BONKOWSKI & ASSOCIATES, INC.
GEOTECHNICAL SERVICES AND HAZARDOUS MATERIALS MANAGEMENT

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Alameda County
Environmental Health

February 10, 2009
E27297-3

Mr. Jerry Wickham
Senior Hazardous Materials Specialist
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

**RE: Soil Gas Survey and Soil Sampling Report**
**421 23rd Avenue, Oakland, California**

Dear Mr. Wickham,

This soil gas survey and soil sampling report for the underground storage tank site at 421 23rd Avenue in Oakland, California (Figure 1) was prepared by Bonkowski & Associates, Inc. (B&A) on behalf of Golden Gate Petroleum. This work is submitted to the Alameda County Department of Environmental Health (ACDEH) in response to their letter directive dated April 15, 2008. This object of this work was to provide soil vapor exposure, and soil and groundwater chemical test data to support a previously made request for regulatory underground storage tank site closure. To complete this task B&A: (1) obtained drilling permits, prepared a health and safety plan, and cleared underground utilities, (2) conducted a soil gas survey, (3) collected soil and grab-groundwater samples for chemical testing, (4) conducted field head-space analysis, (5) reviewed chemical test data, and (6) prepared this report. The Site has been the subject of numerous environmental investigations (References). Pertinent site and environmental conditions are described in the Site Closure Report (B&A, January 2008). Based upon the results of this investigation, the Site is a candidate for closure.

## SITE DESCRIPTION

The Golden Gate Petroleum Oakland Cardlock (Site) is located at 421 23rd Avenue in Oakland, California. The Site is situated at the northwest corner of the intersection of Kennedy Street and 23rd Avenue. The site includes two 20,000 gallon double wall steel fiberglass reinforced tanks, and supporting product lines and dispensers; seven groundwater monitor wells, and a building. A Site Plan map is provided in Figure 2.

## FIELD METHODS

Permitting, Underground Locating, Health & Safety Plan and Offsite Access:
Prior to conducting any field work, B&A prepared a health and safety plan to meet California OSHA regulations regarding exposure of employees to hazardous materials. The health and safety plan was prepared and reviewed by all pertinent personnel prior to conducting any work. B&A obtained well installation permits from Alameda County to conduct drilling and vapor sampling at the Site. Copies of the permits are attached in Appendix A. Underground utilities were checked by notifying USA and confirmed at each well and boring location using a private underground utility locator. All work was performed in accordance with the provisions of the permits. County Inspectors Ms. Vicky Hamlin and Mr. Ron Smalley visited the Site during field activities. B&A was unable to obtain a site access agreement for the soil gas sample SG-1.

Soil Gas Survey
A soil gas survey was conducted at the Site on December 16, 2008 by Optimal Technology (Optimal). The soil gas survey was conducted to help evaluate the potential for petroleum fuel vapor intrusion into indoor air. The work was conducted in accordance with the Department of Toxic Substances Control (DTSC), "Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" (DTSC, 2004). The soil gas survey was conducted at the locations shown in Figure 2. The vapor samples were collected from depths of 4.0 to 4.5 feet below the ground surface. The soil gas probes were advanced into the subsurface using direct push technology. Sampling proceeded in accordance with Cal-EPA (2003) and Los Angeles RWQCB (1997) guidance documents. In accordance with DTSC (2003) guidelines, one duplicate vapor sample was collected from the SG-6 location. The soil gas samples were tested in the field using a mobile GC/MS laboratory using modified EPA method 8260B for volatile organic compounds. Except for the sample from SG-8, the vapor samples were all non-detect to the laboratory reporting limit. SG-8 contained 4.71 µg/l tetrachloroethene (PCE). The data is summarized in Table 1. Optimal's report is attached as Appendix B.

Geoprobe Borings
On January 13, 2009 Gregg Drilling advanced Geoprobe borings GP-A and GP-B to depths of 12 and 20 feet at the locations shown on Figure 2. The depth represents the top of the first encountered shallow groundwater. Samples were collected continuously using 4-foot long rigid clear acrylic tubes. A B&A field geologist observed the test boring(s), described the samples according to the Unified Soils Classification System, and prepared a log for each boring. Copies of the logs are included in Appendix C.

Soils encountered in the borings consisted of fine sand, silty clay, silty sand, gravelly sand and clayey silt. Groundwater was encountered at a depth of about 12 feet in GP-A and 20 feet in GP-B. Groundwater quickly rose to depths of 8 and 10 feet in each boring, respectively. After collecting grab groundwater samples, the borings were then grouted to grade using neat cement.

Field Head Space Analysis

A portion of each soil sample collected was used to perform a head-space test in the field for volatile organic compounds. The test procedure involved emptying the contents of the soil sample from selected depths into a plastic zip-lock bag. After about five minutes, the tip of a Rae 2000 Organic Vapor Meter equipped with a 10.6 eV lamp was inserted into the bag to measure total organic vapors. These measurements are presented on the log of each boring in parts-per-million OVM units. The highest OVM concentrations were found consistently at a depth of about 4 to 5 feet. The concentrations decreased with depth.

Soil Sampling

Soil samples collected from depths of 12 feet in GP-A, and from 20 feet from GP-B were retained for chemical analysis. This sample were retained by covering both ends of the acrylic sampler tubing with Teflon sheeting and sealing with plastic end caps. The samples were then labeled, and later transported on ice to Excelchem Environmental Labs in Rocklin, California using chain-of-custody documentation.

The samples were analyzed for TPHD, TPHG, BTEX, MTBE DIPE, ETBE, TAME and TBA using modified EPA Methods 8015 M and 8260B. The laboratory results are presented in the attached certified report in Appendix D. TPHD was reported at a concentration of 6.00 mg/kg in GP-A, and 4.85 mg/kg in GP-B. The samples were non-detect for the other analytes. These results are summarized in Table 2.

Groundwater Sampling

One grab groundwater sample was collected from GP-A and GP-B for chemical testing. A 3/4-inch slotted PVC casing was placed in the boring to facilitate water sampling. Groundwater elevations were measured prior to sampling, 8 feet in GP-A and 10 feet in GP-B. The grab groundwater samples were collected using a stainless steel bailer that was decontaminated between sampling locations. Groundwater samples were placed directly into laboratory prepared 40-milliliter VOA containers and sealed to prevent loss of volatile constituents. The groundwater samples were labeled, placed on ice, and transported to Excelchem under formal EPA chain-of-custody. The samples were analyzed for TPHG, BTEX, MTBE DIPE, ETBE, TAME and TBA using EPA Method 8260B. A copy of the Excelchem analytical report with a summary of the method of analysis and chain-of-custody documents are attached in Appendix D.

TPHG was reported in both samples, 207 µg/l in GP-A and 746 µg/l in GP-B. MTBE was reported in the both samples, 430 µg/l in GP-A and 92.4 µg/l in GP-B. GP-A contained 4.9 µg/l TAME. GP-B contained 0.4 µg/l total xylenes. The samples were non-detect for the other analytes. Grab groundwater sample chemical test results are summarized in Table 3.

**RESULTS**

The Site is predominantly underlain by fine sand, silty clay, silty sand, gravelly sand and clayey silts to a depth of about 20 feet. Groundwater was first encountered at a depth of approximately 12 feet in GP-A, but quickly rose to 8 feet. Groundwater was first encountered at feet 20 feet in GP-B, but quickly rose to 10 feet. These conditions are similar to those reported by Hageman-Aguiar (November 1999) when they installed monitor wells MW-1, MW-2 and MW-3.

Except for GP-8, soil gas samples were void of the all VOCs to the laboratory reporting limit. The sample collected from GP-8 contained 4.71 µg/l PCE. There appears to be little risk of vapor intrusion from petroleum fuel hydrocarbons.

TPHD was found in soil samples collected from both borings (6.00 mg/kg in GP-A at a depth of 12 feet, and 4.85 mg/kg in GP-B at a depth of 20 feet). No other analytes were reported. The TPHD soil concentrations are too low to warrant further investigation.

The grab groundwater samples collected from GP-A and GP-B contained TPHG and MTBE. TPHG was reported at a concentration of 207 µg/l in GP-A and 746 µg/l in GP-B. MTBE was reported at concentrations of 430 µg/l in GP-A and 92.4 µg/l in GP-B. GP-A contained 4.9 µg/l TAME. GP-B contained 0.4 µg/l total xylenes. No other analytes were reported.

Grab groundwater chemical test results from the site in 1999 and 2008 are compared below. As shown, the concentrations of TPHG and MTBE have decreased substantially with time. On this basis, the Site is a candidate for closure. If closure is granted, B&A recommends deed restrictions for potable groundwater use.

| Analyte (µg/l) | GP-A (2009) | GP-6 (1999) | GP-B (2009) | GP-4 (1999) |
|---|---|---|---|---|
| TPHG | 207 | 3,100 | 746 | 12,000 |
| Benzene | <0.7 | <0.50 | <0.07 | <0.50 |
| Toluene | <0.8 | <0.50 | <0.08 | <0.50 |
| Ethylbenzene | <0.7 | <0.50 | <0.07 | <0.50 |
| Total Xylenes | <3.4 | <0.50 | 0.4 | <0.50 |
| MTBE | 430 | 4,800 | 92.4 | 13,000 |

## CERTIFICATION

This Report has been prepared by the staff of Bonkowski & Associates, Inc. under contract to Golden Gate Petroleum and has been reviewed and approved by the professionals whose signatures appear below. This report addresses exposures from petroleum fuel hydrocarbons leaking for underground storage tank sites. No other chemicals are addressed. The findings, recommendations, specifications, or professional opinions are presented, within the limits prescribed by the Client, and are true and correct to the best of our knowledge, after being prepared in accordance with generally accepted engineering practice in Northern California at the time this Report was prepared. No other warranty is either expressed or implied.

Please feel free to contact either of the undersigned professionals at (510) 450-0770 if you have any questions or need any additional information.

Sincerely,
**BONKOWSKI & ASSOCIATES, INC**

Michael S. Bonkowski, PG CEG 1329
Senior Managing Principal
Environmental and Engineering Services

Cynthia A. Dittmar, PG 7213
Project Geologist

REGISTERED GEOLOGIST
CYNTHIA A. DITTMAR
No. 7213
Exp. 01/10
STATE OF CALIFORNIA

Enclosure

cc: Mr. Dennis O'Keefe

## ATTACHMENTS

Table 1 Soil Vapor Chemical Test Results
Table 2 Soil Chemical Test Results
Table 3 Groundwater Chemical Test Results

Figure 1 Site Location Map
Figure 2 Site Plan Map

Appendix A Permits
Appendix B Optimal Technology Soil Gas Survey Report
Appendix C Boring Logs
Appendix D Excelchem Environmental Labs Chemical Test Report

## REFERENCES

Bonkowski & Associates, Inc., "Tank Cavity Closure Report, Golden Gate Petroleum, Oakland Cardlock," September 16, 1998.

Hageman-Aguiar, Inc., "Report of Subsurface Investigation, Golden Gate Petroleum, 421 23rd Avenue, Oakland, California," November 23, 1999.

Hydro Analysis, Inc., "Well Installation and Quarterly Groundwater Monitoring Report, Golden Gate Petroleum, 421 23rd Avenue, Oakland, California, Fuel Leak Case No. 191," August 22, 2000.

Hydro Analysis, Inc., "Quarterly Groundwater Monitoring Report, Golden Gate Petroleum, 421 23rd Avenue, Oakland, California," July 9, 2002.

Bonkowski & Associates, Inc., "Site Closure Report, Golden Gate Petroleum, Oakland Cardlock," January 14, 2008.

# TABLES

**Table 1. Soil Vapor Chemical Test Results**
**421 23rd Avenue, Oakland, California**

| Well/ Boring No. | Sample Depth (feet) | TVPH (TPHG) (µg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl-benzene (µg/l) | Total Xylenes (µg/l) | MTBE (µg/l) | Sample Date |
|---|---|---|---|---|---|---|---|---|
| **SG-2** | 4.5 | <5.00 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 12/16/2008 |
| **SG-3** | 4 | <5.00 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 12/16/2008 |
| **SG-4** | 4 | <5.00 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 12/16/2008 |
| **SG-5** | 4 | <5.00 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 12/16/2008 |
| **SG-6** | 4 | <5.00 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 12/16/2008 |
| **SG-6 (duplicate)** | 4 | <5.00 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 12/16/2008 |
| **SG-7** | 4 | <5.00 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 12/16/2008 |
| **SG-8*** | 4 | <5.00 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 12/16/2008 |

* -- Sample also contained 4.71 µg/l tetrachloroethene.

**Table 2. Soil Chemical Test Results**
**421 23rd Avenue, Oakland, California**

| Well/ Boring No. | Sample Depth (feet) | TPHG (mg/kg) | TPHD (mg/kg) | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl-benzene (mg/kg) | Total Xylenes (mg/kg) | MTBE (mg/kg) | ETBE (mg/kg) | DIPE (mg/kg) | TAME (mg/kg) | TBA (mg/kg) | Sample Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GP-A** | 12 | <0.510 | **6.00** | <0.010 | <0.009 | <0.006 | <0.022 | <0.012 | <0.006 | <0.004 | <0.006 | <0.080 | 1/13/2009 |
| **GP-B** | 20 | <0.510 | **4.85** | <0.010 | <0.009 | <0.006 | <0.022 | <0.012 | <0.006 | <0.004 | <0.006 | <0.080 | 1/13/2009 |
| **MW-2** | 5 | <1.0 | **9.7** | <0.005 | **0.037** | <0.005 | <0.005 | <0.005 | | | | | 11/1/1999 |
| | 10 | **450** | **4,300** | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | |
| **MW-5** | 5 | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 7/28/2000 |
| | 10 | <1.0 | **130** | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | |
| **MW-6** | 5 | <1.0 | **13** | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 7/28/2000 |
| | 10 | <1.0 | **5.6** | <0.005 | <0.005 | <0.005 | <0.005 | **0.014** | | | | | |
| **MW-7** | 5 | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 7/28/2000 |
| | 10 | <1.0 | **15** | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | |
| **GP-1** | 10 | <1.0 | **4.2** | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 10/8/1999 |
| **GP-2** | 5 | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | **0.66** | | | | | 10/8/1999 |
| | 10 | **220** | **7.9** | **0.41** | **0.44** | **1.2** | **1.2** | <0.005 | | | | | |
| **GP-3** | 10 | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 10/8/1999 |
| **GP-4** | 5 | **70** | **610** | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 10/8/1999 |
| | 10 | **36** | **56** | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | |
| **GP-5** | 10 | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 10/8/1999 |
| **GP-6** | 10 | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 10/8/1999 |
| **GP-7** | 10 | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | 10/8/1999 |

**Table 3. Groundwater Chemical Test Results**
**421 23rd Avenue, Oakland, California**

| Well/ Boring No. | TPHG (mg/l) | TPHD (mg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl-benzene (µg/l) | Total Xylenes (µg/l) | MTBE (µg/l) | DIPE (µg/l) | ETBE (µg/l) | TAME (µg/l) | TBA (µg/l) | 1,2-DCA (µg/l) | 1,2-EDB (µg/l) | Sample Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GP-A (grab)** | **0.207** | | <0.7 | <0.8 | <0.7 | <3.4 | **430** | <0.5 | <1.1 | **4.9** | <24.0 | | | 1/13/2009 |
| **GP-B (grab)** | **0.746** | | <0.07 | <0.08 | <0.07 | **0.4** | **92.4** | <0.05 | <0.1 | <0.1 | <2.4 | | | 1/13/2009 |
| **MW-1** | <0.050 | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | <0.50 | <0.50 | 12/21/2007 |
| | **0.051** | <0.050 | <0.5 | <0.5 | <0.5 | <1.0 | **1.6** | | | | | | | 6/4/2002 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | | 1/29/2001 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | | 10/18/2000 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | | 8/7/2000 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | | 3/28/2000 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | | 11/11/1999 |
| **MW-2** | <0.050 | **0.067** | <0.50 | <0.50 | <0.50 | <0.50 | **210** | <0.50 | <0.50 | **1.1** | <5.0 | <0.50 | <0.50 | 12/21/2007 |
| | **0.059** | <0.050 | <0.5 | <0.5 | <0.5 | <1.0 | **582** | | | | | | | 6/4/2002 |
| | **1.1** | **0.75** | **11** | <0.5 | <0.5 | <0.5 | **4,300*** | | | | | | | 1/29/2001 |
| | **2.3** | **0.51** | <5.0 | <5.0 | <5.0 | <5.0 | **8,300*** | | | | | | | 10/18/2000 |
| | **4.5** | **0.62** | <25 | <25 | <25 | <25 | **6,300** | | | | | | | 8/7/2000 |
| | **2.5** | **1.8** | <25 | <25 | <25 | <25 | **1,800** | | | | | | | 3/28/2000 |
| | **6.8** | **0.22** | <50 | <50 | <50 | <50 | **13,000*** | | | | | | | 11/11/1999 |
| **MW-3** | <0.050 | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | **320** | <0.50 | <0.50 | **3.5** | <5.0 | <0.50 | <0.50 | 12/21/2007 |
| | **0.056** | <0.050 | <0.50 | **0.5** | **0.8** | **3.2** | **2,710** | | | | | | | 6/4/2002 |
| | **0.70** | <0.050 | **2.0** | <0.50 | <0.50 | <0.50 | **920*** | | | | | | | 1/29/2001 |
| | **0.90** | **0.058** | <5.0 | <5.0 | <5.0 | <5.0 | **2,000*** | | | | | | | 10/18/2000 |
| | **1.1** | <0.050 | <5.0 | <5.0 | <5.0 | <5.0 | **1,500** | | | | | | | 8/7/2000 |
| | **0.28** | <0.050 | <2.5 | <2.5 | <2.5 | <2.5 | **610** | | | | | | | 3/28/2000 |
| | **1.6** | <0.050 | <12.5 | <12.5 | <12.5 | <12.5 | **2,500*** | | | | | | | 11/11/1999 |
| **MW-4** | <0.050 | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | **4.2** | <0.50 | <0.50 | <0.50 | <5.0 | <0.50 | <0.50 | 12/21/2007 |
| | **0.089** | <0.050 | <0.5 | <0.5 | **1.1** | **6.3** | **35** | | | | | | | 6/4/2002 |
| | **0.16** | <0.056 | **1.7** | <0.5 | <0.5 | <0.5 | **230*** | | | | | | | 1/29/2001 |
| | **0.26** | <0.050 | <2.5 | <2.5 | <2.5 | <2.5 | **410*** | | | | | | | 10/18/2000 |
| | **0.60** | <0.050 | <5 | <5 | <5 | <5 | **500** | | | | | | | 8/7/2000 |
| | **0.43** | <0.050 | <2.5 | <2.5 | <2.5 | <2.5 | **800** | | | | | | | 3/28/2000 |
| | **0.65** | <0.050 | <5 | <5 | <5 | <5 | **540*** | | | | | | | 11/11/1999 |

**Table 3. Groundwater Chemical Test Results**
**421 23rd Avenue, Oakland, California**

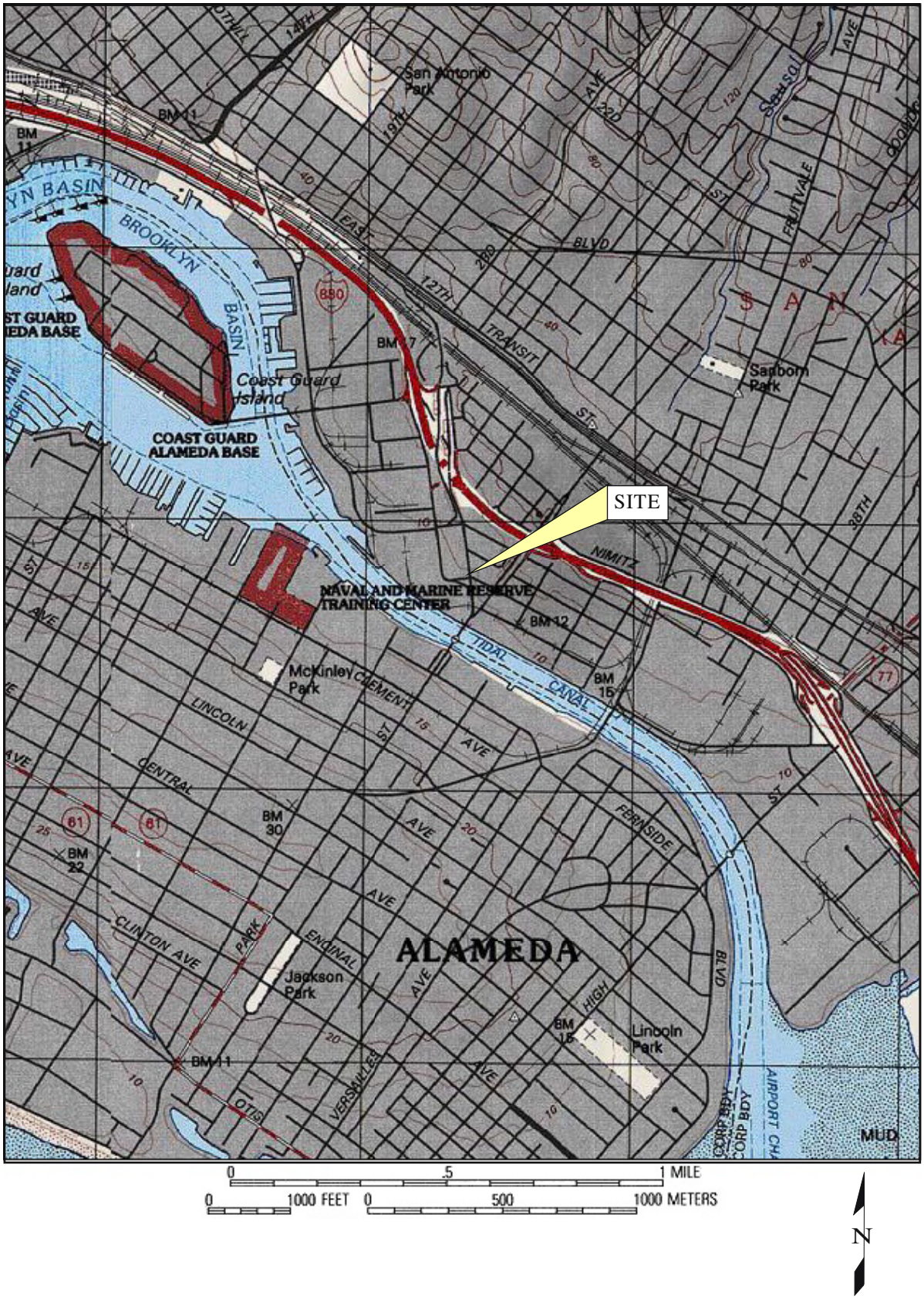
| Well/ Boring No. | TPHG (mg/l) | TPHD (mg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl-benzene (µg/l) | Total Xylenes (µg/l) | MTBE (µg/l) | DIPE (µg/l) | ETBE (µg/l) | TAME (µg/l) | TBA (µg/l) | 1,2-DCA (µg/l) | 1,2-EDB (µg/l) | Sample Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW-5** | <0.050 | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | **1.5** | <0.50 | <0.50 | <0.50 | <5.0 | <0.50 | <0.50 | 12/21/2007 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | <1.0 | **108** | | | | | | | 6/4/2002 |
| | **0.19** | **0.086** | **1.9** | <0.5 | <0.5 | <0.5 | **290*** | | | | | | | 1/29/2001 |
| | **0.15** | **0.083** | <0.5 | <0.5 | <0.5 | <0.5 | **420*** | | | | | | | 10/18/2000 |
| | **0.11** | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | **470*** | | | | | | | 8/7/2000 |
| **MW-6** | <0.050 | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | **160** | <0.50 | <0.50 | **2.5** | <5.0 | <0.50 | <0.50 | 12/21/2007 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | **1.7** | **725** | | | | | | | 6/4/2002 |
| | **0.78** | <0.069 | **4.2** | <0.5 | <0.5 | <0.5 | **1,200*** | | | | | | | 1/29/2001 |
| | **0.89** | **0.062** | **5.6** | <2.5 | <2.5 | **3.1** | **2,400*** | | | | | | | 10/18/2000 |
| | **0.46** | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | **1,900*** | | | | | | | 8/7/2000 |
| **MW-7** | <0.050 | <0.050† | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | <0.50 | <0.50 | 12/21/2007 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | **1.9** | **1.1** | | | | | | | 6/4/2002 |
| | <0.050 | <0.063 | <0.5 | <0.5 | <0.5 | <0.5 | <5* | | | | | | | 1/29/2001 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | <5* | | | | | | | 10/18/2000 |
| | <0.050 | <0.050 | <0.5 | <0.5 | <0.5 | <0.5 | <5* | | | | | | | 8/7/2000 |
| **Casing 1 **** | <0.50 | **0.069** | <5 | <5 | <5 | <5 | **760** | | | | | | | 1/29/2001 |
| | **0.054** | **0.14** | <0.5 | <0.5 | <0.5 | <0.5 | **30** | | | | | | | 8/7/2000 |
| | <0.050 | <0.250 | <2.5 | <2.5 | <2.5 | <2.5 | **350** | | | | | | | 11/11/1999 |
| | <0.050 | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | **9.2** | | | | | | | 10/8/1999 |
| **Casing 2 **** | **0.082** | **0.11** | <0.5 | <0.5 | <0.5 | <0.5 | **190** | | | | | | | 8/7/2000 |
| | **0.27** | <0.050 | <2.5 | <2.5 | <2.5 | <2.5 | **150** | | | | | | | 3/28/2000 |
| | **0.15** | <0.050 | <1 | <1 | <1 | <1 | **320** | | | | | | | 11/11/1999 |
| | **0.68** | **0.083** | <0.50 | <0.50 | <0.50 | <0.50 | **1,200** | | | | | | | 10/8/1999 |

**Table 3. Groundwater Chemical Test Results**
**421 23rd Avenue, Oakland, California**

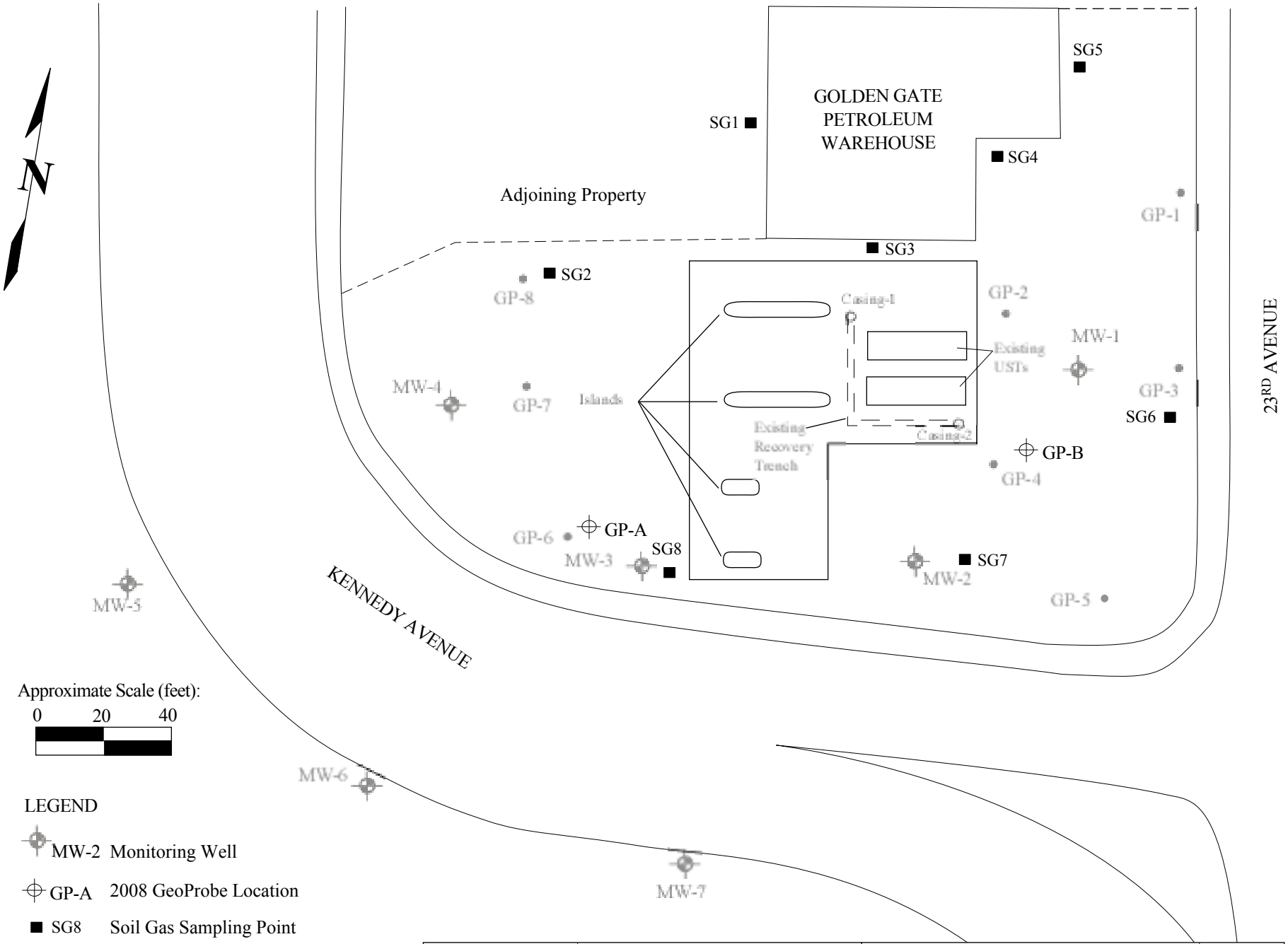
| Well/ Boring No. | TPHG (mg/l) | TPHD (mg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl-benzene (µg/l) | Total Xylenes (µg/l) | MTBE (µg/l) | DIPE (µg/l) | ETBE (µg/l) | TAME (µg/l) | TBA (µg/l) | 1,2-DCA (µg/l) | 1,2-EDB (µg/l) | Sample Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GP-1** | <0.050 | **0.19** | **1.4** | <0.50 | <0.50 | <0.50 | <5.0 | | | | | | | 10/8/1999 |
| **GP-2** | **1.2** | **0.35** | **6.1** | **2.9** | **65** | **55** | **76** | | | | | | | 10/8/1999 |
| **GP-3** | <0.050 | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | | | | | | | 10/8/1999 |
| **GP-4** | **12** | **620** | <0.50 | <0.50 | <0.50 | <0.50 | **13,000** | | | | | | | 10/8/1999 |
| **GP-5** | **0.79** | **80** | <0.50 | <0.50 | <0.50 | <0.50 | **340** | | | | | | | 10/8/1999 |
| **GP-6** | **3.1** | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | **4,800** | | | | | | | 10/8/1999 |
| **GP-7** | **0.18** | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | **350** | | | | | | | 10/8/1999 |
| **GP-8** | **0.15** | <0.050 | <0.50 | <0.50 | <0.50 | <0.50 | **240** | | | | | | | 10/8/1999 |
| **Regulatory Limits** | 0.005[1] | 0.1[2] | 1.0[3] | 42[2] | 29[2] | 17[2] | 5[4] | | | | | | | |

1 -- Taste and odor threshold (SWRCB)
2 -- Taste and odor threshold (U.S. EPA)
3 -- California Primary MCL
4 -- California Secondary MCL
* Confirmed by EPA Method 8260B
** Recovery casing located in the previous tank excavatio † Extracted outside hold time

# FIGURES




| Project No. E27297-3 | Golden Gate Petroleum | SITE LOCATION MAP<br>421 23RD AVENUE<br>OAKLAND, CALIFORNIA | Figure 1 |
|---|---|---|---|
| **Bonkowski & Associates, Inc.** | | | |




| Project No. E27297-3 | Golden Gate Petroleum | SITE PLAN MAP<br>421 23RD AVENUE<br>OAKLAND, CALIFORNIA | Figure 2 |
|---|---|---|---|
| **Bonkowski & Associates, Inc.** | | | |

# APPENDIX A

# Alameda County Public Works Agency - Water Resources Well Permit

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

**Application Approved on: 12/09/2008 By jamesy**

**Permit Numbers: W2008-0938**
**Permits Valid from 12/16/2008 to 12/16/2008**

**Application Id:** 1228768505870
**City of Project Site:** Oakland
**Site Location:** Golden Gate Petroleum
421 23rd Ave.
Oakland, CA 94606
(December 16, 2008 OK'd by J. Yoo)
**Project Start Date:** 12/16/2008
**Completion Date:** 12/16/2008
**Requested Inspection:** 12/16/2008
**Scheduled Inspection:** 12/16/2008 at 1:00 PM (Contact your inspector, Vicky Hamlin at (510) 670-5443, to confirm.)

**Applicant:** Bonkowski & Associates, Inc. - Cynthia Dittmar
6400 Hollis St., Suite 4, Emeryville, CA 94608
**Phone:** 510-450-0770 x13
**Property Owner:** Golden Gate Petroleum
501 Shell Ave., Martinez, CA 94553
**Phone:** 925-228-2222
**Client:** ** same as Property Owner **
**Contact:** Kurt Vogler
**Phone:** 510-450-0770 x10
**Cell:** --

**Total Due:** $230.00
**Receipt Number: WR2008-0448** **Total Amount Paid:** $230.00
**Payer Name : Bonkowski & Associates, Inc.** Paid By: CHECK **PAID IN FULL**

**Works Requesting Permits:**

Borehole(s) for Investigation-Contamination Study - 9 Boreholes
Driller: Optimal Technology - Lic #: 00000 - Method: DP **Work Total: $230.00**

**Specifications**

| Permit Number | Issued Dt | Expire Dt | # Boreholes | Hole Diam | Max Depth |
|---|---|---|---|---|---|
| W2008-0938 | 12/09/2008 | 03/16/2009 | 9 | 2.00 in. | 8.00 ft |

**Specific Work Permit Conditions**

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits

and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

5. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

6. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

7. Permit is valid only for the purpose specified herein.  No changes in construction procedures, as described on this permit application.  Boreholes shall not be converted to monitoring wells, without a permit application process.

**Kurt Vogler**

---

**From:** wells@acpwa.org

**Sent:** Tuesday, December 09, 2008 5:05 PM

**To:** cindy@bonkowski.com

**Cc:** kvogler@bonkowski.com; mail@bonkowski.com

**Subject:** Alameda County Well Permit Approval Notification

Thank you for your Online Request for Wells Permits.
Your Application Id is: 1228768505870
Application submitted on: 12/08/2008
Project Site City/Location: Oakland / Golden Gate Petroleum 421 23rd Ave. Oakland, CA 94606 (December 16, 2008 OK'd by J. Yoo)
Project Start Date: 12/16/2008 Completion Date: 12/16/2008

Your Permit Application has been approved.
Permit Number(s) Issued: W2008-0938 Valid from 12/16/2008 to 12/16/2008

Requested Inspection Date: 12/16/2008

You have a tentative inspection scheduled on 12/16/2008 at 1:00 PM.
You must contact your assigned inspector, Vicky Hamlin at (510) 670-5443, to confirm.

Attached are 2 PDF files, one serves as your receipt and permit(s), please print for your record.
The other includes the General Conditions and Instructions you must follow.
Note: You need to have the free Adobe Reader to open the pdf file.

Conditions of Permit:
Please follow and comply with conditions and instructions listed in the general conditions document.
In addition, you must comply with all specific conditions listed in your permit.

If you need further assistance regarding your permit, please visit our website at: http://www.acgov.org/pwa/wells/ or contact us at wells@acpwa.org, and include your application id number.

Thank you,
Public Works Agency-Water Resources

# Alameda County Public Works Agency - Water Resources Well Permit

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

**Application Approved on: 01/09/2009 By jamesy**

**Permit Numbers: W2009-0011**
**Permits Valid from 01/13/2009 to 01/13/2009**

**Application Id:** 1231199810065
**City of Project Site:** Oakland
**Site Location:** 421 23rd Ave.
Oakland, CA 94606
(Requesting start date of Jan. 13)
**Project Start Date:** 01/13/2009
**Completion Date:** 01/13/2009
**Requested Inspection:** 01/13/2009
**Scheduled Inspection:** 01/13/2009 at 1:30 PM (Contact your inspector, Ron Smalley at (510) 670-5407, to confirm.)

**Applicant:** Bonkowski & Associates, Inc. - Kurt Vogler
6400 Hollis St., Suite 4, Emeryville, CA 94608
**Phone:** 510-450-0770 x10
**Property Owner:** Dennis O'Keefe
201 Shell Ave., Martinez, CA 94553
**Phone:** 925-228-2222
**Client:** ** same as Property Owner **
**Contact:** Cynthia Dittmar
**Phone:** 510-450-0770 x13
**Cell:** 510-697-9291

**Total Due:** $230.00
**Receipt Number: WR2009-0008** **Total Amount Paid:** $230.00
**Payer Name : Cynthia Annette Dittmar** Paid By: CHECK **PAID IN FULL**

**Works Requesting Permits:**

Borehole(s) for Geo Probes-Sampling 24 to 72 hours only - 2 Boreholes
Driller: Gregg Drilling & Testing, Inc. - Lic #: 485165 - Method: DP **Work Total: $230.00**

**Specifications**

| Permit Number | Issued Dt | Expire Dt | # Boreholes | Hole Diam | Max Depth |
|---|---|---|---|---|---|
| W2009-0011 | 01/09/2009 | 04/13/2009 | 2 | 4.00 in. | 8.00 ft |

**Specific Work Permit Conditions**

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Applicant shall contact Ron Smalley for an inspection time at 510-670-5407 at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

4. Permitte, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

5. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

6. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

# PROGRAMS AND SERVICES

## Well Standards Program

**The Alameda County Public Works Agency, Water Resources is located at:**
**399 Elmhurst Street**
**Hayward, CA 94544**
**For Driving Directions or General Info, Please Contact 510-670-5480 or wells@acpwa.org**
For Drilling Permit information and process contact James Yoo at
Phone: 510-670-6633
FAX: 510-782-1939
Email: Jamesy@acpwa.org

Alameda County Public Works is the administering agency of General Ordinance Code, Chapter 6.88 . The purpose of this chapter is to provide for the regulation of groundwater wells and exploratory holes as required by California Water Code. The provisions of these laws are administered and enforced by Alameda County Public Works Agency through its Well Standards Program.

**Drilling Permit Jurisdictions in Alameda County:** There are four jurisdictions in Alameda County.

### Location: Agency with Jurisdiction Contact Number

Berkeley City of Berkeley Ph: 510-981-7460
Fax: 510-540-5672

Fremont, Newark, Union City Alameda County Water District Ph: 510-668-4460
Fax: 510-651-1760

Pleasanton, Dublin, Livermore, Sunol Zone 7 Water Agency Ph: 925-454-5000
Fax: 510-454-5728

**The Alameda County Public Works Agency, Water Resources** has the responsibility and authority to issue drilling permits and to enforce the County Water Well Ordinance 73-68. This jurisdiction covers the western Alameda County area of **Oakland**, **Alameda**,**Piedmont**, **Emeryville**, **Albany**, **San Leandro**, **San Lorenzo**, **Castro Valley**, and **Hayward** . The purpose of the drilling permits are to ensure that any new well or the destruction of wells, including geotechnical investigations and environmental sampling within the above jurisdiction and within Alameda County will not cause pollution or contamination of ground water or otherwise jeopardize the health, safety or welfare of the people of Alameda County.

**Permits** are required for all work pertaining to wells and exploratory holes at any depth within the jurisdiction of the Well Standards Program. A completed permit application *(30 Kb)** , along with a site map, should be submitted at least **ten (10) working days prior to the planned start of work**. Submittals should be sent to the address or fax number provided on the application form. When submitting an application via fax, please use a high resolution scan to retain legibility.

**Fees**
**Beginning April 11, 2005** , the following fees shall apply:

A permit to construct, rehabilitate, or destroy wells, including cathodic protection wells, but excluding dewatering wells (*Horizontal hillside dewatering and dewatering for construction period only), shall cost $300.00 per well.

A permit to bore exploratory holes, including temporary test wells, shall cost $200 per site. A site includes the project parcel as well as any adjoining parcels.

Please make checks payable to: **Treasurer, County of Alameda**

**Permit Fees are exempt to State & Federal Projects**
Applicants shall submit a letter from the agency requesting the fee exemption.

**Scheduling Work/Inspections:**
Alameda County Public Works Agency (ACPWA), Water Resources Section requires scheduling and inspection of permitted work. All drilling activities must be scheduled in advance. Availability of inspections will vary from week to week and will come on a first come, first served bases. To ensure inspection availability on your desired or driller scheduled date, the following procedures are required:

Please contact **James Yoo at 510-670-6633** to schedule the inspection date and time (You must have drilling permit approved prior to scheduling).

Schedule the work as far in advance as possible (at least 5 days in advance); and confirm the scheduled drilling date(s) at least 24 hours prior to drilling.

Once the work has been scheduled, an ACPWA Inspector will coordinate the inspection requirements as well as how the Inspector can be reached if they are not at the site when Inspection is required. Expect for special circumstances given, all work will require the inspection to be conducted during the working hours of 8:30am to 2:30pm., Monday to Friday, excluding holidays.

**Request for Permit Extension:**
Permits are only valid from the start date to the completion date as stated on the drilling permit application and Conditions of Approval. To request an extension of a drilling permit application, applicants must request in writing prior to the completion date as set forth in the Conditions of Approval of the drilling permit application. Please send fax or email to Water Resources Section, Fax 510-782-1939 or email at wells@acpwa.org. There are no additional fees for permit extensions or for re-scheduling inspection dates. You may not extend your drilling permit dates beyond 90 days from the approval date of the permit application. **NO refunds** shall be given back after 90 days and the permit shall be deemed voided.

**Cancel a Drilling Permit:**
Applicants may cancel a drilling permit only in writing by mail, fax or email to Water Resources Section, Fax 510-782-1939 or email at wells@acpwa.org. If you do not cancel your drilling permit application before the drilling completion date or notify in writing within 90 days, Alameda County Public Works Agency, Water Resources Section may void the permit and No refunds may be given back.

**Refunds/Service Charge:**
A service charge of $25.00 dollars for the first check returned and $35.00 dollars for each subsequent check returned.

Applicants who cancel a drilling permit application **before** we issue the approved permit(s), will receive a **FULL** refund (at any amount) and will be mailed back within two weeks.

Applicants who cancel a drilling permit application **after** a permit has been issued will then be charged a service fee of $50.00 (fifty Dollars).

To collect the remaining funds will be determined by the amount of the refund to be refunded (see process below).

Board of Supervisors Minute Order, File No. 9763, dated January 9, 1996, gives blanket authority to the Auditor-Controller to process claims, from all County departments for the refund of fees which do not exceed $500 (Five Hundred Dollars)(with the exception of the County Clerk whose limit is $1,500).

Refunds over the amounts must be authorized by the Board of Supervisors Minute Order, File No. 9763 require specific approval by the Board of Supervisors. The forms to request for refunds under $500.00 (Five Hundred Dollars) are available at this office or any County Offices. If the amount is exceeded, a Board letter and Minute Order must accompany the claim. Applicant shall fill out the request form and the County Fiscal department will process the request.

**Enforcement**
Penalty. Any person who does any work for which a permit is required by this chapter and who fails to obtain a permit shall be guilty of a misdemeanor punishable by fine not exceeding Five Hundred Dollars ($500.00) or by imprisonment not exceeding six months, or by both such fine and imprisonment, and such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any such

violation is committed, continued, or permitted, and shall be subject to the same punishment as for the original offense. (Prior gen. code §3-160.6)

**Enforcement actions will be determined by this office on a case-by-case basis**
Drilling without a permit shall be the cost of the permit(s) and a fine of $500.00 (Five Hundred Dollars).

**Well Completion Reports** (State DWR-188 forms) must be filed with the Well Standards Program within 60 days of completing work. Staff will review the report, assign a state well number, and then forward it to the California Department of Water Resources (DWR). Drillers should not send completed reports to DWR directly. Failure to file a Well Completion Report or deliberate falsification of the information is a misdemeanor; it is also grounds for disciplinary action by the Contractors' State License Board. Also note that filed Well Completion Reports are considered private record protected by state law and can only be released to the well owner or those specifically authorized by government agencies.

See our website (www.acgov.org/pwa/wells/index.shtml) for links to additional forms.

# APPENDIX B

**OPTIMAL TECHNOLOGY**
Specializing in Environmental Field Services

December 17, 2008

Ms. Cindy Dittmar
Bonkowski & Associates
6400 Hollis St., Suite 4
Emeryville, CA 94608

Dear Ms. Dittmar:

This letter presents the results of the soil vapor investigation conducted by Optimal Technology (Optimal), for Bonkowski & Associates on December 16, 2008. The study was performed at 421 23rd Ave., Oakland, California.

Optimal was contracted to perform a soil vapor survey at this site to screen for possible chlorinated solvents and aromatic hydrocarbons. The primary objective of this soil vapor investigation was to determine if soil vapor contamination is present in the subsurface soil.

**Gas Sampling Method**

Gas sampling was performed by hydraulically pushing soil gas probes to a depth of 4.0-4.5 feet below ground surface (bgs). An electric rotary hammer drill was used to drill a 1.0-inch diameter hole through the overlying surface to allow probe placement when required. The same electric hammer drill was used to push probes in areas of resistance during placement.

At each sampling location an electric vacuum pump set to draw 0.2 liters per minute (L/min) of soil vapor was attached to the probe and purged prior to sample collection. Vapor samples were obtained in SGE gas-tight syringes by drawing the sample through a luer-lock connection which connects the sampling probe and the vacuum pump. Samples were immediately injected into the gas chromatograph/purge and trap after collection. New tubing was used at each sampling point to prevent cross contamination. Clean sampling probes were used after each sample with detectable analytes. Equipment blanks using ambient air were collected throughout the day.

All analyses were performed on a laboratory grade Hewlett Packard model 5890 Series II gas chromatograph equipped with a Hewlett Packard model 5971 Mass Spectra Detector and Tekmar LSC 2000 Purge and Trap. An SGE capillary column using helium as the carrier gas was used to perform all analysis. All results were collected on a personal computer utilizing Hewlett Packard's 5971 MS and chromatographic data collection and handling system.

**Quality Assurance**

*3-Point Calibration*
An initial 3-point calibration was performed on December 16, 2008 by preparing a calibration solution from a pre-mixed standard supplied by CPI International. The standard contained common halogenated solvents and aromatic hydrocarbons (see Table 1). The individual compound concentrations in the standards ranged between 0.025 nanograms per microliter(ng/ul) and 0.25 ng/ul.

The initial three point calibrations consisted of 250, 500 and 1000 ul injections of the calibration solutions. A calibration factor on each analyte was generated using a best fit line method using the HP data system. If the $r^2$ factor generated from this line was not greater than 0.990, an additional three point calibration would have been performed. Method detection limits were calculated to be 0.5-1.0 micrograms per Liter (ug/L) for the individual compounds.

**TABLE 1**

| | | |
|---|---|---|
| Dichlorodifluoromethane | Carbon Tetrachloride | Chloroethane |
| Trichlorofluoromethane | 1,2-Dichloroethane | Benzene |
| 1,1-Dichloroethene | Trichloroethene | Toluene |
| Methylene Chloride | 1,1,2-Trichloroethane | Ethylbenzene |
| trans-1,2-Dichloroethene | Tetrachloroethene | m-/p-Xylene |
| 1,1-Dichloroethane | Chloroform | o-Xylene |
| cis-1,2-Dichloroethene | 1,1,1,2-Tetrachloroethane | Vinyl Chloride |
| 1,1,1-Trichloroethane | 1,1,2,2-Tetrachloroethane | Freon 113 |
| 4-Methyl-2-Pentanone | Cyclohexane | Acetone |
| Chlorobenzene | 2-Butanone | MTBE |
| Ethyl-Tert-Butyl-Ether | Tert-Amyl-Methyl Ether | Tert-Butyl Alcohol |
| Diisopropylether | Isobutane | |

*Sample Replicates*
A replicate analysis (duplicate) was run to evaluate the reproducibility of the sampling system and instrument. The difference between samples did not vary more than 20%.

*Equipment Blanks*
Blanks were run at the beginning of each workday and after calibrations. Clean vapor probes were used following each sample with detectable analytes or when probes were damaged during installation. The blanks were collected using an ambient air sample. These blanks checked the septum, syringe, GC column, GC detector and the ambient air. Contamination was not found in any of the blanks analyzed during this investigation. Blank results are given along with the sample results.

*Tracer Gas*
A tracer gas was applied to the soil gas probes at each point of connection in which ambient air could enter the sampling system. These points include the top of the sampling probe where the tubing meets the probe connection and the surface bentonite seals. Isobutane was used as the tracer gas, found in common shaving cream. No Isobutane was found in any of the samples collected.

**Subsurface Conditions**

Subsurface soil conditions at this site were predominantly silty-sand from ground surface to 4.0 feet bgs. Silty-clay and clay conditions existed between 4.0-5.0 feet bgs. These soil conditions offered sampling flows at 15-75" water vacuum. Depth to groundwater was unknown at the time of the investigation.

**Scope of Work**

To achieve the objective of this investigation a total of 8 vapor samples were collected from 7 locations throughout the site. Sampling depths, vacuum readings, purge volume and sampling volumes are given on the analytical results page. All the collected vapor samples were analyzed on-site using Optimal's mobile laboratory.

**Results**

During this vapor investigation SG-8 contained 4.71 ug/L of Tetrachloroethene (PCE). None of the other compounds listed in Table 1 above were detected above the listed detection limits. A complete table of analytical results is included with this report.

**Disclaimer**

All conclusions presented in this letter are based solely on the information collected by the soil vapor survey conducted by Optimal Technology. Soil vapor testing is only a subsurface screening tool and does not represent actual contaminant concentrations in either the soil and/or groundwater. We enjoyed working with you on this project and look forward to future projects. If you have any questions please contact me at (877) 764-5427.

Sincerely,

Jason Anderson
Project Manager

**OPTIMAL TECHNOLOGY**
Specializing in Environmental Field Services

## SOIL VAPOR RESULTS

**Site Name:** 421 23rd Ave., Oakland, CA
**Lab Name:** Optimal Technology
**Date:** 12/16/08
**Analyst:** J.A. **Collector:** J.A.
**Inst. ID:** HP-5890 Series II
**Method:** Modified EPA 8260B
**Detector:** HP-5971 Mass Spectrometer
**Page:** 1 of 2

| SAMPLE ID | BLANK-1 | SG-2 | SG-3 | SG-4 | SG-5 | SG-6 | SG-6 Dup | SG-7 |
|---|---|---|---|---|---|---|---|---|
| Sampling Depth (Ft.) | N/A | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Purge Volume (ml) | N/A | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Vacuum (in. of Water) | N/A | 30 | 75 | 15 | 30 | 30 | 30 | 20 |
| Injection Volume (ul) | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| COMPOUND | DET. LIMIT | CONC (ug/L) | CONC (ug/L) | CONC (ug/L) | CONC (ug/L) | CONC (ug/L) | CONC (ug/L) | CONC (ug/L) | CONC (ug/L) |
|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloroethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichlorofluoromethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Freon 113 | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloroform | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,1-Trichloroethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Tetrachloride | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene (TCE) | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,2-Trichloroethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene (PCE) | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,1,2-Tetrachloroethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,2,2-Tetrachloroethane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Butanone (MEK) | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Cyclohexane | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Methyl-2-Pentanone | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Chlorobenzene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| m/p-Xylene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| o-Xylene | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl-Tert-Butyl-Ether | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethyl-Tert-Butyl-Ether | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Tert-Amyl-Methyl-Ether | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Tert-Butyl-Alcohol | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| Diisopropylether | 0.50 | ND | ND | ND | ND | ND | ND | ND | ND |
| TVPH - (Gasoline) | 5.00 | ND | ND | ND | ND | ND | ND | ND | ND |
| Isobutane (Tracer Gas) | 1.00 | ND | ND | ND | ND | ND | ND | ND | ND |

**Note:** ND = Below Listed Detection Limit

2369 Rutland Place, Thousand Oaks, CA 91362 • Toll Free (877) SOIL GAS (764-5427) • (818) 734-6230 • Fax (818) 734-6235

**OPTIMAL TECHNOLOGY**
Specializing in Environmental Field Services

## SOIL VAPOR RESULTS

**Site Name:** 421 23rd Ave., Oakland, CA
**Lab Name:** Optimal Technology
**Date:** 12/16/08
**Analyst:** J.A. **Collector:** J.A.
**Inst. ID:** HP-5890 Series II
**Method:** Modified EPA 8260B
**Detector:** HP-5971 Mass Spectrometer
**Page:** 2 of 2

| SAMPLE ID | SG-8 |
|---|---|
| Sampling Depth (Ft.) | 4.0 |
| Purge Volume (ml) | 1,500 |
| Vacuum (in. of Water) | 20 |
| Injection Volume (ul) | 50000 |
| Dilution Factor | 1 |

| COMPOUND | DET. LIMIT | CONC (ug/L) |
|---|---|---|
| Dichlorodifluoromethane | 0.50 | ND |
| Chloroethane | 0.50 | ND |
| Trichlorofluoromethane | 0.50 | ND |
| Freon 113 | 0.50 | ND |
| Methylene Chloride | 0.50 | ND |
| 1,1-Dichloroethane | 0.50 | ND |
| Chloroform | 0.50 | ND |
| 1,1,1-Trichloroethane | 0.50 | ND |
| Carbon Tetrachloride | 0.50 | ND |
| 1,2-Dichloroethane | 0.50 | ND |
| Trichloroethene (TCE) | 0.50 | ND |
| 1,1,2-Trichloroethane | 0.50 | ND |
| **Tetrachloroethene (PCE)** | 0.50 | **4.71** |
| 1,1,1,2-Tetrachloroethane | 0.50 | ND |
| 1,1,2,2-Tetrachloroethane | 0.50 | ND |
| Vinyl Chloride | 0.50 | ND |
| Acetone | 0.50 | ND |
| 1,1-Dichloroethene | 0.50 | ND |
| trans-1,2-Dichloroethene | 0.50 | ND |
| 2-Butanone (MEK) | 0.50 | ND |
| cis-1,2-Dichloroethene | 0.50 | ND |
| Cyclohexane | 0.50 | ND |
| Benzene | 0.50 | ND |
| 4-Methyl-2-Pentanone | 0.50 | ND |
| Toluene | 0.50 | ND |
| Chlorobenzene | 0.50 | ND |
| Ethylbenzene | 0.50 | ND |
| m/p-Xylene | 0.50 | ND |
| o-Xylene | 0.50 | ND |
| Methyl-Tert-Butyl-Ether | 0.50 | ND |
| Ethyl-Tert-Butyl-Ether | 0.50 | ND |
| Tert-Amyl-Methyl-Ether | 0.50 | ND |
| Tert-Butyl-Alcohol | 0.50 | ND |
| Diisopropylether | 0.50 | ND |
| TVPH - (Gasoline) | 5.00 | ND |
| Isobutane (Tracer Gas) | 1.00 | ND |

**Note:** ND = Below Listed Detection Limit

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# APPENDIX C

## SAMPLE CLASSIFICATION CHART

| Moisture Content | | |
|---|---|---|
| DRY | - | Little/ No Perceptible Moisture |
| DAMP | - | Some Perceptible Moisture, Not Compactible |
| MOIST | - | Compactible |
| WET | - | Above Compaction Range |
| SATURATED | - | Pores, Voids Filled With Water |
| ▼ | - | Water Table (at Time Of Drilling) |

| SORTING ($S_o = P_{75}/P_{25}$) | |
|---|---|
| | $S_o$ |
| EXTREMELY WELL | 1.0 - 1.1 |
| VERY WELL | 1.1 - 1.2 |
| WELL | 1.2 - 1.4 |
| MODERATELY | 1.4 - 2.0 |
| POORLY | 2.0 - 2.7 |
| VERY POORLY | 2.7 - 5.0 |

### SOIL CONSISTENCY

| SAND OR GRAVEL | BLOWS/FT | SILT OR CLAY | BLOWS/FT | THUMB PENETRATION |
|---|---|---|---|---|
| Very Loose | < 5 | Very Soft | < 3 | Very easily - inches |
| Loose | 5 - 15 | Soft | 3 - 5 | Easily - inches |
| Medium Dense | 16 - 40 | Medium (firm) | 6 - 10 | Moderate Effort - inches |
| Dense | 41 - 65 | Stiff | 11 - 20 | Indented easily |
| Very Dense | > 65 | Very Stiff | 21 - 40 | Indented by nail |
| | | Hard | >40 | Difficult by nail |

### SOIL BORING AND WELL CONSTRUCTION LEGEND

▌ Laboratory Sample

▼ Water Level Observed in Boring

▽ Static Water Level Measured in Well

Note: Blow Count (Blows/Ft) Represent the Number of Blows of a 140 - Pound Hammer Falling 30 Inches per Blow Required to Drive a Sampler Through The Last 12 Inches of an 18-inch Penetration.

Note: The Line Separating Strata on the Logs Represents Approximate Boundaries Only. The Actual Transition may be Gradual. No Warranty is Provided as to the Continuity of Soil Strata Between Borings. Logs Represent the Soil Section Observed at the Boring Location on the Date of Drilling Only.

Blank Casing

Screened Casing

Cement Grout

Bentonite

Sand Pack

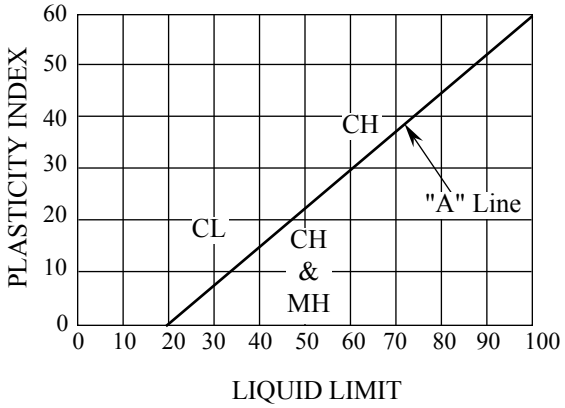
# SAMPLE CLASSIFICATION CHART

| UNIFIED SOIL CLASSIFICATION | | | | |
|---|---|---|---|---|
| MAJOR DIVISIONS | | SYMBOLS | GRAPHIC COLUMN | TYPICAL NAMES |
| COARSE GRAINED SOILS (More than 1/2 of soil > no. 200 sieve size) | GRAVELS (More than 1/2 of coarse fraction > no. 4 sieve size) | GW | | Well-graded gravels and gravel-sand mixtures, little or no fines |
| | | GP | | Poorly-graded gravels or gravel-sand mixtures, little or no fines |
| | | GM | | Silty gravels, gravel-sand-silt mixtures |
| | | GC | | Clayey gravels, gravel-sand-clay mixtures |
| | SANDS (More than 1/2 of coarse fraction < no. 4 sieve size) | SW | | Well-graded sands or gravelly sands, little or no fines |
| | | SP | | Poorly-graded sands or gravelly sands, little or no fines |
| | | SM | | Silty sands, sand-silt mixtures |
| | | SC | | Clayey sands, sand-clay mixtures |
| FINE GRAINED SOILS (More than 1/2 of soil < no. 200 sieve size) | SILTS & CLAYS LL < 50 | ML | | Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity |
| | | CL | | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays |
| | | OL | | Organic silts and organic silty clays of low plasticity |
| | SILTS & CLAYS LL > 50 | MH | | Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts |
| | | CH | | Inorganic clays of high plasticity, fat clays |
| | | OH | | Organic clays of medium to high plasticity, fat clays |
| HIGHLY ORGANIC SOILS | | Pt | | Peat and other highly organic soils |

| CLASSIFICATION MODIFIERS | |
|---|---|
| TRACE | 0 - 10 % |
| LITTLE | 10 - 20 % |
| SOME | 20 - 35 % |
| AND | 35 - 50 % |
| ± MODIFIERS | |

| GRAIN SIZE CLASSIFICATION | | |
|---|---|---|
| CLASSIFICATION | RANGE OF GRAIN SIZES | |
| | U.S. Standard Grain Size | Sieve Size in Millimeters |
| BOULDERS | Above 12” | Above 305 |
| COBBLES | 12” to 3” | 305 to 76.2 |
| GRAVEL | 3” to No. 4 | 76.2 to 4.76 |
| coarse (c) | 3” to 3/4” | 76.2 to 19.1 |
| fine (f) | 3/4” to No. 4 | 19.1 to 4.76 |
| SAND | No. 4 to No. 200 | 4.76 to 0.074 |
| coarse (c) | No. 4 to No. 10 | 4.76 to 2.00 |
| medium (m) | No. 10 to No. 40 | 2.00 to 0.420 |
| fine (f) | No. 40 to No. 200 | 0.420 to 0.074 |
| SILT & CLAY | Below No. 200 | Below 0.074 |

PLASTICITY CHART



**Bonkowski & Associates, Inc.**

PROJECT NAME GGP - Oakland FILE NO. E27297-3

| | | | |
|---|---|---|---|
| MONITORING WELL LOCATION 421 23rd Avenue, Oakland, CA | | GEOPROBE NUMBER GP-A | |
| DRILLING AGENCY Gregg Drilling & Testing | DRILLER Brandon | DATE STARTED / DATE FINISHED 1/13/09 | |
| DRILLING EQUIPMENT Truck mounted Geoprobe | | COMPLETION DEPTH 12 feet | SAMPLER Direct Push |
| DRILLING METHOD direct push | DRILL BIT NA | NO. OF SAMPLES / DIST. | UNDIST. 3 |
| SIZE AND TYPE OF CASING NA | FROM TO FT. | WATER LEVEL FIRST ≅ 12 feet | COMPL. ≅ 8 feet / 24 HRS. — |
| TYPE OF PERFORATION NA | FROM TO FT. | LOGGED BY: C. Dittmar | CHECKED BY: M. Bonkowski |
| SIZE AND TYPE OF PACK NA | FROM TO FT. | | |
| TYPE OF SEAL NO. 1 Neat Cement | FROM 0 TO 12 FT. | | |
| NO. 2 NA | FROM TO FT. | | |

| Depth (feet) | Samples | Blows | MATERIAL DESCRIPTION | USCS | Well Construction |
|---|---|---|---|---|---|
| | | | 6" AC<br>FILL — Hand Auger To 5 Feet | | |
| | | | SAND, fine, brown, moist | SP | |
| 5 | | | SILTY CLAY, black, moist, no odor — >9,999 ppm | CL | |
| | | | grades to | | |
| | | | SILTY CLAY, brown, moist, no odor — 1,130 ppm ▽ | CL | |
| | | | SAND, fine, brown, moist | SP | |
| 10 | | | SILTY SAND, medium, brown, wet, no odor — 808 ppm ▼ | SM | |
| | | | BOH 12 feet. Groundwater first encountered ≅ 12 feet. | | |
| 15 | | | | | |
| 20 | | | | | |
| 25 | | | | | |
| 30 | | | | | |
| 35 | | | | | |

**Bonkowski & Associates, Inc.** PROJECT NAME GGP - Oakland FILE NO. E27297-3

| | | | |
|---|---|---|---|
| MONITORING WELL LOCATION 421 23rd Avenue, Oakland, CA | | GEOPROBE NUMBER GP-B | |
| DRILLING AGENCY Gregg Drilling & Testing | DRILLER Brandon | DATE STARTED / DATE FINISHED 1/13/09 | |
| DRILLING EQUIPMENT Truck mounted Geoprobe | | COMPLETION DEPTH 20 feet | SAMPLER Direct Push |
| DRILLING METHOD direct push | DRILL BIT NA | NO. OF SAMPLES / DIST. | UNDIST. 5 |
| SIZE AND TYPE OF CASING NA | FROM TO FT. | WATER LEVEL FIRST ≅ 20 feet | COMPL. ≅ 10 feet / 24 HRS. — |
| TYPE OF PERFORATION NA | FROM TO FT. | LOGGED BY: C. Dittmar | CHECKED BY: M. Bonkowski |
| SIZE AND TYPE OF PACK NA | FROM TO FT. | | |
| TYPE OF SEAL NO. 1 Neat Cement | FROM 0 TO 20 FT. | | |
| NO. 2 NA | FROM TO FT. | | |

| Depth (feet) | Samples | Blows | MATERIAL DESCRIPTION | USCS | Well Construction |
|---|---|---|---|---|---|
| | | | 6" AC<br>FILL — Hand Auger To 5 Feet | | |
| | | | SAND, brown, moist, slight odor | SP | |
| | | | 1492 ppm | | |
| 5 | | | CLAYEY SAND, gray black, moist, slight odor | SC | |
| | | | SAND, medium, gray black, moist, slight odor — 590 ppm | SP | |
| 10 | | | ▽ | | |
| | | | GRAVELLY SAND, black, moderate odor — 343 ppm | SW | |
| | | | SILTY GRAVEL, orange brown | | |
| 15 | | | CLAYEY SILT, brown, moist, no odor — 310 ppm | ML | |
| | | | grades to | | |
| | | | SAND, fine, orange brown, moist/wet, no odor — 10 ppm ▼ | SP | |
| 20 | | | BOH 20 feet. Groundwater first encountered ≅ 20 feet. | | |
| 25 | | | | | |
| 30 | | | | | |
| 35 | | | | | |

# APPENDIX D

# EXCELCHEM
## Environmental Labs

1135 W Sunset Boulevard
Suite A
Rocklin, CA 95765
Phone# 916-543-4445
Fax# 916-543-4449


**ELAP Certificate No. : 2119**

30 January 2009

Cynthia Dittmar

Bonkowski & Assoc.

6400 Hollis St. Suite 4

Emeryville, CA 94608

RE: Oakland

Workorder number:0901075

Enclosed are the results of analyses for samples received by the laboratory on 01/13/09 09:50. All Quality Control results are within acceptable limits except where noted as a case narrative. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

_____

John Somers, Lab Director

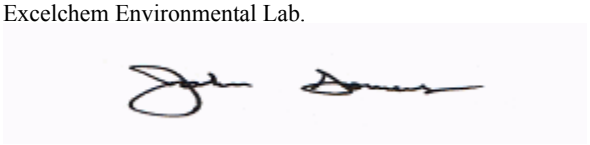
# Excelchem Environmental Labs

| | | | |
|---|---|---|---|
| Bonkowski & Assoc. | Project: | Oakland | |
| 6400 Hollis St. Suite 4 | Project Number: | E27297-2 | Date Reported: |
| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GP-A | 0901075-01 | Water | 01/13/09 09:50 | 01/13/09 09:50 |
| GP-B | 0901075-02 | Water | 01/13/09 10:55 | 01/13/09 09:50 |
| GP-A-12 | 0901075-03 | Soil | 01/13/09 09:35 | 01/13/09 09:50 |
| GP-B-20 | 0901075-04 | Soil | 01/13/09 08:00 | 01/13/09 09:50 |

Excelchem Environmental Lab.



Laboratory Representative

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## Excelchem Environmental Labs

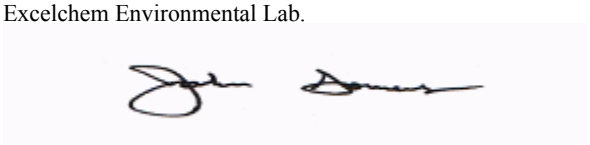
| | | | |
|---|---|---|---|
| Bonkowski & Assoc. | Project: | Oakland | |
| 6400 Hollis St. Suite 4 | Project Number: | E27297-2 | Date Reported: |
| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

**GP-A**

**0901075-01 (Water)**

| Analyte | Result | Reporting Limit | MDL | Units | Batch | Date Prepared | Date Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS** | | | | | | | | | |
| **Gasoline Range Hydrocarbons** | **207** | 500 | 65.0 | ug/l | ASA0130 | 01/19/09 | 01/22/09 | EPA 8260B | MDL, J |
| TBA | ND | 50.0 | 24.0 | " | " | " | " | " | MDL |
| **Methyl tert-Butyl Ether** | **430** | 5.0 | 1.5 | " | " | " | " | " | MDL |
| Di-isopropyl ether | ND | 5.0 | 0.5 | " | " | " | " | " | MDL |
| Ethyl tert-Butyl Ether | ND | 5.0 | 1.1 | " | " | " | " | " | MDL |
| **Tert-Amyl Methyl Ether** | **4.9** | 5.0 | 1.3 | " | " | " | " | " | MDL, J |
| Benzene | ND | 5.0 | 0.7 | " | " | " | " | " | MDL |
| Toluene | ND | 5.0 | 0.8 | " | " | " | " | " | MDL |
| Ethylbenzene | ND | 5.0 | 0.7 | " | " | " | " | " | MDL |
| m,p-Xylene | ND | 5.0 | 2.2 | " | " | " | " | " | MDL |
| o-Xylene | ND | 5.0 | 1.2 | " | " | " | " | " | MDL |
| Xylenes, total | ND | 10.0 | 3.4 | " | " | " | " | " | MDL |
| *Surrogate: Dibromofluoromethane* | *104 %* | % Recovery Limits | | *70-130* | | | | *"* | *MDL* |
| *Surrogate: Toluene-d8* | *98.2 %* | % Recovery Limits | | *70-130* | | | | *"* | *MDL* |
| *Surrogate: 4-Bromofluorobenzene* | *97.7 %* | % Recovery Limits | | *70-130* | | | | *"* | *MDL* |

Excelchem Environmental Lab.



Laboratory Representative

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## Excelchem Environmental Labs

| | | | |
|---|---|---|---|
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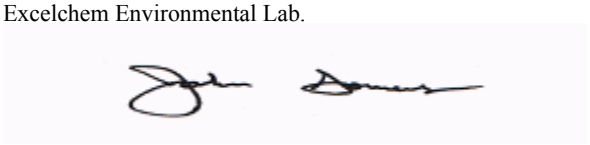
| 6400 Hollis St. Suite 4 | Project Number: | E27297-2 | Date Reported: |
| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

### GP-B
### 0901075-02 (Water)

| Analyte | Result | Reporting Limit | MDL | Units | Batch | Date Prepared | Date Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS** | | | | | | | | | |
| **Gasoline Range Hydrocarbons** | **746** | 50.0 | 6.5 | ug/l | ASA0130 | 01/19/09 | 01/22/09 | EPA 8260B | MDL |
| TBA | ND | 5.0 | 2.4 | " | " | " | " | " | MDL |
| **Methyl tert-Butyl Ether** | **92.4** | 0.5 | 0.1 | " | " | " | " | " | MDL |
| Di-isopropyl ether | ND | 0.5 | 0.05 | " | " | " | " | " | MDL |
| Ethyl tert-Butyl Ether | ND | 0.5 | 0.1 | " | " | " | " | " | MDL |
| Tert-Amyl Methyl Ether | ND | 0.5 | 0.1 | " | " | " | " | " | MDL |
| Benzene | ND | 0.5 | 0.07 | " | " | " | " | " | MDL |
| Toluene | ND | 0.5 | 0.08 | " | " | " | " | " | MDL |
| Ethylbenzene | ND | 0.5 | 0.07 | " | " | " | " | " | MDL |
| m,p-Xylene | ND | 0.5 | 0.2 | " | " | " | " | " | MDL |
| **o-Xylene** | **0.4** | 0.5 | 0.1 | " | " | " | " | " | MDL, J |
| **Xylenes, total** | **0.4** | 1.0 | 0.3 | " | " | " | " | " | MDL, J |
| *Surrogate: Dibromofluoromethane* | *98.0 %* | % Recovery Limits | | *70-130* | | | | *"* | *MDL* |
| *Surrogate: Toluene-d8* | *102 %* | % Recovery Limits | | *70-130* | | | | *"* | *MDL* |
| *Surrogate: 4-Bromofluorobenzene* | *99.7 %* | % Recovery Limits | | *70-130* | | | | *"* | *MDL* |

Excelchem Environmental Lab.



Laboratory Representative

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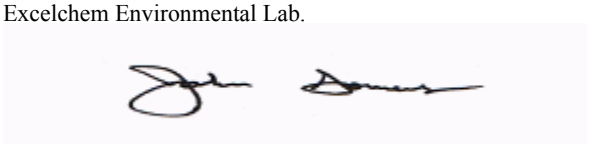
| | | | |
|---|---|---|---|
| Bonkowski & Assoc. | Project: | Oakland | |
| 6400 Hollis St. Suite 4 | Project Number: | E27297-2 | Date Reported: |
| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

### GP-A-12
### 0901075-03 (Soil)

| Analyte | Result | Reporting Limit | MDL | Units | Batch | Date Prepared | Date Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS** | | | | | | | | | |
| Gasoline Range Hydrocarbons | ND | 5.00 | 0.510 | mg/kg | ASA0132 | 01/19/09 | 01/19/09 | EPA 8260B | MDL |
| TBA | ND | 0.250 | 0.080 | " | " | " | " | " | MDL |
| Methyl tert-Butyl Ether | ND | 0.025 | 0.012 | " | " | " | " | " | MDL |
| Ethyl tert-Butyl Ether | ND | 0.025 | 0.006 | " | " | " | " | " | MDL |
| Di-isopropyl ether | ND | 0.025 | 0.004 | " | " | " | " | " | MDL |
| Tert-Amyl Methyl Ether | ND | 0.025 | 0.006 | " | " | " | " | " | MDL |
| Benzene | ND | 0.025 | 0.010 | " | " | " | " | " | MDL |
| Toluene | ND | 0.025 | 0.009 | " | " | " | " | " | MDL |
| Ethylbenzene | ND | 0.025 | 0.006 | " | " | " | " | " | MDL |
| m,p-Xylene | ND | 0.050 | 0.016 | " | " | " | " | " | MDL |
| o-Xylene | ND | 0.025 | 0.006 | " | " | " | " | " | MDL |
| Xylenes, total | ND | 0.050 | 0.022 | " | " | " | " | " | MDL |
| *Surrogate: Dibromofluoromethane* | *113 %* | % Recovery Limits | | *70-130* | | | | " | *MDL* |
| *Surrogate: Toluene-d8* | *99.5 %* | % Recovery Limits | | *70-130* | | | | " | *MDL* |
| *Surrogate: 4-Bromofluorobenzene* | *103 %* | % Recovery Limits | | *70-130* | | | | " | *MDL* |
| **Total Petroleum Hydrocarbons by FID** | | | | | | | | | |
| **TPH as Diesel** | **6.00** | 1.00 | 0.630 | mg/kg | ASA0089 | 01/15/09 | 01/15/09 | EPA 8015Mod | D-18 |

Excelchem Environmental Lab.



Laboratory Representative

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## Excelchem Environmental Labs

| | | | |
|---|---|---|---|
| Bonkowski & Assoc. | Project: | Oakland | |
| 6400 Hollis St. Suite 4 | Project Number: | E27297-2 | Date Reported: |
| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

### GP-B-20
### 0901075-04 (Soil)

| Analyte | Result | Reporting Limit | MDL | Units | Batch | Date Prepared | Date Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS** | | | | | | | | | |
| Gasoline Range Hydrocarbons | ND | 5.00 | 0.510 | mg/kg | ASA0132 | 01/19/09 | 01/19/09 | EPA 8260B | MDL |
| TBA | ND | 0.250 | 0.080 | " | " | " | " | " | MDL |
| Methyl tert-Butyl Ether | ND | 0.025 | 0.012 | " | " | " | " | " | MDL |
| Ethyl tert-Butyl Ether | ND | 0.025 | 0.006 | " | " | " | " | " | MDL |
| Di-isopropyl ether | ND | 0.025 | 0.004 | " | " | " | " | " | MDL |
| Tert-Amyl Methyl Ether | ND | 0.025 | 0.006 | " | " | " | " | " | MDL |
| Benzene | ND | 0.025 | 0.010 | " | " | " | " | " | MDL |
| Toluene | ND | 0.025 | 0.009 | " | " | " | " | " | MDL |
| Ethylbenzene | ND | 0.025 | 0.006 | " | " | " | " | " | MDL |
| m,p-Xylene | ND | 0.050 | 0.016 | " | " | " | " | " | MDL |
| o-Xylene | ND | 0.025 | 0.006 | " | " | " | " | " | MDL |
| Xylenes, total | ND | 0.050 | 0.022 | " | " | " | " | " | MDL |
| *Surrogate: Dibromofluoromethane* | *110 %* | % Recovery Limits | | *70-130* | | | | " | *MDL* |
| *Surrogate: Toluene-d8* | *98.6 %* | % Recovery Limits | | *70-130* | | | | " | *MDL* |
| *Surrogate: 4-Bromofluorobenzene* | *100 %* | % Recovery Limits | | *70-130* | | | | " | *MDL* |
| **Total Petroleum Hydrocarbons by FID** | | | | | | | | | |
| **TPH as Diesel** | **4.85** | 1.00 | 0.630 | mg/kg | ASA0089 | 01/15/09 | 01/15/09 | EPA 8015Mod | |

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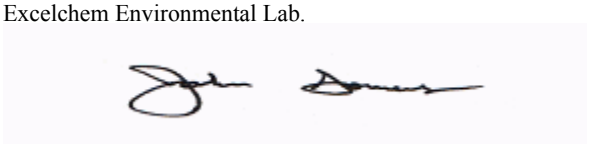

Laboratory Representative

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| Bonkowski & Assoc. | Project: | Oakland | |
| 6400 Hollis St. Suite 4 | Project Number: | E27297-2 | Date Reported: |
| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

## Volatile Organic Compounds by GC/MS - Quality Control

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch ASA0130 - EPA 8260B** | | | | | | | | | | | |
| **Blank (ASA0130-BLK1)** | | | | | Prepared & Analyzed: 01/19/09 | | | | | | |
| *Surrogate: Dibromofluoromethane* | *9.51* | | | *ug/l* | *12.5* | | *76.1* | *70-130* | | | *MDL* |
| *Surrogate: Toluene-d8* | *12.7* | | | *"* | *12.5* | | *102* | *70-130* | | | *MDL* |
| *Surrogate: 4-Bromofluorobenzene* | *11.5* | | | *"* | *12.5* | | *92.3* | *70-130* | | | *MDL* |
| TBA | ND | 5.0 | 2.4 | " | | | | | | | MDL |
| Methyl tert-Butyl Ether | ND | 0.5 | 0.1 | " | | | | | | | MDL |
| Di-isopropyl ether | ND | 0.5 | 0.05 | " | | | | | | | MDL |
| Ethyl tert-Butyl Ether | ND | 0.5 | 0.1 | " | | | | | | | MDL |
| Tert-Amyl Methyl Ether | ND | 0.5 | 0.1 | " | | | | | | | MDL |
| 1,2-Dichloroethane | ND | 0.5 | 0.1 | " | | | | | | | MDL |
| 1,2-Dibromoethane (EDB) | ND | 0.5 | 0.3 | " | | | | | | | MDL |
| Naphthalene | ND | 0.5 | 0.3 | " | | | | | | | MDL |
| **LCS (ASA0130-BS1)** | | | | | Prepared & Analyzed: 01/19/09 | | | | | | |
| *Surrogate: Dibromofluoromethane* | *13.1* | | | *ug/l* | *12.5* | | *105* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *12.2* | | | *"* | *12.5* | | *97.2* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.3* | | | *"* | *12.5* | | *106* | *70-130* | | | |
| Benzene | 19.1 | 0.5 | 0.07 | " | 20.0 | | 95.7 | 80-120 | | | |
| Toluene | 18.3 | 0.5 | 0.08 | " | 20.0 | | 91.5 | 80-120 | | | |
| 1,1-Dichloroethene | 20.9 | 0.5 | 0.2 | " | 20.0 | | 104 | 80-120 | | | |
| Trichloroethene | 18.2 | 0.5 | 0.2 | " | 20.0 | | 90.9 | 80-120 | | | |
| Chlorobenzene | 17.6 | 0.5 | 0.2 | " | 20.0 | | 88.0 | 80-120 | | | |
| **LCS Dup (ASA0130-BSD1)** | | | | | Prepared & Analyzed: 01/19/09 | | | | | | |
| *Surrogate: Dibromofluoromethane* | *10.6* | | | *ug/l* | *12.5* | | *84.6* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *12.3* | | | *"* | *12.5* | | *98.7* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.0* | | | *"* | *12.5* | | *96.0* | *70-130* | | | |
| Benzene | 19.8 | 0.5 | 0.07 | " | 20.0 | | 99.0 | 80-120 | 3.39 | 15 | |
| Toluene | 19.3 | 0.5 | 0.08 | " | 20.0 | | 96.7 | 80-120 | 5.58 | 15 | |
| 1,1-Dichloroethene | 18.4 | 0.5 | 0.2 | " | 20.0 | | 92.2 | 80-120 | 12.4 | 15 | |
| Trichloroethene | 18.6 | 0.5 | 0.2 | " | 20.0 | | 93.3 | 80-120 | 2.61 | 15 | |
| Chlorobenzene | 19.2 | 0.5 | 0.2 | " | 20.0 | | 96.0 | 80-120 | 8.75 | 15 | |

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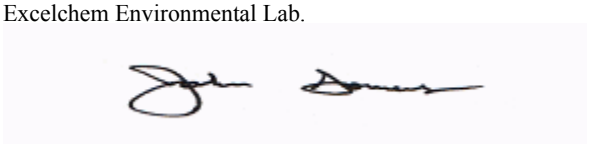

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| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

## Volatile Organic Compounds by GC/MS - Quality Control

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch ASA0132 - EPA 8260B** | | | | | | | | | | | |
| **Blank (ASA0132-BLK1)** | | | | | Prepared & Analyzed: 01/19/09 | | | | | | |
| *Surrogate: Dibromofluoromethane* | *38.0* | | | *ug/kg* | *50.0* | | *76.1* | *70-130* | | | *MDL* |
| *Surrogate: Toluene-d8* | *50.9* | | | *"* | *50.0* | | *102* | *70-130* | | | *MDL* |
| *Surrogate: 4-Bromofluorobenzene* | *46.2* | | | *"* | *50.0* | | *92.3* | *70-130* | | | *MDL* |
| Gasoline Range Hydrocarbons | ND | 0.400 | 0.041 | mg/kg | | | | | | | MDL |
| TBA | ND | 0.020 | 0.006 | " | | | | | | | MDL |
| Methyl tert-Butyl Ether | ND | 0.002 | 0.0009 | " | | | | | | | MDL |
| Di-isopropyl ether | ND | 0.002 | 0.0003 | " | | | | | | | MDL |
| Ethyl tert-Butyl Ether | ND | 0.002 | 0.0005 | " | | | | | | | MDL |
| Tert-Amyl Methyl Ether | ND | 0.002 | 0.0004 | " | | | | | | | MDL |
| Benzene | ND | 0.002 | 0.0008 | " | | | | | | | MDL |
| Toluene | ND | 0.002 | 0.0007 | " | | | | | | | MDL |
| Ethylbenzene | ND | 0.002 | 0.0005 | " | | | | | | | MDL |
| m,p-Xylene | ND | 0.004 | 0.001 | " | | | | | | | MDL |
| o-Xylene | ND | 0.002 | 0.0005 | " | | | | | | | MDL |
| Xylenes, total | ND | 0.004 | 0.002 | " | | | | | | | MDL |
| **LCS (ASA0132-BS1)** | | | | | Prepared & Analyzed: 01/19/09 | | | | | | |
| *Surrogate: Dibromofluoromethane* | *52.5* | | | *ug/kg* | *50.0* | | *105* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *48.6* | | | *"* | *50.0* | | *97.2* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *53.2* | | | *"* | *50.0* | | *106* | *70-130* | | | |
| Benzene | 0.077 | 0.002 | 0.0008 | mg/kg | 0.0800 | | 95.7 | 80-120 | | | |
| Toluene | 0.073 | 0.002 | 0.0007 | " | 0.0800 | | 91.5 | 80-120 | | | |
| 1,1-Dichloroethene | 0.083 | 0.005 | 0.002 | " | 0.0800 | | 104 | 80-120 | | | |
| Chlorobenzene | 0.070 | 0.005 | 0.002 | " | 0.0800 | | 88.0 | 80-120 | | | |
| Trichloroethene | 0.073 | 0.005 | 0.002 | " | 0.0800 | | 90.9 | 80-120 | | | |
| **LCS Dup (ASA0132-BSD1)** | | | | | Prepared & Analyzed: 01/19/09 | | | | | | |
| *Surrogate: Dibromofluoromethane* | *42.3* | | | *ug/kg* | *50.0* | | *84.6* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *49.4* | | | *"* | *50.0* | | *98.7* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *48.0* | | | *"* | *50.0* | | *96.0* | *70-130* | | | |
| Benzene | 0.079 | 0.002 | 0.0008 | mg/kg | 0.0800 | | 99.0 | 80-120 | 3.39 | 15 | |
| Toluene | 0.077 | 0.002 | 0.0007 | " | 0.0800 | | 96.7 | 80-120 | 5.58 | 15 | |
| 1,1-Dichloroethene | 0.074 | 0.005 | 0.002 | " | 0.0800 | | 92.2 | 80-120 | 12.4 | 15 | |
| Chlorobenzene | 0.077 | 0.005 | 0.002 | " | 0.0800 | | 96.0 | 80-120 | 8.75 | 15 | |
| Trichloroethene | 0.075 | 0.005 | 0.002 | " | 0.0800 | | 93.3 | 80-120 | 2.61 | 15 | |

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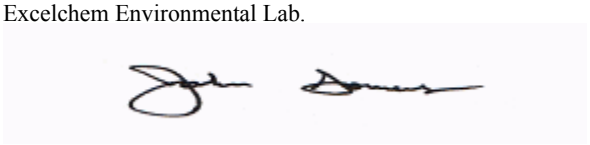

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| 6400 Hollis St. Suite 4 | Project Number: | E27297-2 | Date Reported: |
| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

### Total Petroleum Hydrocarbons by FID - Quality Control

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch ASA0089 - EPA 8015Mod** | | | | | | | | | | | |
| **Blank (ASA0089-BLK1)** | | | | | Prepared & Analyzed: 01/15/09 | | | | | | |
| TPH as Diesel | ND | 1.00 | | mg/kg | | | | | | | |
| **LCS (ASA0089-BS1)** | | | | | Prepared & Analyzed: 01/15/09 | | | | | | |
| TPH as Diesel | 73.8 | 1.00 | | mg/kg | 100 | | 73.8 | 70-130 | | | |
| **LCS Dup (ASA0089-BSD1)** | | | | | Prepared & Analyzed: 01/15/09 | | | | | | |
| TPH as Diesel | 76.6 | 1.00 | | mg/kg | 100 | | 76.6 | 70-130 | 3.72 | 30 | |
| **Matrix Spike (ASA0089-MS1)** | | | **Source: 0901075-04** | | Prepared: 01/15/09 Analyzed: 01/16/09 | | | | | | |
| TPH as Diesel | 75.6 | 1.00 | | mg/kg | 100 | 4.85 | 70.7 | 70-130 | | | |
| **Matrix Spike Dup (ASA0089-MSD1)** | | | **Source: 0901075-04** | | Prepared: 01/15/09 Analyzed: 01/16/09 | | | | | | |
| TPH as Diesel | 75.5 | 1.00 | | mg/kg | 100 | 4.85 | 70.7 | 70-130 | 0.0985 | 30 | |

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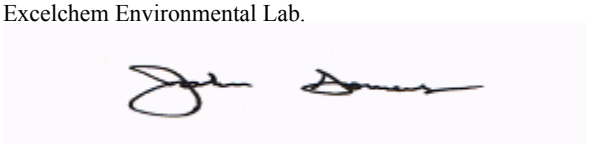

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| Bonkowski & Assoc. | Project: | Oakland | |
| 6400 Hollis St. Suite 4 | Project Number: | E27297-2 | Date Reported: |
| Emeryville, CA 94608 | Project Manager: | Cynthia Dittmar | 01/30/09 09:56 |

### Notes and Definitions

| | |
|---|---|
| MDL | Result(s) reported to the MDL |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| D-18 | The sample chromatogram does not match the standard diesel chromatogram. All peaks were integrated within the diesel range. The result is an estimated value. |

ND - Analyte not detected at reporting limit.

NR - Not reported

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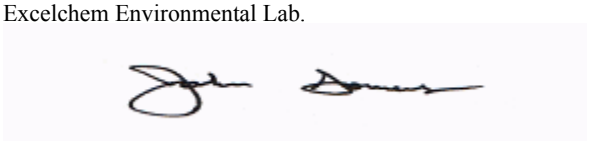

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| Bonkowski & Assoc.<br>6400 Hollis St. Suite 4<br>Emeryville, CA 94608 | Project:<br>Project Number:<br>Project Manager: | Oakland<br>E27297-2<br>Cynthia Dittmar | Date Reported:<br>01/30/09 09:56 |


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