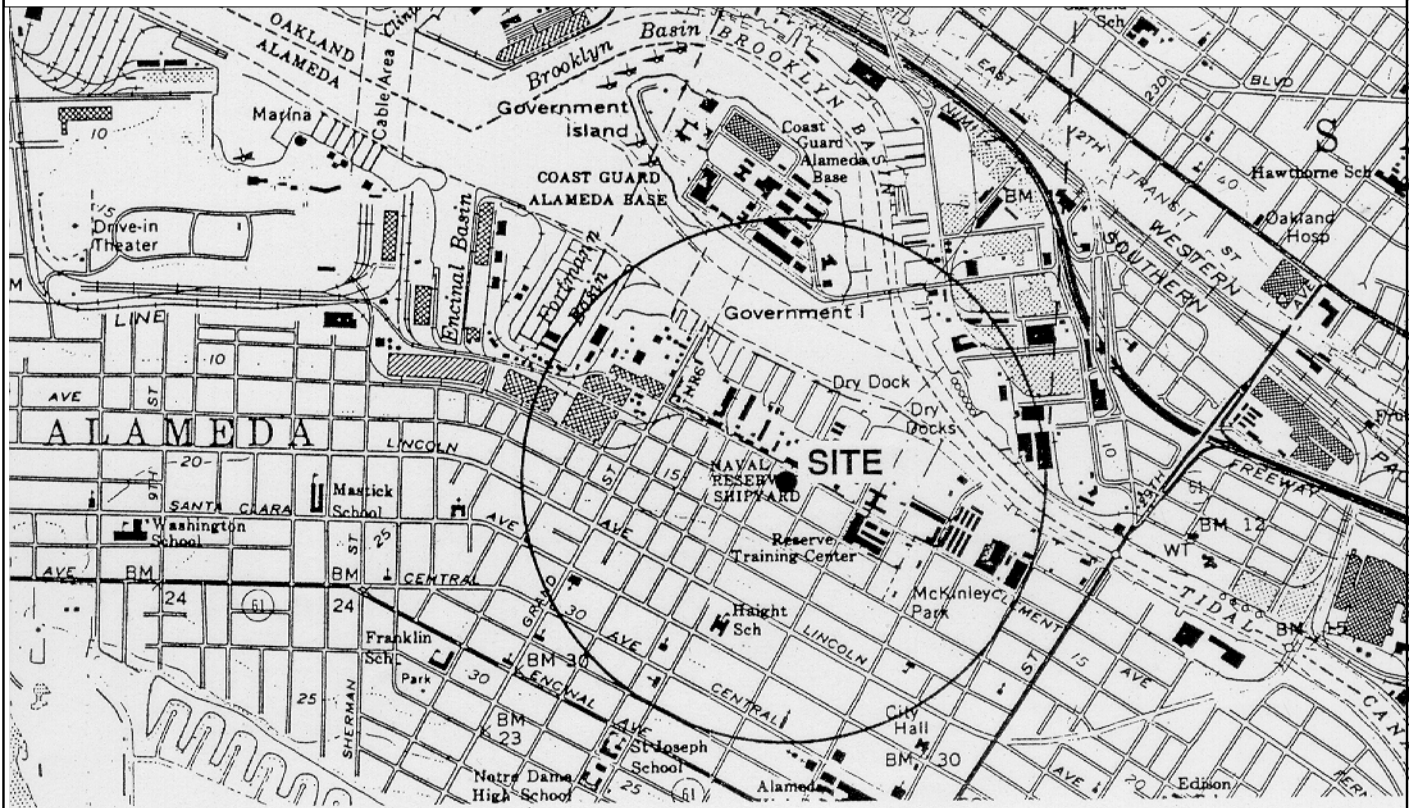
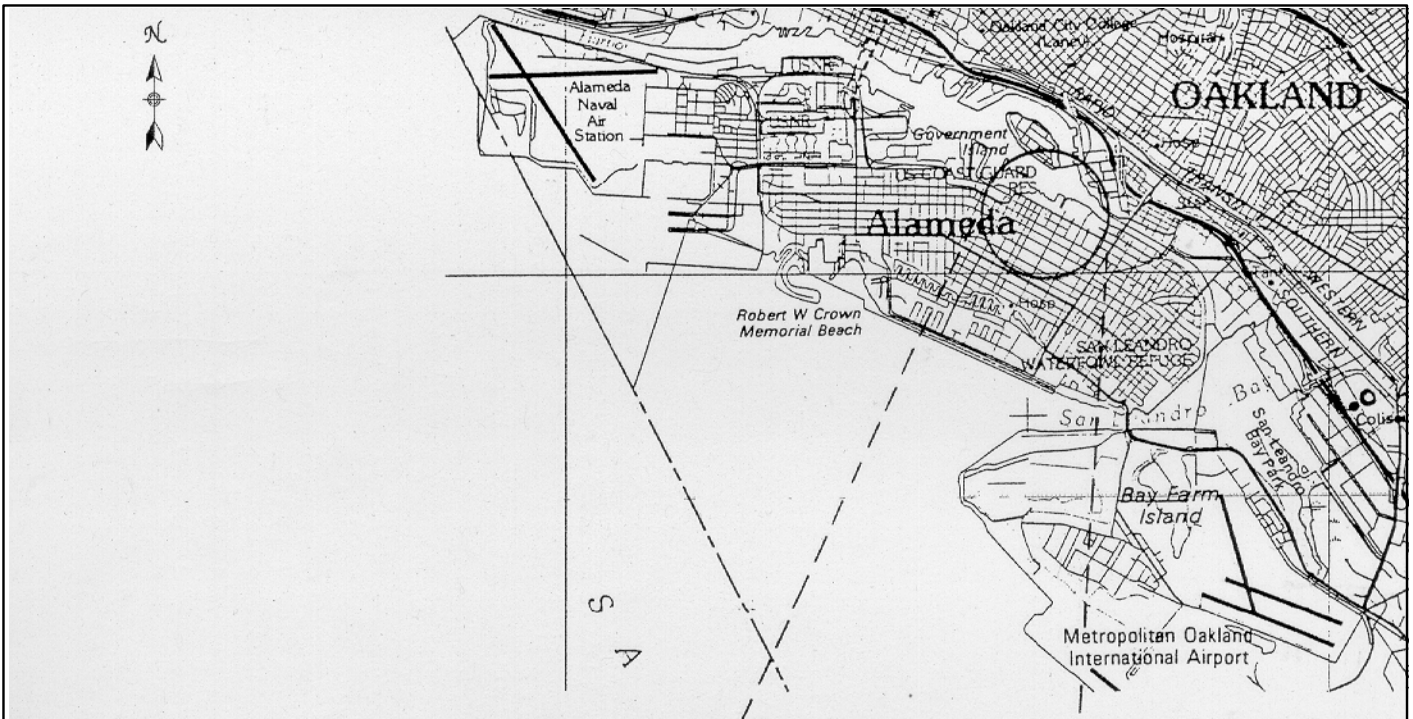
<sup>7</sup> TCA = 1,1,1-Trichloroethane

<sup>8</sup> TCE = Trichloroethene

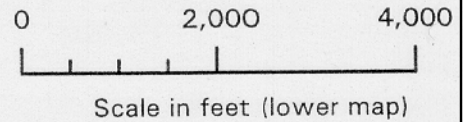
<sup>9</sup> PCE = Tetrachloroethene

<sup>10</sup> All other 8010 list analytes

<sup>11</sup> nd = not detected above laboratory reporting limit



Base map (upper): U.S.G.S. 1:1,000,000-scale series (Topographic)  
 San Francisco Quadrangle, California, 1978.  
 Base map (lower): U.S.G.S. 7.5 minute series (Topographic)  
 Oakland East and Oakland West Quadrangles, California,  
 1959, Photorevised 1980.



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**Figure 1. Site Location**

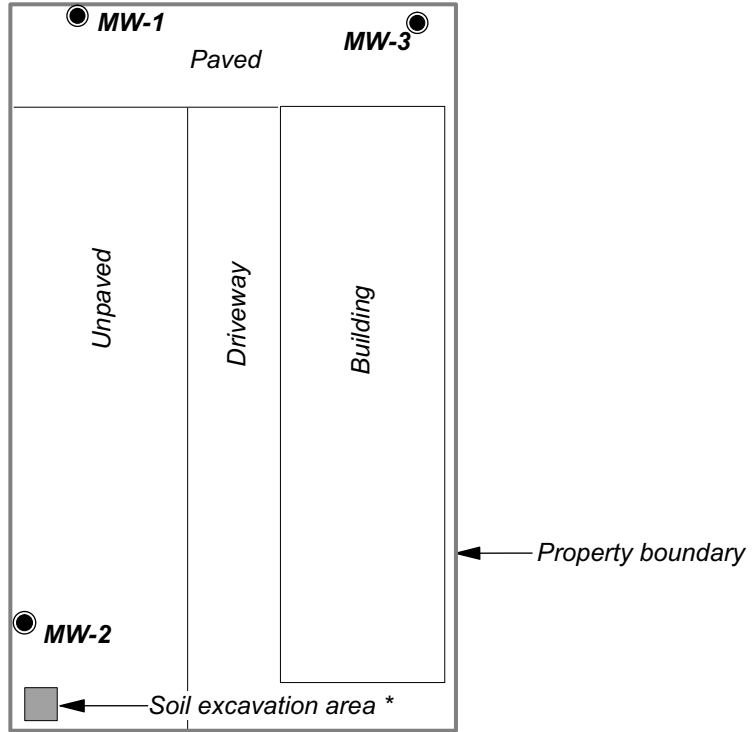


**MW-4**

*Curb line (Typ.)*

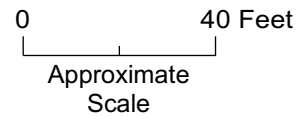


*Clement Avenue*



**EXPLANATION**

- Groundwater monitoring well
- \* Excavated in February 1994



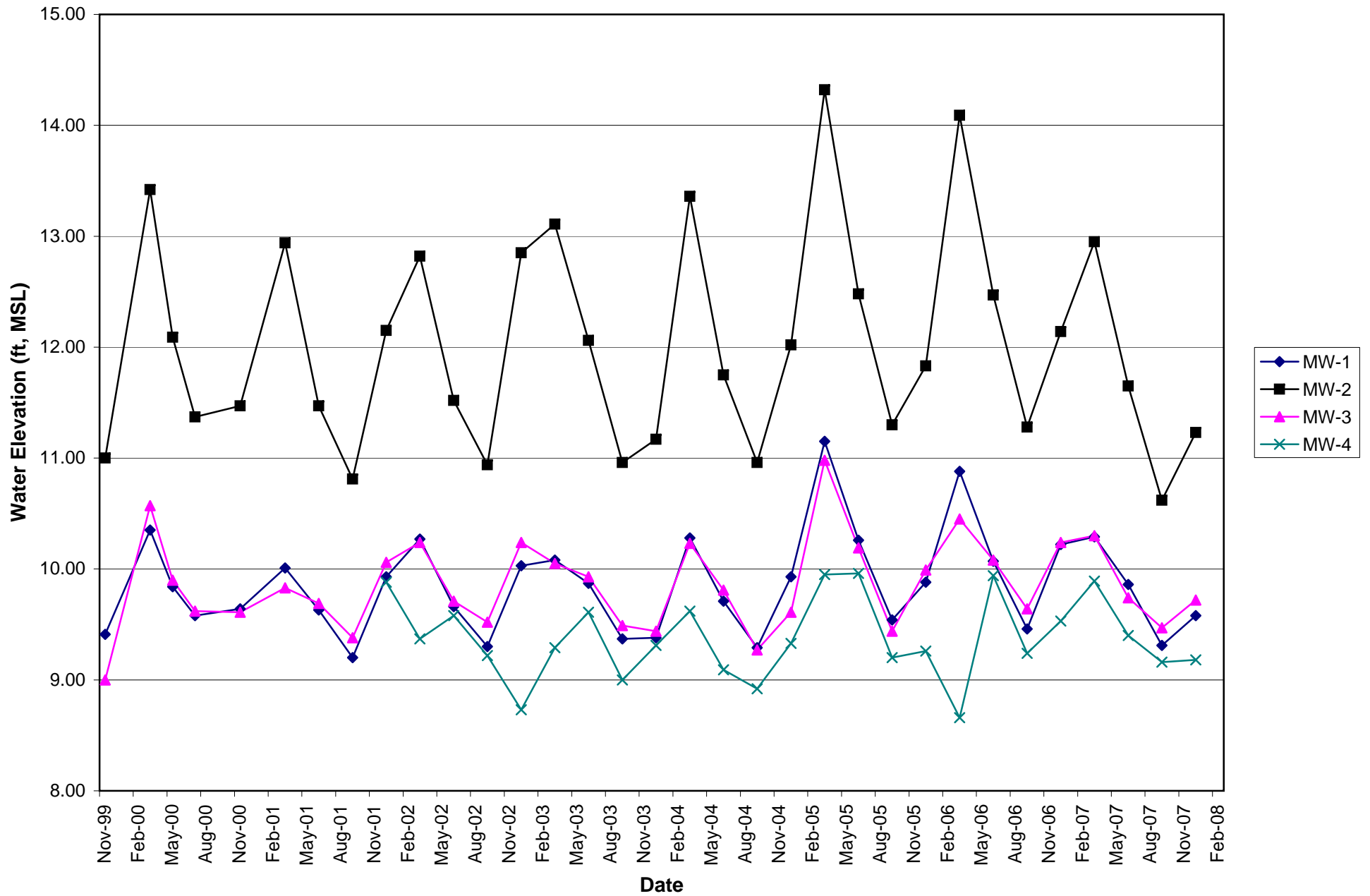
1605fig207Q4.dsf 2/22/08

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

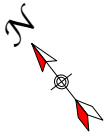


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**Figure 2. Groundwater Monitoring Well Locations**

Figure 3. Graphical Summary of Groundwater Elevations



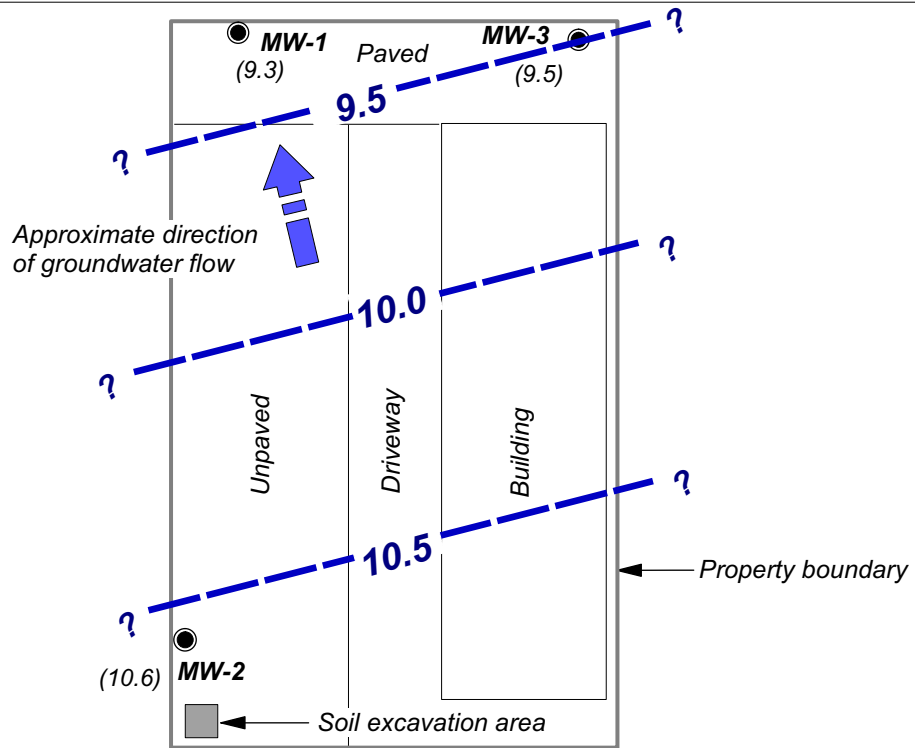




Curb line (Typ.)

● (9.2)  
**MW-4**

Clement Avenue

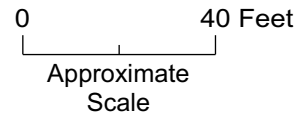


**EXPLANATION**

● Monitoring well

(9.3) Groundwater elevation (Ft.-MSL);  
measured 12/4/07

?-10- Groundwater elevation contour  
(Ft.-MSL)

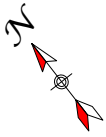


Base map from Conor Pacific/EFW, ORES Inc  
Groundwater Characterization, August 21, 2002

1605fig407Q4.dsf 2/22/08



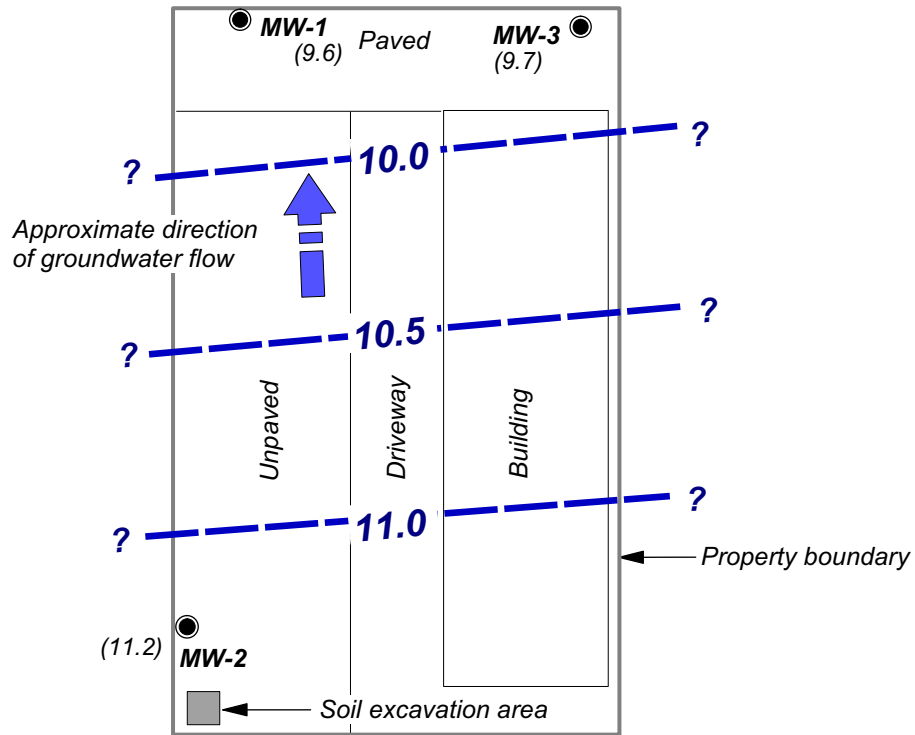
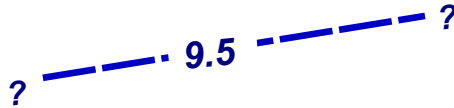
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Cargill Salt Dispensing Systems Division  
2016 Clement Avenue, Alameda, California  
**Figure 4. Groundwater Elevation Contours - September 2007**



Curb line (Typ.)

● MW-4 (9.2)

Clement Avenue

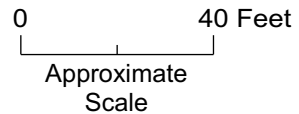


**EXPLANATION**

● Monitoring well

(9.9) Groundwater elevation (Ft.-MSL);  
measured 12/4/07

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



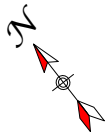
1605fig507Q4.dsf 2/22/08

Base map from Conor Pacific/EFW, 0 files in  
Groundwater Characterization, August 21, 2002.



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Cargill Salt Dispensing Systems Division  
2016 Clement Avenue, Alameda, California

**Figure 5. Groundwater Elevation Contours - December 2007**



Curb line (Typ.)

Clement Avenue

MW-4

Parameter	9/07	12/07
DCE	<0.5	<0.5
TCE	<0.5	<0.5
PCE	0.86	0.92

MW-1

MW-3

Paved

Parameter	9/07	12/07
DCE	<5.0	<5.0
TCE	51	29
PCE	430	330

Parameter	9/07	12/07
DCE	1.4	1.1
TCE	<0.5	<0.5
PCE	<0.5	<0.5

Unpaved

Driveway

Building

Parameter	9/07	12/07
DCE	<20	<20
TCE	31	<20
PCE	1,700	1,100

Property boundary

MW-2

Soil excavation area

**EXPLANATION**



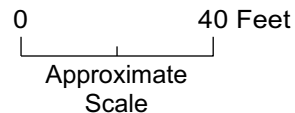
Groundwater monitoring well location

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

Analyte concentration

DCE	3.0
TCE	38
PCE	310

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



Analytical parameter



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**Figure 6. VOC Concentrations in Groundwater –  
 September and December 2007**

Figure 7. Graphical Summary of PCE Concentrations

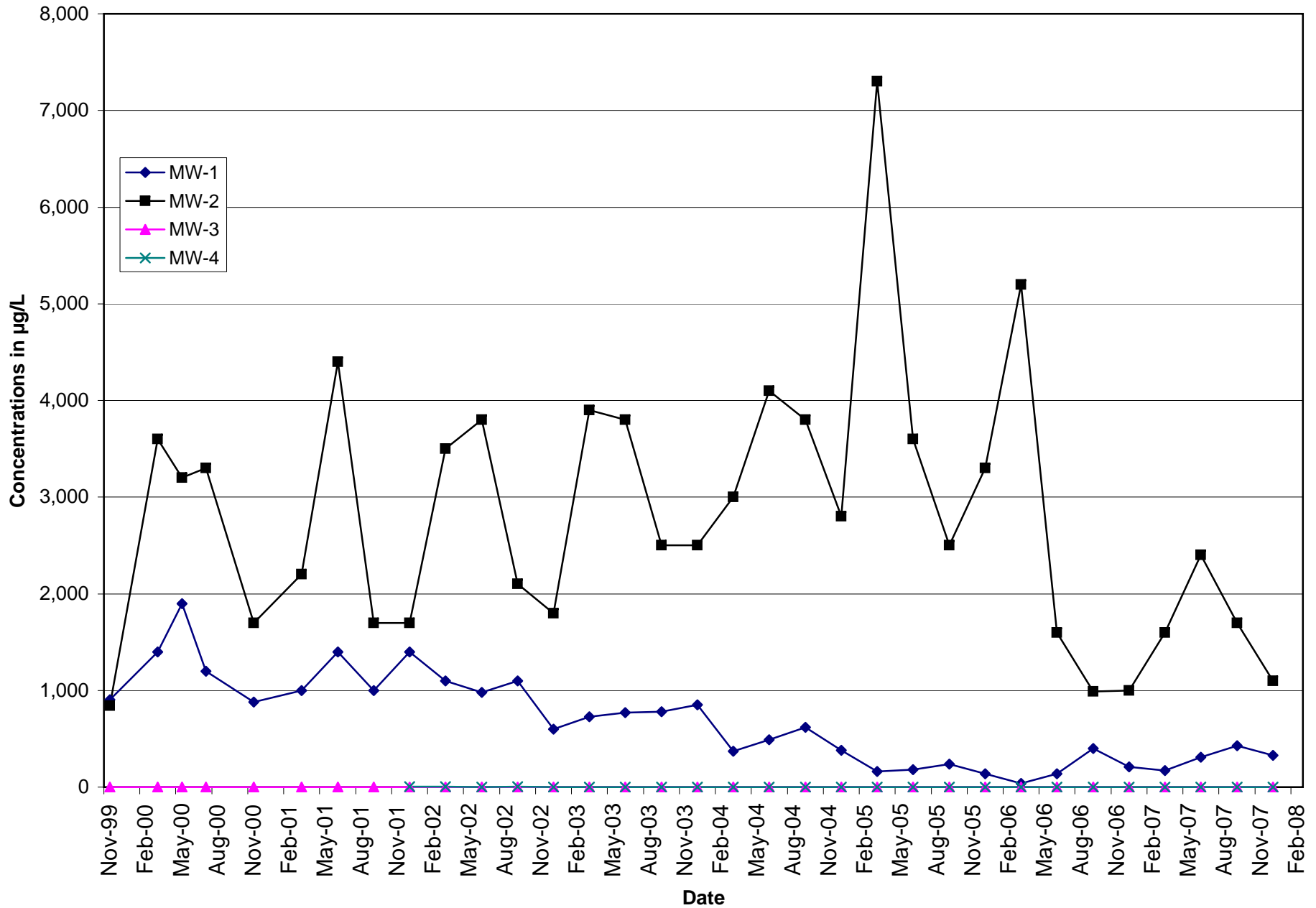
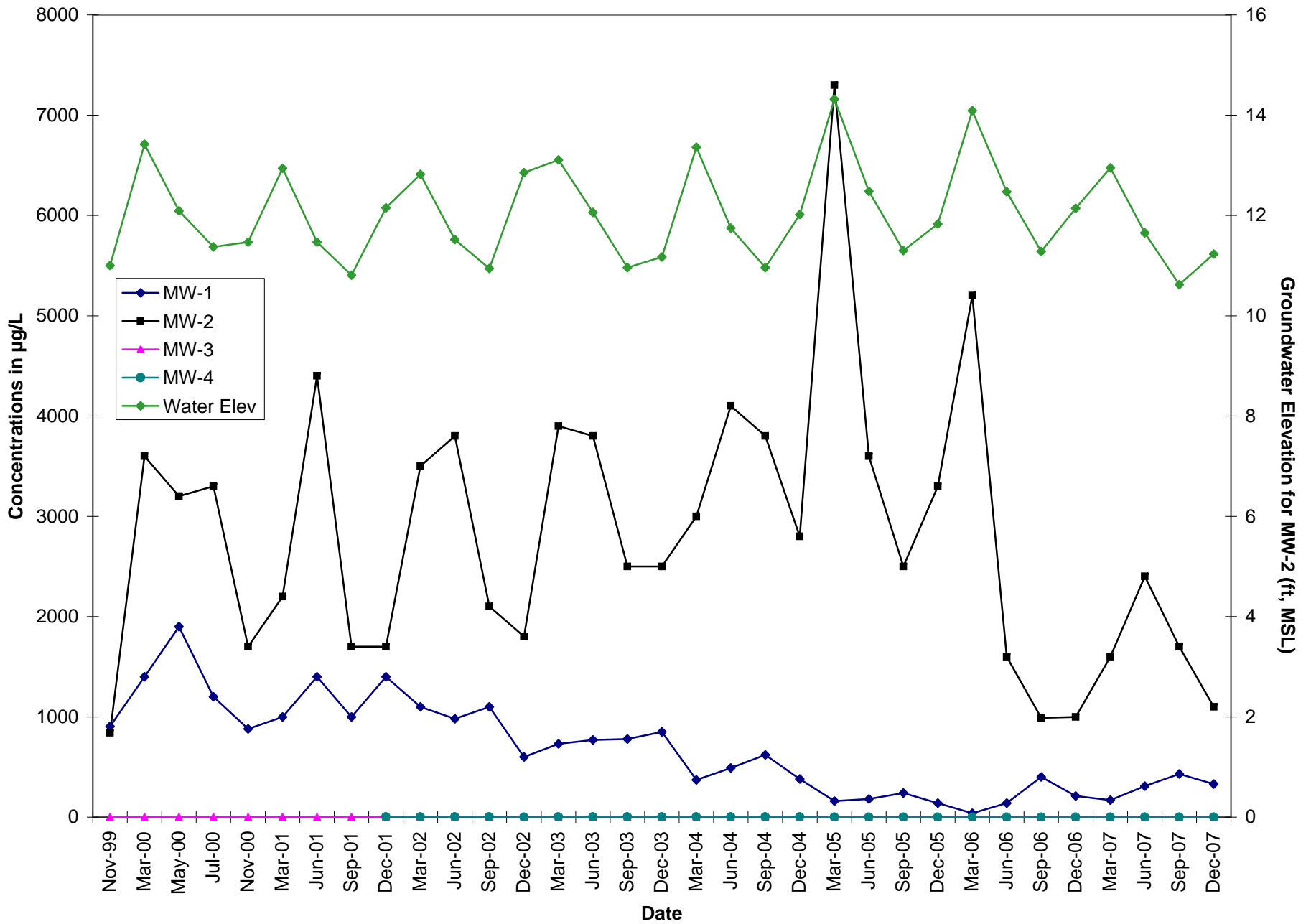




Figure 8. PCE Concentrations vs. Groundwater Elevation



**Appendix A**  
**Field Data Sheets**

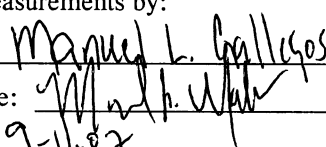
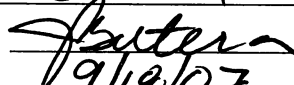
**Third Quarter 2007**

## 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	9-11-07	0805	3.85	3.85	No bolts on lid (9/10)
MW-2	9-11-07	0807	5.60	5.60	No bolts
MW-3	9-11-07	0803	3.87	3.87	No bolts
MW-4	9-11-07	0811	3.27	3.27	no bolts on lid (9/11)

### Data Collection

Field measurements by: Print: <u>Manuel L. Gallagos</u> Signature: <u></u> Date: <u>9-11-07</u>	Reviewed by: Print: <u>J. Butera</u> Signature: <u></u> Date: <u>9/18/07</u>
---	---

**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: 9-11-07  
 Finish Date: 9-11-07

**WELL INFORMATION**

Casing diameter (in.): 1.0 Depth to water (ft): 3.82 Well depth (ft): 18.13  
 One casing volume (gal.): 0.59 Calculated purge volume (gal.) (3 x casing volume): 1.78  
 $One\ casing\ volume = \pi \times [casing\ radius\ (in.) \times 1\ ft/12\ in.]^2 \times [well\ depth\ (ft) - depth\ to\ water\ (ft)] \times 7.48\ gal/ft^3$   
 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): 0.0 Method for checking: Interface probe  Clear bailer

**WELL PURGING (3.785 liters per 1 gallon)**

Date purged: 9-11-07 Start time: 0904 End time: 0934  
 Purging equipment: Submersible pump \_\_\_\_\_ Bladder pump \_\_\_\_\_ Peristaltic pump   
 PVC bailer \_\_\_\_\_ Teflon bailer \_\_\_\_\_ Other \_\_\_\_\_  
 Purge rate (lpm): 0.22 Well yield (H/L): High  
 Purge water disposal: Drums on site

Time (2400 hr)	Cumulative Vol. Purged (Liters)	pH (units)	EC (mS/cm)	T (° C)	Color (Visual)	Turbidity (NTU)
<u>0916</u>	<u>2.2</u>	<u>7.30</u>	<u>465</u>	<u>20.3</u>	<u>Clear</u>	<u>8.87</u>
<u>0925</u>	<u>4.4</u>	<u>7.15</u>	<u>428</u>	<u>20.3</u>	<u>Clear</u>	<u>2.17</u>
<u>0934</u>	<u>6.6</u>	<u>7.07</u>	<u>422</u>	<u>20.5</u>	<u>Clear</u>	<u>1.33</u>

Total Purged (Liters): 6.6

**WELL SAMPLING**

Date sampled: 9-11-07 Start time: 0935 End time: 0932  
 Depth to water (ft) before sampling: 5.13  
 Sampling equipment: Peristaltic pump  Bladder pump \_\_\_\_\_ Teflon bailer \_\_\_\_\_  
 PVC bailer \_\_\_\_\_ Other \_\_\_\_\_

Weather conditions: Cloudy Ambient temperature (° F): 67  
 Well condition/Remarks: All samples taken

Meter calibration: EC \_\_\_\_\_ pH \_\_\_\_\_  
 Temperature \_\_\_\_\_ Turbidity \_\_\_\_\_

Purged and sampled by (print): Manuel L. Gallegos  
 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: 9-11-07  
 Finish Date: 9-11-07

**WELL INFORMATION**

Casing diameter (in.): 1.0 Depth to water (ft): 5.42 Well depth (ft): 17.5  
 One casing volume (gal.): 0.49 Calculated purge volume (gal.) (3 x casing volume): 1.48  
 $One\ casing\ volume = \pi \times [casing\ radius\ (in.) \times 1\ ft/12\ in.]^2 \times [well\ depth\ (ft) - depth\ to\ water\ (ft)] \times 7.48\ gal/ft^3$   
 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): NO Method for checking: Interface probe  Clear bailer

**WELL PURGING (3.785 liters per 1 gallon)**

Date purged: 9-11-07 Start time: 1049 End time: 1117  
 Purging equipment: Submersible pump \_\_\_\_\_ Bladder pump \_\_\_\_\_ Peristaltic pump   
 PVC bailer \_\_\_\_\_ Teflon bailer \_\_\_\_\_ Other \_\_\_\_\_  
 Purge rate (lpm): 0.19 Well yield (H/L): LOW H. 96  
 Purge water disposal: Drums on site

Time (2400 hr)	Cumulative Vol. Purged (Liters)	pH (units)	EC (mS/cm)	T (° C)	Color (Visual)	Turbidity (NTU)
<u>1059</u>	<u>1.8</u>	<u>7.52</u>	<u>460</u>	<u>19.8</u>	<u>Clear</u>	<u>30.9</u>
<u>1104</u>	<u>3.6</u>	<u>7.01</u>	<u>465</u>	<u>19.8</u>	<u>Clear</u>	<u>22.8</u>
<u>1117</u>	<u>5.4</u>	<u>6.96</u>	<u>469</u>	<u>19.6</u>	<u>Clear</u>	<u>14.5</u>
Total Purged (Liters): <u>5.4</u>						

**WELL SAMPLING**

Date sampled: 9-11-07 Start time: 1114 End time: 1122  
 Depth to water (ft) before sampling: 27.70  
 Sampling equipment: Peristaltic pump  Bladder pump \_\_\_\_\_ Teflon bailer \_\_\_\_\_  
 PVC bailer \_\_\_\_\_ Other \_\_\_\_\_

Weather conditions: Sunny / Clear Ambient temperature (° F): 65  
 Well condition/Remarks: All samples taken

DUP-1 @ this location

Meter calibration: EC \_\_\_\_\_ pH \_\_\_\_\_  
 Temperature \_\_\_\_\_ Turbidity \_\_\_\_\_

Purged and sampled by (print): Manuel L. Gallegos  
 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: 9-11-07  
 Finish Date: 9-11-07

**WELL INFORMATION**

Casing diameter (in.): 1.0 Depth to water (ft): 3.87 Well depth (ft): 17.6  
 One casing volume (gal.): 0.54 Calculated purge volume (gal.) (3 x casing volume): 1.68  
 $One\ casing\ volume = \pi \times [casing\ radius\ (in.) \times 1\ ft/12\ in.]^2 \times [well\ depth\ (ft) - depth\ to\ water\ (ft)] \times 7.48\ gal/ft^3$   
 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 (3.785 liters per 1 gallon)**

Date purged: 9-11-07 Start time: 0947 End time: 1035  
 Purging equipment: Submersible pump  Bladder pump  Peristaltic pump

PVC bailer  Teflon bailer  Other   
 Purge rate (lpm): 0.13 Well yield (H/L): Low

Purge water disposal: Drum on site

Time (2400 hr)	Cumulative Vol. Purged (Liters)	pH (units)	EC (mS/cm)	T (° C)	Color (Visual)	Turbidity (NTU)
<u>1002</u>	<u>2.1</u>	<u>7.17</u>	<u>610</u>	<u>19.5</u>	<u>Clear</u>	<u>23.3</u>
<u>1018</u>	<u>4.2</u>	<u>7.42</u>	<u>606</u>	<u>19.6</u>	<u>Clear</u>	<u>46.7</u>
<u>1035</u>	<u>6.3</u>	<u>7.45</u>	<u>605</u>	<u>19.2</u>	<u>Clear</u>	<u>49.6</u>

Total Purged (Liters): 6.3

**WELL SAMPLING**

Date sampled: 9-11-07 Start time: 1035 End time: 1039  
 Depth to water (ft) before sampling: 14.70

Sampling equipment: Peristaltic pump  Bladder pump  Teflon bailer   
 PVC bailer  Other

Weather conditions: Cloudy Ambient temperature (° F): 68

Well condition/Remarks: All samples taken

Meter calibration: EC \_\_\_\_\_ pH \_\_\_\_\_  
 Temperature \_\_\_\_\_ Turbidity \_\_\_\_\_

Purged and sampled by (print): Manuel L. Gallegos

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: 9-11-07  
 Finish Date: 9-11-07

**WELL INFORMATION**

Casing diameter (in.): 0.9513 Depth to water (ft): 3.27 Well depth (ft): 19.0  
 One casing volume (gal.): 0.64 Calculated purge volume (gal.) (3 x casing volume): 1.93  
 One casing volume =  $\pi \times [\text{casing radius (in.)} \times 1 \text{ ft}/12 \text{ in.}]^2 \times [\text{well depth (ft)} - \text{depth to water (ft)}] \times 7.48 \text{ gal/ft}^3$   
 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): X Method for checking: Interface probe X Clear bailer \_\_\_\_\_

**WELL PURGING (3.785 liters per 1 gallon)**

Date purged: 9-11-07 Start time: 0814 End time: 0850  
 Purging equipment: Submersible pump \_\_\_\_\_ Bladder pump \_\_\_\_\_ Peristaltic pump X  
 PVC bailer \_\_\_\_\_ Teflon bailer \_\_\_\_\_ Other \_\_\_\_\_  
 Purge rate (lpm): 0.18 Well yield (H/L): High  
 Purge water disposal: Drum on site

Time (2400 hr)	Cumulative Vol. Purged (Liters)	pH (units)	EC (mS/cm)	T (° C)	Color (Visual)	Turbidity (NTU)
<u>0825</u>	<u>2.4</u>	<u>6.47</u>	<u>643</u>	<u>20.8</u>	<u>Clear</u>	<u>16.9</u>
<u>0837</u>	<u>4.8</u>	<u>7.13</u>	<u>643</u>	<u>20.5</u>	<u>Clear</u>	<u>4.66</u>
<u>0850</u>	<u>7.2</u>	<u>7.20</u>	<u>644</u>	<u>20.1</u>	<u>Clear</u>	<u>11.4</u>

Total Purged (Liters): 7.2

**WELL SAMPLING**

Date sampled: 9-11-07 Start time: 0851 End time: 0853  
 Depth to water (ft) before sampling: 9.12  
 Sampling equipment: Peristaltic pump X Bladder pump \_\_\_\_\_ Teflon bailer \_\_\_\_\_  
 PVC bailer \_\_\_\_\_ Other \_\_\_\_\_

Weather conditions: Cloudy Ambient temperature (° F): 64  
 Well condition/Remarks: All samples taken

Meter calibration: EC 15,120-15,000 pH 6.99-7.00/1000-1000/3.94-4.00  
 Temperature 20.4 Turbidity 1.1-1.0

Purged and sampled by (print): Manuel L. Gallardo  
 Signature: [Signature] Reviewed by: [Signature]



**Fourth Quarter 2007**

## 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	12/4/07	0853	3.58	3.58	Water in box
MW-2	12/4/07	0847	4.99	4.99	
MW-3	12/4/07	0850	3.62	3.62	Water in box
MW-4	12/4/07	0855	3.25	3.25	Cap on top of well.

### Data Collection

Field measurements by: Print: <u>Manuel L. Gallegos</u> Signature: <u>[Signature]</u> Date: <u>12-4-07</u>	Reviewed by: Print: <u>J. Butters</u> Signature: <u>[Signature]</u> Date: <u>12/5/07</u>
---	---



**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: 12-4-07  
 Finish Date: 12-4-07

**WELL INFORMATION**

Casing diameter (in.): 1.0 Depth to water (ft): 4.93 Well depth (ft): 17.5  
 One casing volume (gal.): 0.51 Calculated purge volume (gal.) (3 x casing volume): 1.54  
 $One\ casing\ volume = \pi \times [casing\ radius\ (in.) \times 1\ ft/12\ in.]^2 \times [well\ depth\ (ft) - depth\ to\ water\ (ft)] \times 7.48\ gal/ft^3$   
 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): NA Method for checking: Interface probe  Clear bailer

**WELL PURGING**

Date purged: 12-4-07 Start time: 1104 End time: 1132  
 Purging equipment: Submersible pump \_\_\_\_\_ Bladder pump \_\_\_\_\_ Peristaltic pump   
 PVC bailer \_\_\_\_\_ Teflon bailer \_\_\_\_\_ Other \_\_\_\_\_  
 Purge rate (L/min): 0.20 Well yield (H/L): High  
 Purge water disposal: Drums on site

Time (2400 hr)	Cumulative Vol. Purged (liters)	pH (units)	EC ( $\mu S/cm$ )	T ( $^{\circ}C$ )	Color (Visual)	Turbidity (Visual or NTU)
<u>1114</u>	<u>1.9</u>	<u>7.15</u>	<u>442</u>	<u>17.4</u>	<u>Clear</u>	<u>14.8</u>
<u>1123</u>	<u>3.8</u>	<u>6.85</u>	<u>471</u>	<u>17.5</u>	<u>Clear</u>	<u>4.66</u>
<u>1132</u>	<u>5.7</u>	<u>6.80</u>	<u>472</u>	<u>17.7</u>	<u>Clear</u>	<u>1.34</u>
Total Purged (liters): <u>5.7</u>						

**WELL SAMPLING**

Date sampled: 12-4-07 Start time: 1132 End time: 1134  
 Depth to water (ft) before sampling: 5.78  
 Sampling equipment: Peristaltic pump  Bladder pump \_\_\_\_\_ Teflon bailer \_\_\_\_\_  
 PVC bailer \_\_\_\_\_ Other \_\_\_\_\_

Weather conditions: Rain / clouds Ambient temperature ( $^{\circ}F$ ): 57  
 Well condition/Remarks: OK  
All samples taken  
\* DUPL @ this well.

Meter calibration: EC \_\_\_\_\_ pH \_\_\_\_\_  
 Temperature \_\_\_\_\_ Turbidity \_\_\_\_\_  
 Purged and sampled by (print): Manuel L. Gallegos  
 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: 12-4-07  
 Finish Date: 12-4-07

**WELL INFORMATION**

Casing diameter (in.): 1.0 Depth to water (ft): 3.61 Well depth (ft): 17.4  
 One casing volume (gal.): 0.57 Calculated purge volume (gal.) (3 x casing volume): 1.72  
 $One\ casing\ volume = \pi \times [casing\ radius\ (in.) \times 1\ ft/12\ in.]^2 \times [well\ depth\ (ft) - depth\ to\ water\ (ft)] \times 7.48\ gal/ft^3$   
 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: 12-4-07 Start time: 1017 End time: 1054  
 Purging equipment: Submersible pump  Bladder pump  Peristaltic pump   
 PVC bailer  Teflon bailer  Other   
 Purge rate (L/min): 0.16 Well yield (H/L): low  
 Purge water disposal: Drum on site

Time (2400 hr)	Cumulative Vol. Purged (liters)	pH (units)	EC ( $\mu S/cm$ )	T ( $^{\circ}C$ )	Color (Visual)	Turbidity (Visual or NTU)
<u>1028</u>	<u>2.1</u>	<u>7.18</u>	<u>585</u>	<u>16.5</u>	<u>Clear</u>	<u>16.8</u>
<u>1042</u>	<u>4.2</u>	<u>7.24</u>	<u>590</u>	<u>17.0</u>	<u>Clear</u>	<u>29.2</u>
<u>1054</u>	<u>6.3</u>	<u>7.28</u>	<u>592</u>	<u>17.1</u>	<u>Clear</u>	<u>13.1</u>
Total Purged (liters): <u>6.3</u>						

**WELL SAMPLING**

Date sampled: 12-4-07 Start time: 1054 End time: 1058  
 Depth to water (ft) before sampling: 14.73  
 Sampling equipment: Peristaltic pump  Bladder pump  Teflon bailer   
 PVC bailer  Other

Weather conditions: Rain / clouds Ambient temperature ( $^{\circ}F$ ): 57  
 Well condition/Remarks: OK

Meter calibration: EC \_\_\_\_\_ pH \_\_\_\_\_  
 Temperature \_\_\_\_\_ Turbidity \_\_\_\_\_

Purged and sampled by (print): Marcus L. Gallegos  
 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: 12-4-07  
 Finish Date: 12-4-07

**WELL INFORMATION**

Casing diameter (in.): 0.64 Depth to water (ft): 3.25 Well depth (ft): 19.0  
 One casing volume (gal.): 0.64 Calculated purge volume (gal.) (3 x casing volume): 1.93  
 $One\ casing\ volume = \pi \times [casing\ radius\ (in.) \times 1\ ft/12\ in.]^2 \times [well\ depth\ (ft) - depth\ to\ water\ (ft)] \times 7.48\ gal/ft^3$   
 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): no Method for checking: Interface probe  Clear bailer

**WELL PURGING**

Date purged: 12-4-07 Start time: 0857 End time: 0926  
 Purging equipment: Submersible pump  Bladder pump  Peristaltic pump   
 PVC bailer  Teflon bailer  Other   
 Purge rate (L/min): 0.23 Well yield (H/L): H.9h  
 Purge water disposal: Drum on site

Time (2400 hr)	Cumulative Vol. Purged (liters)	pH (units)	EC ( $\mu$ S/cm)	T ( $^{\circ}$ C)	Color (Visual)	Turbidity (Visual or NTU)
<u>0904</u>	<u>2.4</u>	<u>6.67</u>	<u>623</u>	<u>19.3</u>	<u>Clear</u>	<u>3.54</u>
<u>0916</u>	<u>4.8</u>	<u>6.93</u>	<u>622</u>	<u>19.4</u>	<u>Clear</u>	<u>1.51</u>
<u>0926</u>	<u>7.2</u>	<u>7.01</u>	<u>621</u>	<u>19.7</u>	<u>Clear</u>	<u>0.98</u>
Total Purged (liters): <u>7.2</u>						

**WELL SAMPLING**

Date sampled: 12-4-07 Start time: 0926 End time: 0928  
 Depth to water (ft) before sampling: 6.53  
 Sampling equipment: Peristaltic pump  Bladder pump  Teflon bailer   
 PVC bailer  Other

Weather conditions: Rain/clouds Ambient temperature ( $^{\circ}$  F): 57  
 Well condition/Remarks: OK  
All samples taken

Meter calibration: EC 15,12-15000 pH 698-700/1000-1000/892-400  
 Temperature 12.7 Turbidity 15,120-15,000

Purged and sampled by (print): Manuel L. Gallagos  
 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 2007    0.001  
 December 2007    0.001

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 2007	NE	0.00002	0.001	0.33	0.1
December 2007	NE	0.00002	0.001	0.33	0.1

Calculations and assumptions prepared by:

*Handwritten signature: Mark C. Wheeler*

Date: 2/25/2008



## **Appendix C**

### **Certified Analytical Reports and Chain-of-Custody Documentation**

**Third Quarter 2007**

## ANALYTICAL REPORT

Job Number: 720-10737-1

Job Description: Alameda Facility CS 1605

For:

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

Attention: Mark Wheeler



---

Dimple Sharma  
Project Manager I  
dimple.sharma@testamericainc.com  
09/14/2007

cc: Dana Johnston



## EXECUTIVE SUMMARY - Detections

Client: Crawford Consulting Inc

Job Number: 720-10737-1

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
<b>720-10737-1</b>	<b>MW-1</b>				
Trichloroethene		51	5.0	ug/L	8260B
Tetrachloroethene		430	5.0	ug/L	8260B
<b>720-10737-2</b>	<b>MW-2</b>				
Trichloroethene		31	20	ug/L	8260B
Tetrachloroethene		1700	20	ug/L	8260B
<b>720-10737-3</b>	<b>MW-3</b>				
1,1-Dichloroethene		1.4	0.50	ug/L	8260B
<b>720-10737-4</b>	<b>MW-4</b>				
Tetrachloroethene		0.86	0.50	ug/L	8260B
<b>720-10737-5FD</b>	<b>DUP-1</b>				
Trichloroethene		27	20	ug/L	8260B
Tetrachloroethene		1700	20	ug/L	8260B

## METHOD SUMMARY

Client: Crawford Consulting Inc

Job Number: 720-10737-1

<b>Description</b>	<b>Lab Location</b>	<b>Method</b>	<b>Preparation Method</b>
<b>Matrix: Water</b>			
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: 720-10737-1

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
720-10737-1	MW-1	Water	09/11/2007 0935	09/11/2007 1218
720-10737-2	MW-2	Water	09/11/2007 1118	09/11/2007 1218
720-10737-3	MW-3	Water	09/11/2007 1035	09/11/2007 1218
720-10737-4	MW-4	Water	09/11/2007 0851	09/11/2007 1218
720-10737-5FD	DUP-1	Water	09/11/2007 0000	09/11/2007 1218
720-10737-6TB	TB-1	Water	09/11/2007 0000	09/11/2007 1218

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Client Sample ID: MW-1**

Lab Sample ID: 720-10737-1  
Client Matrix: Water

Date Sampled: 09/11/2007 0935  
Date Received: 09/11/2007 1218

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

Method: 8260B	Analysis Batch: 720-26086	Instrument ID: Varian 3900G
Preparation: 5030B		Lab File ID: c:\saturnws\data\200709\09
Dilution: 10		Initial Weight/Volume: 40 mL
Date Analyzed: 09/13/2007 1603		Final Weight/Volume: 40 mL
Date Prepared: 09/13/2007 1603		

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	51		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	430		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)	109		82 - 126
4-Bromofluorobenzene	114		83 - 127
1,2-Dichloroethane-d4 (Surr)	106		86 - 129



## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Client Sample ID: MW-2**

Lab Sample ID: 720-10737-2  
Client Matrix: Water

Date Sampled: 09/11/2007 1118  
Date Received: 09/11/2007 1218

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

Method: 8260B	Analysis Batch: 720-26031	Instrument ID: Varian 3900G
Preparation: 5030B		Lab File ID: c:\saturnws\data\200709\09
Dilution: 40		Initial Weight/Volume: 40 mL
Date Analyzed: 09/12/2007 1840		Final Weight/Volume: 40 mL
Date Prepared: 09/12/2007 1840		

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	31		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	1700		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)	106		82 - 126
4-Bromofluorobenzene	108		83 - 127
1,2-Dichloroethane-d4 (Surr)	105		86 - 129

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Client Sample ID: MW-3**

Lab Sample ID: 720-10737-3  
Client Matrix: Water

Date Sampled: 09/11/2007 1035  
Date Received: 09/11/2007 1218

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

Method:	8260B	Analysis Batch: 720-26031	Instrument ID: Varian 3900G
Preparation:	5030B		Lab File ID: c:\saturnws\data\200709\09
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	09/12/2007 1947		Final Weight/Volume: 40 mL
Date Prepared:	09/12/2007 1947		

Analyte	Result (ug/L)	Qualifier	RL
1,1-Dichloroethene	1.4		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 - 126	
4-Bromofluorobenzene	111	83 - 127	
1,2-Dichloroethane-d4 (Surr)	101	86 - 129	

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Client Sample ID: MW-4**

Lab Sample ID: 720-10737-4  
Client Matrix: Water

Date Sampled: 09/11/2007 0851  
Date Received: 09/11/2007 1218

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

Method:	8260B	Analysis Batch: 720-26031	Instrument ID: Varian 3900G
Preparation:	5030B		Lab File ID: c:\saturnws\data\200709\09
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	09/12/2007 2021		Final Weight/Volume: 40 mL
Date Prepared:	09/12/2007 2021		

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	0.86		0.50
Chlorodibromomethane	ND		0.50
Chlorobenzene	ND		0.50
Bromoform	ND		1.0
1,1,1,2-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)	102		82 - 126
4-Bromofluorobenzene	112		83 - 127
1,2-Dichloroethane-d4 (Surr)	101		86 - 129

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Client Sample ID: DUP-1**

Lab Sample ID: 720-10737-5FD  
 Client Matrix: Water

Date Sampled: 09/11/2007 0000  
 Date Received: 09/11/2007 1218

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

Method:	8260B	Analysis Batch: 720-26031	Instrument ID: Varian 3900G
Preparation:	5030B		Lab File ID: c:\saturnws\data\200709\09
Dilution:	40		Initial Weight/Volume: 40 mL
Date Analyzed:	09/12/2007 1914		Final Weight/Volume: 40 mL
Date Prepared:	09/12/2007 1914		

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	27		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	1700		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)	109		82 - 126
4-Bromofluorobenzene	110		83 - 127
1,2-Dichloroethane-d4 (Surr)	106		86 - 129

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Client Sample ID:** TB-1

Lab Sample ID: 720-10737-6TB  
 Client Matrix: Water

Date Sampled: 09/11/2007 0000  
 Date Received: 09/11/2007 1218

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

Method:	8260B	Analysis Batch: 720-26031	Instrument ID: Varian 3900G
Preparation:	5030B		Lab File ID: c:\saturnws\data\200709\09
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	09/12/2007 1519		Final Weight/Volume: 40 mL
Date Prepared:	09/12/2007 1519		

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
1,1,1,2-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 - 126
4-Bromofluorobenzene	109	83 - 127
1,2-Dichloroethane-d4 (Surr)	106	86 - 129

**DATA REPORTING QUALIFIERS**

Client: Crawford Consulting Inc

Job Number: 720-10737-1

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
GC/MS VOA	F	MS or MSD exceeds the control limits

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-10737-1

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>GC/MS VOA</b>					
<b>Analysis Batch:720-26031</b>					
LCS 720-26031/6	Lab Control Spike	T	Water	8260B	
MB 720-26031/1	Method Blank	T	Water	8260B	
720-10697-B-18 MS	Matrix Spike	T	Water	8260B	
720-10697-C-18 MSD	Matrix Spike Duplicate	T	Water	8260B	
720-10737-2	MW-2	T	Water	8260B	
720-10737-3	MW-3	T	Water	8260B	
720-10737-4	MW-4	T	Water	8260B	
720-10737-5FD	DUP-1	T	Water	8260B	
720-10737-6TB	TB-1	T	Water	8260B	
<b>Analysis Batch:720-26086</b>					
LCS 720-26086/1	Lab Control Spike	T	Water	8260B	
MB 720-26086/2	Method Blank	T	Water	8260B	
720-10737-1	MW-1	T	Water	8260B	
720-10747-B-1 MS	Matrix Spike	T	Water	8260B	
720-10747-C-1 MSD	Matrix Spike Duplicate	T	Water	8260B	

#### Report Basis

T = Total

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-10737-1

### Method Blank - Batch: 720-26031

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

Lab Sample ID: MB 720-26031/1  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 09/12/2007 1124  
Date Prepared: 09/12/2007 1124

Analysis Batch: 720-26031  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Varian 3900G  
Lab File ID: c:\saturnws\data\200709\05  
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)	107	82 - 126	
4-Bromofluorobenzene	110	83 - 127	
1,2-Dichloroethane-d4 (Surr)	101	86 - 129	

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



## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Lab Control Spike - Batch: 720-26031**

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

Lab Sample ID: LCS 720-26031/6  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 09/12/2007 1051  
Date Prepared: 09/12/2007 1051

Analysis Batch: 720-26031  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Varian 3900G  
Lab File ID: c:\satumws\data\200709\05  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
1,1-Dichloroethene	20.0	19.5	97	65 - 125	
Trichloroethene	20.0	18.6	93	74 - 134	
Chlorobenzene	20.0	21.1	106	61 - 121	
<hr/>					
Surrogate			% Rec	Acceptance Limits	
Toluene-d8 (Surr)			109	82 - 126	
4-Bromofluorobenzene			111	83 - 127	
1,2-Dichloroethane-d4 (Surr)			105	86 - 129	

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 720-26031**

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

MS Lab Sample ID: 720-10697-B-18 MS  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 09/12/2007 1412  
Date Prepared: 09/12/2007 1412

Analysis Batch: 720-26031  
Prep Batch: N/A

Instrument ID: Varian 3900G  
Lab File ID: c:\satumws\data\200709\05  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

MSD Lab Sample ID: 720-10697-C-18 MSD  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 09/12/2007 1446  
Date Prepared: 09/12/2007 1446

Analysis Batch: 720-26031  
Prep Batch: N/A

Instrument ID: Varian 3900G  
Lab File ID: c:\satumws\data\200709\05  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	<u>% Rec.</u>		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
1,1-Dichloroethene	101	91	65 - 125	10	20		
Trichloroethene	89	83	74 - 134	8	20		
Chlorobenzene	108	100	61 - 121	8	20		
<hr/>							
Surrogate	MS % Rec		MSD % Rec		Acceptance Limits		
Toluene-d8 (Surr)	102		104		82 - 126		
4-Bromofluorobenzene	109		110		83 - 127		
1,2-Dichloroethane-d4 (Surr)	104		102		86 - 129		

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

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Method Blank - Batch: 720-26086**

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

Lab Sample ID: MB 720-26086/2  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 09/13/2007 1027  
Date Prepared: 09/13/2007 1027

Analysis Batch: 720-26086  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Varian 3900G  
Lab File ID: c:\saturnws\data\200709\05  
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)	109	82 - 126
4-Bromofluorobenzene	118	83 - 127
1,2-Dichloroethane-d4 (Surr)	108	86 - 129

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

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Lab Control Spike - Batch: 720-26086**

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

Lab Sample ID: LCS 720-26086/1  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 09/13/2007 0954  
Date Prepared: 09/13/2007 0954

Analysis Batch: 720-26086  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Varian 3900G  
Lab File ID: c:\satumws\data\200709\05  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
1,1-Dichloroethene	20.0	21.1	105	65 - 125	
Trichloroethene	20.0	18.7	94	74 - 134	
Chlorobenzene	20.0	21.1	106	61 - 121	
<hr/>					
Surrogate			% Rec	Acceptance Limits	
Toluene-d8 (Surr)			101	82 - 126	
4-Bromofluorobenzene			106	83 - 127	
1,2-Dichloroethane-d4 (Surr)			101	86 - 129	

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 720-26086**

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

MS Lab Sample ID: 720-10747-B-1 MS  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 09/13/2007 1349  
Date Prepared: 09/13/2007 1349

Analysis Batch: 720-26086  
Prep Batch: N/A

Instrument ID: Varian 3900G  
Lab File ID: c:\satumws\data\200709\05  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

MSD Lab Sample ID: 720-10747-C-1 MSD  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 09/13/2007 1422  
Date Prepared: 09/13/2007 1422

Analysis Batch: 720-26086  
Prep Batch: N/A

Instrument ID: Varian 3900G  
Lab File ID: c:\satumws\data\200709\05  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
1,1-Dichloroethene	82	73	65 - 125	10	20		
Trichloroethene	79	73	74 - 134	8	20		F
Chlorobenzene	93	85	61 - 121	9	20		
<hr/>							
Surrogate	MS % Rec		MSD % Rec		Acceptance Limits		
Toluene-d8 (Surr)	111		110		82 - 126		
4-Bromofluorobenzene	112		117		83 - 127		
1,2-Dichloroethane-d4 (Surr)	111		104		86 - 129		

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

Test America San Francisco

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

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Service Request: 107112

Date: 9-11-07

**720-10737**

**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:** *M. P. Gallegos*

Number of Containers	Analysis Requested										REMARKS				
	Volatile Organics (VOCs) (EPA 8021B)	Pb (7421), As (7060)	Same as Metals	COD, TKN	500 ml plastic H <sub>2</sub> SO <sub>4</sub>	Chloride, Nitrate	500 ml plastic NP	pH, Conductivity	500 ml plastic NP	Total Phenols		2 x 500 ml glass H <sub>2</sub> SO <sub>4</sub>	Volatile Organics (8010)	3 x 40 ml vial	TPH/BTEX
												X			
												X			
												X			
												X			
												X			
												X			
												X			

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix
MW-1	9-11-07	0935	1	Water
MW-2	9-11-07	1118	2	Water
MW-3	9-11-07	1035	3	Water
MW-4	9-11-07	0851	4	Water
DUP-1	9-11-07	—	5	Water
TB-1	9-11-07	—	6	Water

**Relinquished By:** *M. P. Gallegos*  
 Signature: *M. P. Gallegos*  
 Printed Name: *M. P. Gallegos*  
 Firm: *EST*  
 Date/Time: *9-11-07 - 12:18*

**Received By:** *Tracy Bullock*  
 Signature: *Tracy Bullock*  
 Printed Name: *Tracy Bullock*  
 Firm: *TAL-SF*  
 Date/Time: *9/11/07 12:18*

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

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

**INVOICE INFORMATION**  
 P.O. # \_\_\_\_\_  
 Bill to: \_\_\_\_\_

**SAMPLE RECEIPT**  
 Shipping VIA: \_\_\_\_\_  
 Shipping #: \_\_\_\_\_  
 Condition: \_\_\_\_\_

**Special Instructions/Comments:**  
 Please report MRLs only  
 Please pdf results to: Dana Johnston at dana@crawfordconsulting.com  
 Please provide EDF for Geotracker. Global ID is SL0600177511  
*Temp. 4.8°C*

## LOGIN SAMPLE RECEIPT CHECK LIST

Client: Crawford Consulting Inc

Job Number: 720-10737-1

**Login Number: 10737**

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
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 2007**

## ANALYTICAL REPORT

Job Number: 720-12035-1

Job Description: Alameda Facility CS 1605

For:

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

Attention: Mark Wheeler



---

Dimple Sharma  
Project Manager I  
dimple.sharma@testamericainc.com  
12/11/2007

cc: Dana Johnston

**Job Narrative**  
**720-J12035-1**

**Comments**

No additional comments.

**Receipt**

All samples were received in good condition within temperature requirements.

**GC/MS VOA**

Method(s) 8260B: The matrix spike duplicate (MSD) trichloroethene recovery for batch 29432 was outside control limit. The associated laboratory control standard and laboratory control standard duplicate (LCS/LCSD) met acceptance criteria.

No other analytical or quality issues were noted.



## EXECUTIVE SUMMARY - Detections

Client: Crawford Consulting Inc

Job Number: 720-12035-1

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
<b>720-12035-1</b>	<b>MW-1</b>				
Trichloroethene		29	5.0	ug/L	8260B
Tetrachloroethene		330	5.0	ug/L	8260B
<b>720-12035-2</b>	<b>MW-2</b>				
Tetrachloroethene		1100	20	ug/L	8260B
<b>720-12035-3</b>	<b>MW-3</b>				
1,1-Dichloroethene		1.1	0.50	ug/L	8260B
<b>720-12035-4</b>	<b>MW-4</b>				
Tetrachloroethene		0.92	0.50	ug/L	8260B
<b>720-12035-5</b>	<b>DUP-1</b>				
Tetrachloroethene		950	20	ug/L	8260B

## METHOD SUMMARY

Client: Crawford Consulting Inc

Job Number: 720-12035-1

<b>Description</b>	<b>Lab Location</b>	<b>Method</b>	<b>Preparation Method</b>
<b>Matrix: Water</b>			
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: 720-12035-1

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
720-12035-1	MW-1	Water	12/04/2007 1008	12/04/2007 1245
720-12035-2	MW-2	Water	12/04/2007 1132	12/04/2007 1245
720-12035-3	MW-3	Water	12/04/2007 1056	12/04/2007 1245
720-12035-4	MW-4	Water	12/04/2007 0926	12/04/2007 1245
720-12035-5	DUP-1	Water	12/04/2007 0000	12/04/2007 1245
720-12035-6	TB-1	Water	12/04/2007 0000	12/04/2007 1245

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Client Sample ID: MW-1**

Lab Sample ID: 720-12035-1  
Client Matrix: Water

Date Sampled: 12/04/2007 1008  
Date Received: 12/04/2007 1245

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

Method: 8260B	Analysis Batch: 720-29432	Instrument ID: Saturn 2K3
Preparation: 5030B		Lab File ID: d:\data\200712\121007\SA-
Dilution: 10		Initial Weight/Volume: 40 mL
Date Analyzed: 12/10/2007 1618		Final Weight/Volume: 40 mL
Date Prepared: 12/10/2007 1618		

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	29		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	330		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)	109	82 - 126	
4-Bromofluorobenzene	119	83 - 127	
1,2-Dichloroethane-d4 (Surr)	90	86 - 129	

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Client Sample ID: MW-2**

Lab Sample ID: 720-12035-2  
Client Matrix: Water

Date Sampled: 12/04/2007 1132  
Date Received: 12/04/2007 1245

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

Method:	8260B	Analysis Batch: 720-29432	Instrument ID: Saturn 2K3
Preparation:	5030B		Lab File ID: d:\data\200712\121007\SA-
Dilution:	40		Initial Weight/Volume: 40 mL
Date Analyzed:	12/10/2007 1405		Final Weight/Volume: 40 mL
Date Prepared:	12/10/2007 1405		

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	1100		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
<hr/>			
Surrogate	%Rec		Acceptance Limits
Toluene-d8 (Surr)	112		82 - 126
4-Bromofluorobenzene	118		83 - 127
1,2-Dichloroethane-d4 (Surr)	94		86 - 129

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Client Sample ID: MW-3**

Lab Sample ID: 720-12035-3  
Client Matrix: Water

Date Sampled: 12/04/2007 1056  
Date Received: 12/04/2007 1245

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

Method: 8260B	Analysis Batch: 720-29432	Instrument ID: Saturn 2K3
Preparation: 5030B		Lab File ID: d:\data\200712\121007\SA-
Dilution: 1.0		Initial Weight/Volume: 40 mL
Date Analyzed: 12/10/2007 1713		Final Weight/Volume: 40 mL
Date Prepared: 12/10/2007 1713		

Analyte	Result (ug/L)	Qualifier	RL
1,1-Dichloroethene	1.1		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
1,1,1,2-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 - 126	
4-Bromofluorobenzene	113	83 - 127	
1,2-Dichloroethane-d4 (Surr)	97	86 - 129	

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Client Sample ID: MW-4**

Lab Sample ID: 720-12035-4  
Client Matrix: Water

Date Sampled: 12/04/2007 0926  
Date Received: 12/04/2007 1245

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

Method:	8260B	Analysis Batch: 720-29487	Instrument ID: Varian 3900G
Preparation:	5030B		Lab File ID: c:\saturnws\data\200712\12
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	12/11/2007 1253		Final Weight/Volume: 40 mL
Date Prepared:	12/11/2007 1253		

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	0.92		0.50
Chlorodibromomethane	ND		0.50
Chlorobenzene	ND		0.50
Bromoform	ND		1.0
1,1,1,2-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 - 126	
4-Bromofluorobenzene	113	83 - 127	
1,2-Dichloroethane-d4 (Surr)	105	86 - 129	

## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Client Sample ID: DUP-1**

Lab Sample ID: 720-12035-5  
Client Matrix: Water

Date Sampled: 12/04/2007 0000  
Date Received: 12/04/2007 1245

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

Method: 8260B	Analysis Batch: 720-29487	Instrument ID: Varian 3900G
Preparation: 5030B		Lab File ID: c:\saturnws\data\200712\12
Dilution: 40		Initial Weight/Volume: 40 mL
Date Analyzed: 12/11/2007 1433		Final Weight/Volume: 40 mL
Date Prepared: 12/11/2007 1433		

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	950		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)	104		82 - 126
4-Bromofluorobenzene	111		83 - 127
1,2-Dichloroethane-d4 (Surr)	104		86 - 129



## Analytical Data

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Client Sample ID: TB-1**

Lab Sample ID: 720-12035-6  
 Client Matrix: Water

Date Sampled: 12/04/2007 0000  
 Date Received: 12/04/2007 1245

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

Method: 8260B	Analysis Batch: 720-29432	Instrument ID: Saturn 2K3
Preparation: 5030B		Lab File ID: d:\data\200712\121007\SA-
Dilution: 1.0		Initial Weight/Volume: 40 mL
Date Analyzed: 12/10/2007 1545		Final Weight/Volume: 40 mL
Date Prepared: 12/10/2007 1545		

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
1,1,1,2-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)	112	82 - 126	
4-Bromofluorobenzene	116	83 - 127	
1,2-Dichloroethane-d4 (Surr)	96	86 - 129	

**DATA REPORTING QUALIFIERS**

Client: Crawford Consulting Inc

Job Number: 720-12035-1

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
GC/MS VOA	F	MS or MSD exceeds the control limits

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-12035-1

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>GC/MS VOA</b>					
<b>Analysis Batch:720-29432</b>					
LCS 720-29432/2	Lab Control Spike	T	Water	8260B	
LCS 720-29432/1	Lab Control Spike Duplicate	T	Water	8260B	
MB 720-29432/3	Method Blank	T	Water	8260B	
720-12035-1	MW-1	T	Water	8260B	
720-12035-2	MW-2	T	Water	8260B	
720-12035-2MS	Matrix Spike	T	Water	8260B	
720-12035-2MSD	Matrix Spike Duplicate	T	Water	8260B	
720-12035-3	MW-3	T	Water	8260B	
720-12035-6	TB-1	T	Water	8260B	
<b>Analysis Batch:720-29487</b>					
LCS 720-29487/3	Lab Control Spike	T	Water	8260B	
LCS 720-29487/1	Lab Control Spike Duplicate	T	Water	8260B	
MB 720-29487/4	Method Blank	T	Water	8260B	
720-12035-4	MW-4	T	Water	8260B	
720-12035-5	DUP-1	T	Water	8260B	

#### Report Basis

T = Total

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Method Blank - Batch: 720-29432**

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

Lab Sample ID: MB 720-29432/3  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 12/10/2007 1205  
Date Prepared: 12/10/2007 1205

Analysis Batch: 720-29432  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Saturn 2K3  
Lab File ID: d:\data\200712\121007\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)	108	82 - 126
4-Bromofluorobenzene	121	83 - 127
1,2-Dichloroethane-d4 (Surr)	95	86 - 129

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

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Lab Control Spike/  
Lab Control Spike Duplicate Recovery Report - Batch: 720-29432**

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

LCS Lab Sample ID: LCS 720-29432/2  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 12/10/2007 1058  
Date Prepared: 12/10/2007 1058

Analysis Batch: 720-29432  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Saturn 2K3  
Lab File ID: d:\data\200712\121007\LS-  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

LCSD Lab Sample ID: LCSD 720-29432/1  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 12/10/2007 1131  
Date Prepared: 12/10/2007 1131

Analysis Batch: 720-29432  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Saturn 2K3  
Lab File ID: d:\data\200712\121007\LD-V  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
1,1-Dichloroethene	84	92	65 - 125	9	20		
Trichloroethene	78	84	74 - 134	8	20		
Chlorobenzene	104	106	61 - 121	2	20		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
Toluene-d8 (Surr)	96		95		82 - 126		
4-Bromofluorobenzene	109		108		83 - 127		
1,2-Dichloroethane-d4 (Surr)	91		92		86 - 129		

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

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 720-29432**

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

MS Lab Sample ID: 720-12035-2  
Client Matrix: Water  
Dilution: 40  
Date Analyzed: 12/10/2007 1438  
Date Prepared: 12/10/2007 1438

Analysis Batch: 720-29432  
Prep Batch: N/A

Instrument ID: Saturn 2K3  
Lab File ID: d:\data\200712\121007\SA-  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

MSD Lab Sample ID: 720-12035-2  
Client Matrix: Water  
Dilution: 40  
Date Analyzed: 12/10/2007 1511  
Date Prepared: 12/10/2007 1511

Analysis Batch: 720-29432  
Prep Batch: N/A

Instrument ID: Saturn 2K3  
Lab File ID: d:\data\200712\121007\SA-  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
1,1-Dichloroethene	87	75	65 - 125	15	20		
Trichloroethene	80	66	74 - 134	19	20		F
Chlorobenzene	108	97	61 - 121	11	20		
Surrogate	MS % Rec		MSD % Rec		Acceptance Limits		
Toluene-d8 (Surr)	112		108		82 - 126		
4-Bromofluorobenzene	114		112		83 - 127		
1,2-Dichloroethane-d4 (Surr)	91		95		86 - 129		

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

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Method Blank - Batch: 720-29487**

**Method: 8260B**

**Preparation: 5030B**

Lab Sample ID: MB 720-29487/4  
 Client Matrix: Water  
 Dilution: 1.0  
 Date Analyzed: 12/11/2007 1219  
 Date Prepared: 12/11/2007 1219

Analysis Batch: 720-29487  
 Prep Batch: N/A  
 Units: ug/L

Instrument ID: Varian 3900G  
 Lab File ID: c:\saturnws\data\200712\12  
 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)	102	82 - 126	
4-Bromofluorobenzene	107	83 - 127	
1,2-Dichloroethane-d4 (Surr)	100	86 - 129	

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

## Quality Control Results

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Lab Control Spike/  
Lab Control Spike Duplicate Recovery Report - Batch: 720-29487**

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

LCS Lab Sample ID: LCS 720-29487/3  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 12/11/2007 1112  
Date Prepared: 12/11/2007 1112

Analysis Batch: 720-29487  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Varian 3900G  
Lab File ID: c:\satumws\data\200712\121  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

LCSD Lab Sample ID: LCSD 720-29487/1  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 12/11/2007 1146  
Date Prepared: 12/11/2007 1146

Analysis Batch: 720-29487  
Prep Batch: N/A  
Units: ug/L

Instrument ID: Varian 3900G  
Lab File ID: c:\satumws\data\200712\121  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
1,1-Dichloroethene	91	100	65 - 125	9	20		
Trichloroethene	82	97	74 - 134	16	20		
Chlorobenzene	98	107	61 - 121	9	20		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
Toluene-d8 (Surr)	103		103		82 - 126		
4-Bromofluorobenzene	110		105		83 - 127		
1,2-Dichloroethane-d4 (Surr)	103		101		86 - 129		

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





# Login Sample Receipt Check List

Client: Crawford Consulting Inc

Job Number: 720-12035-1

**Login Number: 12035**

**Creator: Mullen, Joan**

**List Number: 1**

**List Source: TestAmerica San Francisco**

<b>Question</b>	<b>T / F / NA</b>	<b>Comment</b>
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	



