

Alameda County

MAY 03 2004

Environmental Services

**Groundwater Monitoring Results and
Request for Site Closure
2662 Fruitvale Avenue
Oakland, California**

**April 29, 2004
001-09225-04**

Prepared for
City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Suite 5301
Oakland, California 94612-2034



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Alameda County

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001-09225-04

Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Groundwater Monitoring Results and Request for Site Closure, 2662 Fruitvale Avenue, Oakland, California

Dear Mr. Chan:

LFR Levine-Fricke (LFR) has prepared this report on behalf of the City of Oakland Public Works Agency, presenting groundwater monitoring results for two wells located downgradient from a former gasoline station, which has been closed and redeveloped with residential housing units. Based on analytical results from these wells, it appears that the petroleum hydrocarbon-affected groundwater plume is stable. In addition, the concentrations of several constituents detected in groundwater at 2662 Fruitvale Avenue, Oakland, California ("the Site"), notably benzene, are below the Regional Water Quality Control Board's Environmental Screening Levels for non-drinking water at a commercial facility, and the City of Oakland's risk-based screening levels for outdoor air inhalation. Therefore, residual concentrations of these constituents likely do not present a potential human health threat.

Based on the evaluation of the recent data collected from the groundwater monitoring wells and the historical remedial activities conducted at the Site, LFR requests that the Alameda County Health Care Services Agency issue a site closure letter for the Site.

If you have any questions or comments, please contact me at (510) 596-9566.

Sincerely,



Kimberly A. Brandt, R.G., C.HG.
Senior Associate Hydrogeologist

cc: Mark Gomez, City of Oakland, Public Works Agency
Gopal Nair, City of Oakland, Public Works Agency

CONTENTS

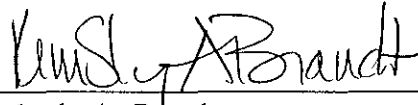
CERTIFICATION.....	iii
1.0 INTRODUCTION AND BACKGROUND	1
1.1 Introduction.....	1
1.2 Site Setting.....	1
1.2.1 Location	1
1.2.2 Hydrogeology	1
2.0 PREVIOUS REMEDIAL ACTIONS.....	2
3.0 RESULTS OF GROUNDWATER MONITORING	2
4.0 DATA EVALUATION.....	3
5.0 PERMIT TRACKING SYSTEM.....	4
6.0 CONCLUSIONS.....	5
7.0 LIMITATIONS	5
8.0 REFERENCES.....	7
TABLES	
1 Depth-to-Groundwater Measurements, February 13, 2004	
2 Summary of Laboratory Results for Groundwater Samples (from Cambria 2002b)	
3 Summary of Groundwater Analytical Data for Wells MW-F4 and MW-13, February 13, 2004	
4 Summary of Bioremediation Parameters Data for Wells MW-F4 and MW-13, February 13, 2004	
FIGURE	
1 Site Plan	


APPENDICES

- A Site Remediation and Closure Report, 2662 Fruitvale Avenue, Oakland, California 94612, Cambria Environmental Technology, Inc., January 14, 2002
- B Offsite Remediation Report, 2662 Fruitvale Avenue, Oakland, California 94612, Cambria Environmental Technology, Inc., July 10, 2002
- C Laboratory Analytical Data Sheets

CERTIFICATION

All hydrogeologic and geologic information, conclusions, and recommendations in this document have been prepared under the supervision of and reviewed by an LFR Levine-Fricke California Registered Geologist.





Kimberly A. Brandt
Senior Associate Hydrogeologist
California Registered Geologist (6658)
California Certified Hydrogeologist (555)

Date

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

This report presents results of a groundwater monitoring event conducted by LFR Levine·Fricke (LFR), on behalf of the City of Oakland (“City”) Public Works Agency, at the property located at 2662 Fruitvale Avenue in Oakland, California (“the Site”; Figure 1). In addition, this report provides information regarding the City’s system for notification of residual contamination at the Site. LFR has conducted this work and prepared this report pursuant to a request by Mr. Barney Chan of the Alameda County Health Care Services Agency (ACHCSA) on January 15, 2004. Mr. Chan requested that these tasks be completed to consider the City’s and LFR’s request for closure for the Site.

The purpose of the groundwater monitoring event was to collect data to assess current concentrations of total petroleum hydrocarbons (TPH) in groundwater directly downgradient from the Site, with respect to groundwater flow direction, and to assess the stability of the groundwater plume. To address the ACHCSA’s concern regarding notification to future workers regarding the residual TPH-affected soil and/or groundwater, Mr. Mark Gomez of the City of Oakland Public Works Agency – Environmental Services Division (PWA-ESD) provided a description of the City’s Permit Tracking System. This system is described in Section 5.0.

1.2 Site Setting

1.2.1 Location

The Site is located at the northeastern corner of Fruitvale Avenue and Davis Street (Figure 1). The Site is located in a mixed-use commercial and residential district. The Site was formerly occupied by an automobile service station that reportedly operated at the Site from the 1940s until 1978. The underground storage tanks (USTs) were reportedly removed from the Site in 1978. The City purchased the property from Texaco in 1983. In 2002, the Site was redeveloped with residential homes.

1.2.2 Hydrogeology

Depth to groundwater during this monitoring event was measured at between approximately 9 and 10 feet below ground surface. Reportedly, groundwater flows toward the west-southwest with an approximate gradient from 0.02 foot per foot (Cambria Environmental Technology, Inc. [“Cambria”] 2002a).

2.0 PREVIOUS REMEDIAL ACTIONS

On behalf of the City, Cambria submitted a report entitled "Site Remediation and Closure Report, 2662 Fruitvale Avenue, Oakland, California," and dated January 14, 2002 (Cambria 2002a; Appendix A). The report summarizes the contaminants of concern (COCs), the lateral distribution of the COCs, remediation that has been conducted on the Site, and the results of a risk screening evaluation and a sensitive receptor survey. The results of the risk screening evaluation indicated that concentrations of petroleum hydrocarbons in site soils and groundwater do not exceed the site-specific target levels in the City's risk-based corrective action guidance document (Oakland Urban Land Redevelopment Program: Guidance Document, January 1, 2000). It was further stated that the residual hydrocarbons on site and immediately adjacent to the Site do not pose a significant risk to human health. The report did identify concentrations of lead (up to 480 milligrams per kilogram) in soil at the Site. The lead-affected soil was subsequently excavated and disposed of off site. To help accelerate the natural attenuation of residual TPH in the saturated zone downgradient and off site, Cambria installed approximately 510 pounds of oxygen-releasing compound in a trench near Davis Street. Cambria's sensitive receptor survey did not identify wells or basements in the site vicinity.

Cambria prepared a risk management plan (RMP) for the Site dated January 14, 2002 (included in Cambria 2002a). The RMP includes provisions for a change in land use, notification of residual petroleum hydrocarbons in soil and groundwater, and a soil management plan for the excavation of affected soil.

Cambria's January 14, 2002 report indicated that petroleum hydrocarbons in groundwater were detected primarily off site (downgradient) beneath the sidewalk (well MW-F4) and Davis Street (MW-13; Table 2). To address the petroleum hydrocarbons in off-site groundwater, hydrogen peroxide was injected in wells MW-F4 and MW-13 in May and June 2002. The introduction of hydrogen peroxide into these wells supplied sufficient dissolved oxygen (DO) to stimulate hydrocarbon biodegradation (Cambria 2002c). The injection of the hydrogen peroxide is summarized in Cambria's report entitled "Offsite Remediation Report for the Site" and dated July 10, 2002 (Cambria 2002b; Appendix B).

3.0 RESULTS OF GROUNDWATER MONITORING

To assess the current concentrations of petroleum hydrocarbons in the off-site groundwater, LFR collected groundwater samples from wells MW-F4 and MW-13 in February 2004.

Prior to groundwater sample collection, the depth to groundwater was measured in each well and recorded on field forms. These data are summarized in Table 1. LFR checked the groundwater in each well for the presence of floating product using disposable bailers. Floating product was not observed in either well. Subsequent to

measuring the water levels, the monitoring wells were micro-purged using a peristaltic pump and dedicated tubing. The field parameters of pH, conductivity, temperature, oxidation-reduction potential (ORP), and DO were measured using a meter equipped with a flow-through cell. After the field parameters stabilized, groundwater samples were collected.

Collected groundwater samples were transferred directly into laboratory-provided sample containers. Groundwater samples were labeled, placed in a chilled cooler, and transported under chain-of-custody procedures to Curtis & Tompkins Ltd. of Berkeley, California, a California-certified laboratory. The samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by U.S. EPA Method 8015M; benzene, toluene, ethylbenzene, and total xylenes (BTEX) by U.S. EPA Method 8020; total and soluble iron by U.S. EPA Method 6010; and nitrate and sulfate by U.S. EPA Method 300.0.

Analytical data for the groundwater samples collected during this monitoring event are discussed below. Laboratory reports for the groundwater samples are included in Appendix C.

TPHg and BTEX were detected in the groundwater samples collected from wells MW-F4 and MW-13 at low levels (Table 3). TPHg was detected in wells MW-F4 and MW-13 at concentrations of 6,100 micrograms per liter ($\mu\text{g/l}$; 6,300 $\mu\text{g/l}$ in the duplicate sample) and 4,500 $\mu\text{g/l}$, respectively. BTEX compounds were detected at 42 $\mu\text{g/l}$, 2.6 $\mu\text{g/l}$, 650 $\mu\text{g/l}$, and 12.4 $\mu\text{g/l}$, respectively, in the primary sample from well MW-F4 and at 48 $\mu\text{g/l}$, 5.6 $\mu\text{g/l}$, 680 $\mu\text{g/l}$, and 12.2 $\mu\text{g/l}$, respectively, in the duplicate sample from this well. In well MW-13, BTEX compounds were detected at 42 $\mu\text{g/l}$, 5.2 $\mu\text{g/l}$, 38 $\mu\text{g/l}$, and 7.4 $\mu\text{g/l}$, respectively. These data are consistent with groundwater monitoring data previously collected for the wells (Table 2).

Biodegradation parameters were also collected from the groundwater from each well. These parameters are summarized on Table 4.

4.0 DATA EVALUATION

To evaluate the concentrations of TPHg and BTEX detected in the groundwater samples, LFR compared the analytical data to the Regional Water Quality Control Board's (RWQCB's) Environmental Screening Levels (ESLs) published in February 2004 (RWQCB 2004), and the City's Tier 1 Risk-Based Screening Criteria (City of Oakland Public Works Agency 2000). For the ESL comparison, LFR concluded, based on the sensitive receptor survey results conducted by Cambria (Cambria 2002a), that groundwater in the site vicinity was not used for drinking water and that the ESL values for non-drinking-water values could be applied. These ESL values are summarized on Table 2. This comparison indicated that only TPHg exceeded its ESL for the groundwater samples from wells MW-F4 and MW-13, and that benzene and ethylbenzene exceeded their respective ESLs only in the groundwater sample collected

from MW-F4. The concentrations of toluene and xylenes were below their respective ESLs in all of the samples analyzed and ethylbenzene was below its respective ESL in well MW-13.

The TPH and BTEX concentrations detected in the groundwater samples were also compared to the City's RBSLs (Table 2). The RBSL values used the groundwater medium and evaluated only the inhalation of outdoor air vapors because the TPH-affected groundwater is located beneath a sidewalk and a street. The concentrations detected in both wells were well below the RBSL values.

Review of biodegradation parameters collected from wells MW-F4 and MW-13 indicates that biodegradation activity is likely occurring in the plume (Table 4). Specifically, the reduced DO and ORP values observed in MW-13, as compared to MW-F4, indicates that the oxygen in the water being consumed, and thereby promoting biodegradation activity within the plume and at the downgradient edge of the plume. Biodegradation within the plume and at the downgradient edge of the plume will help inhibit further migration of the affected groundwater.

5.0 PERMIT TRACKING SYSTEM

The City has implemented an institutional control to help identify properties where residual contamination is present. The City created and maintains a Permit Tracking System (PTS). Properties issued a no further action (NFA) letter with residual contamination are "flagged" in this system. The purpose of this flagging is to ensure that future permitted work at the site (1) does not disturb any conditions upon which the no further action letter was issued (e.g., existence of an asphalt cap), or otherwise change conditions in a manner that would increase risk to unacceptable levels; and (2) is conducted under an appropriate health and safety plan to protect workers and nearby residents. No City permit for work at the site is to be issued until these concerns have been adequately addressed. The City maintains a file of no further action letters and associated risk management plans for reference.

The PTS will only "capture" work that may encounter off-site contamination located *in the public right-of-way* if that work is specifically associated with a private property that has been flagged. In this case, should off-site work be performed in the public right-of-way, it would only be "captured" if it were related to one or more of the new homes located at 2662 Fruitvale Avenue. The City can modify the PTS to "capture" other nearby addresses if that is deemed appropriate.

The City does have an internal Administrative Procedure that provides protocol for work to be performed by City personnel or City contractors in the public right-of-way. The protocol requires that the PWA-ESD be informed in advance of planned "construction, installation, relocation, rehabilitation or removal of City infrastructure that (a) involves the disturbance of subsurface conditions to allow for confined-space work at depths greater than three feet and (b) is located in an area where subsurface

contamination is known or reasonably suspected.” In these cases, the PWA-ESD undertakes due diligence (review of internal files, Phase I research, Phase II investigations, as necessary) prior to commencement of work. Any concerns that the PWA-ESD encounter relating to subsurface contamination are then addressed in the health and safety plan and, in some cases, by remediation of contaminated media.

The City’s Administrative Procedure does provide a notification exemption for “emergency repair or routine maintenance of City infrastructure,” so that work that must be performed quickly to maintain basic City services is not unnecessarily delayed. City policy is that all workers on such a job must have, at a minimum, OSHA 4-hour First Responder Awareness training, which instructs workers on how to identify and react to potentially hazardous conditions. The PWA-ESD ensures that all City employees who might work in subsurface conditions receive the appropriate HAZWOPER certifications and periodic refresher training.

6.0 CONCLUSIONS

Based on review of the data and comparison of the data to RWQCB ESLs and the City’s RBSLs, the data indicate that detected concentrations of chemicals do not pose a significant threat to human health and the environment. The constituent’s concentrations are consistent with the concentrations detected during previous monitoring events and indicate that the TPH-affected groundwater plume localized in the vicinity of MW-F4 and MW-13, is stable and does not appear to be migrating. This is supported by the bioremediation indicator parameters collected from MW-F4 and MW-13, which likely indicate that biodegradation activity is likely occurring within the plume and at the downgradient edge of the plume. Biodegradation will likely continue to occur as “fresh” water containing higher concentrations of DO flows into the affected area. For the protection of workers who may come into contact with the affected groundwater, the City has identified the Site as an area that will require additional health and safety measures. Future workers would be notified of the condition of the groundwater in this area by PTS, which is implemented by the PWD-ESD.

Based on the data collected from these wells, the historical remedial activities associated with the Site, and the assurance of notification to future site workers via the PTS, it is LFR’s recommendation that no further investigation or monitoring be conducted at the Site. In accordance with these findings, on behalf of the City, LFR requests that the ACHCSA issue a closure letter for this Site.

7.0 LIMITATIONS

The opinions and recommendations presented in this report are based upon the scope of services, information obtained through the performance of the services, and the schedule as agreed upon by LFR and the party for whom this report was originally prepared. This report is an instrument of professional service and was prepared in

accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the environmental consulting industry. No representation, warranty, or guarantee, express or implied, is intended or given. To the extent that LFR relied upon any information prepared by other parties not under contract to LFR, LFR makes no representation as to the accuracy or completeness of such information. This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared for a particular purpose. Only the party for whom this report was originally prepared and/or other specifically named parties have the right to make use of and rely upon this report. Reuse of this report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties, shall be at the user's sole risk.

Results of any investigations or testing and any findings presented in this report apply solely to conditions existing at the time when LFR's investigative work was performed. It must be recognized that any such investigative or testing activities is inherently limited and do not represent a conclusive or complete characterization. Conditions in other parts of the project site may vary from those at the locations where data were collected. LFR's ability to interpret investigation results is related to the availability of the data and the extent of the investigation activities. As such, 100% confidence in environmental investigation conclusions cannot reasonably be achieved.

LFR, therefore, does not provide any guarantees, certifications, or warranties regarding any conclusions regarding environmental contamination of any such property. Furthermore, nothing contained in this document shall relieve any other party of its responsibility to abide by contract documents and applicable laws, codes, regulations, or standards.

8.0 REFERENCES

California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). 2004. Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater. Interim Final. February.

Cambria Environmental Technology, Inc. ("Cambria"). 2002a. Site Remediation and Closure Report, 2662 Fruitvale Avenue, Oakland, California 94612. January 14.

———. 2002b. Offsite Remediation Report. 2662 Fruitvale Avenue, Oakland, California 94612. July 10.

City of Oakland Public Works Agency. 2000. Oakland Urban Land Redevelopment Program: Guidance Document. January 1.

Table 1

Depth-to-Groundwater Measurements, February 13, 2004
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Casing Elevation (feet)	Date Measured	Product Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-F4	101.56	2/13/2004	-	8.90	92.66
MW-13	101.20	2/13/2004	-	9.80	91.40

Table 2

Summary of Laboratory Results for Groundwater Samples
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-F1	08/16/93	<0.05	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	-	-	-	-	-	-	<0.10	8.5	38	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.1	<0.10	7.7	38	
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.90	<0.10	11	38	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	7.1	38	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	30	35	
	No longer part of semi-annual monitoring program										
MW-F2	08/16/93	<0.05	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	0.096	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	0.34	<0.0005	<0.0005	<0.0005	0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/27/96	0.064	0.0012	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	0.06	<0.0005	<0.0005	<0.0005	<0.0005	-	0.24	0.20	8	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.1	<0.10	<0.05	7.4	
	03/11/98	0.20	0.00088	<0.0005	<0.0005	<0.0005	4.8	0.18	<0.05	7.1	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.25	<0.10	<0.05	7.8	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<1.0	<1.0	
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<0.2	9	
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	53	<0.10	<1.0	2	
	12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<1.0	9.9	
MW-F3	08/16/93	<0.1	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	0.13	<0.0005	0.0013	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	0.11	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	0.35	0.0008	<0.0005	0.0012	0.0007	-	-	-	-	1
	06/27/96	0.088	0.002	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	0.18	<0.0005	<0.0005	<0.0005	<0.0005	-	0.11	0.69	23	1
	6/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.46	0.16	0.70	23	
	3/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.11	0.20	2.5	28	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.31	0.12	0.97	30	
	6/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	3	38	
	No longer part of semi-annual monitoring program										

Table 2 (Continued)

Summary of Laboratory Results for Groundwater Samples
 2662 Fruitvale Avenue
 Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-F4	09/9/94*	3.5	0.029	0.003	0.038	0.099	-	-	-	-	1
	12/21/94	37	0.66	28	2.5	5.9	-	-	-	-	1
	06/30/95	9.2	0.18	<0.1	0.76	1.0	-	-	-	-	1
	12/29/95	38	0.61	0.019	4.3	5.8	-	-	-	-	1
	06/27/96	6.2	0.081	0.14	0.52	0.29	-	-	-	-	1
	12/13/96	27	0.39	0.05	3.2	3.7	-	6.6	<0.05	<2	1
	06/26/97	6.2	0.16	0.018	0.71	0.32	2.4	3.1	<0.05	0.2	
	03/11/98	9.5	0.062	0.03	1.0	0.80	1.2	3.0	<0.05	<0.1	
	12/11/98	12	0.34	0.051	2.0	0.62	5.7	5.9	<0.05	1.5	
	06/29/99	10	0.23	0.032	1.8	0.30	0.93	0.90	<1.0	9	
	01/21/00	7.9	0.033	<0.005	1.0	0.25	13	2.7	<0.2	<1.0	
	06/27/00	10	0.08	<0.025	1.1	0.32	160	<0.10	<1.0	<1.0	
	10/6/00	3	0.011	0.0018	0.12	0.069	0.24	<0.10	2.1	38	
	11/13/00	3.9	0.039	0.016	0.84	0.30	0.14	<0.10	<1.0	13	
12/22/00	4.7	0.054	0.0096	0.85	0.34	0.32	0.17	<1.0	11		
MW-F5	06/30/95	0.10	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	0.0007	-	-	-	-	1
	06/27/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	6.6	45	1
	06/26/97	<0.05	0.0032	0.0064	0.00073	0.0042	0.21	<0.1	6.1	45	
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	6.1	45	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.58	0.19	6.0	41	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	23	50	
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.14	<0.10	5.2	42	
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	60	<0.10	20	37	
	12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	23	56	
MW-F6	06/30/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/27/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.10	0.44	39	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.22	0.18	<0.05	47	
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	0.14	49	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.24	0.11	0.06	43	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	0.93	<1.0	54	
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.11	<0.10	0.5	42	
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	10	<0.10	<1.0	9	
	12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.29	0.15	1.1	61	

Table 2 (Continued)

Summary of Laboratory Results for Groundwater Samples
 2662 Fruitvale Avenue
 Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-13	12/21/94	3.3	0.33	<0.013	0.024	0.24	-	-	-	-	1
	06/30/95	22	0.85	<0.0005	1.2	1.6	-	-	-	-	1
	12/29/95	22	0.97	0.078	1.8	2.4	-	-	-	-	1
	06/27/96	18	0.63	0.026	1.1	1.0	-	-	-	-	1
	12/13/96	16	0.67	0.04	1.2	1.0	-	6.8	<0.05	<2	1
	6/26/97*	11	0.42	0.037	0.64	0.26	7.7	6.9	<0.05	0.3	
	3/11/98*	13	0.30	<0.025	0.89	0.51	4.3	6.7	<0.05	2.3	
	12/11/98	12	0.47	0.048	1.1	0.48	6.6	7.0	<0.05	16	
	06/29/99	7	0.24	0.13	0.44	0.11	1.3	1.3	<1.0	11	
	01/21/00	7.3	0.035	<0.005	0.62	0.22	7.3	6.9	<0.2	<1.0	
	06/27/00	6.1	0.11	<0.025	0.27	0.038	15	<0.10	1	2	
	10/6/00	4.6	0.10	<0.025	0.19	0.036	4.3	3.5	<1	5.4	
	11/13/00	6.0	0.22	0.035	0.47	0.12	4.5	1.4	1.1	1.7	
	12/22/00	9.2	0.27	0.033	0.53	0.12	6.7	6.7	1.0	<1.0	
MCL	-	-	0.001	0.150	0.700	1.75	-	-	-	-	

Note: Bold indicates detected concentrations. Shaded indicates concentrations exceeding MCLs.

1 Historical laboratory data provided by Baseline Environmental Consulting

* Higher concentration reported for either the sample or field duplicate sample (QC/I)

Table 3

Summary of Groundwater Analytical Data for Wells MW-4 and MW-13, February 13, 2004
 2662 Fruitvale Avenue
 Oakland, California

Monitoring Well ID	Date Sampled	TPHg ($\mu\text{g/l}$)	Benzene ($\mu\text{g/l}$)	Toluene ($\mu\text{g/l}$)	Ethylbenzene ($\mu\text{g/l}$)	Xylenes ($\mu\text{g/l}$)
MW-F4	2/13/2004	6,100	42	2.6	650	12.4
MW-F4 (duplicate)	2/13/2004	6,300	48	5.6	680	12.2
MW-13	2/13/2004	4,500	42	5.2	38	7.4
RWQCB ESLs		500	46	130	290	130
City of Oakland RBSLs for Groundwater (inhalation of outdoor air vapors)		NA	1,300,000	> SOL	> SOL	> SOL

Notes:

$\mu\text{g/l}$ = micrograms per liter

ESL = Environmental Screening Limit

RBSL = Risk-Based Screening Limit

SOL = solubility

Table 4

Summary of Bioremediation Parameter Data for Wells MW-4 and MW-13, February 13, 2004
2662 Fruitvale Avenue
Oakland, California

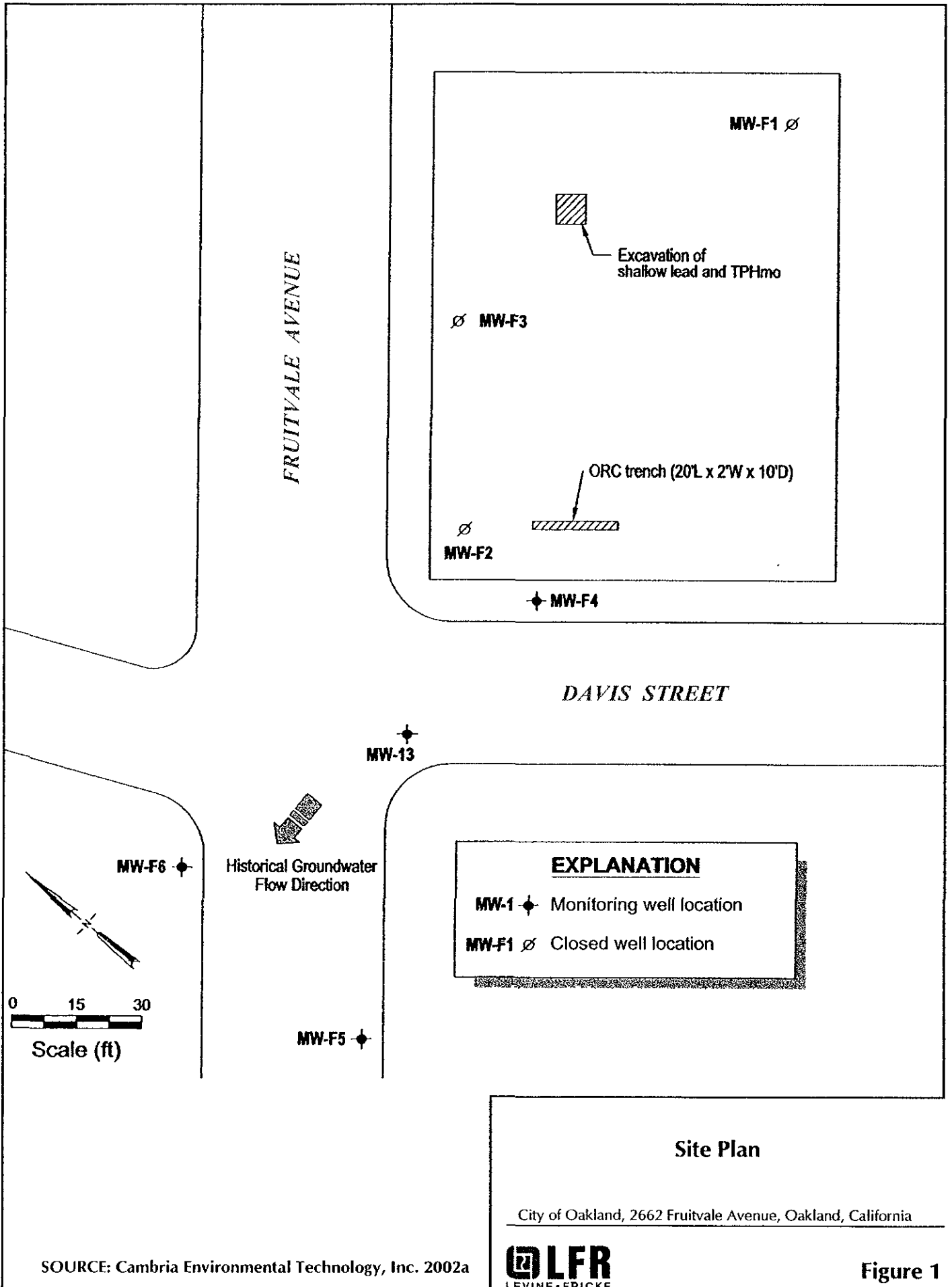
Monitoring Well ID	Date Sampled	Total Iron (mg/l)	Soluble Iron (mg/l)	Nitrate (mg/l)	Sulfate (mg/l)	Dissolved Oxygen (mg/l)	Oxygen Reduction Potential (mV)
MW-F4	2/13/2004	5.6	<0.1	<0.05	<0.50	12.6	190.4
MW-13	2/13/2004	5.9	2	<0.05	0.76	6.4	8.6

Notes:

mg/l = milligrams per liter

mV = millivolts

I:\Design\001\09225104\lowg\Site Plan.dwg, 04/29/2004 02:44:23 PM, Letter



SOURCE: Cambria Environmental Technology, Inc. 2002a

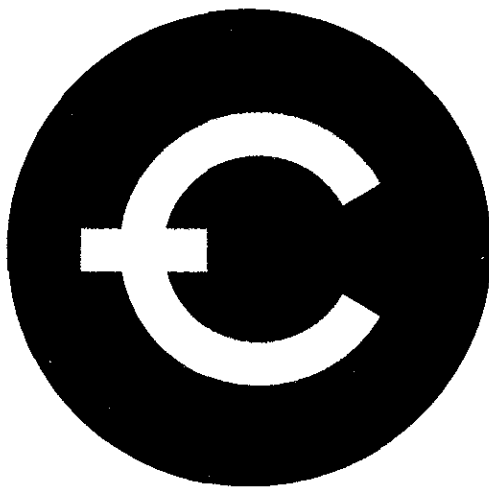


City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Figure 1

APPENDIX A

**Site Remediation and Closure Report
2662 Fruitvale Avenue
Oakland, California 94612
January 14, 2002
Cambria Environmental Technology, Inc.**



C A M B R I A

January 14, 2002

Mr. Joseph Cotton
City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Ste. 5301
Oakland, California 94612-2034

Re: **Site Remediation and Closure Report**
2662 Fruitvale Avenue
Oakland, California 94621
Cambria Project #153-1664-028

Dear Mr. Cotton:

As required by the Alameda County Health Care Services Agency (ACHCSA), Cambria Environmental Technology, Inc. (Cambria) has prepared this site remediation and closure report for the above-referenced site.

Cambria understands that the City of Oakland will forward a copy of this report to the ACHCSA. If you have any questions or comments regarding this report, please call me at (510) 420-3303.

Sincerely,
Cambria Environmental Technology, Inc.



Bob Clark-Riddell, P.E.
Principal Engineer

Enc: Site Remediation and Closure Report

Oakland, CA
San Ramon, CA
Sonoma, CA

**Cambria
Environmental
Technology, Inc.**

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

C A M B R I A

January 14, 2002

Mr. Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Risk Management Plan**
2662 Fruitvale Avenue
Oakland, California 94621
Cambria Project #153-1664-028

Dear Mr. Chan:

On behalf of the City of Oakland, Cambria Environmental Technology, Inc., (Cambria) is submitting this Risk Management Plan (RMP) for the above-referenced site. The Alameda County Health Care Services Agency (ACHCSA) frequently requires a RMP as a condition of regulatory case closure. The site background and the RMP are presented below.

SITE BACKGROUND

Site Location and UST Status: The Site is located on the northeast corner of Fruitvale Avenue and Davis Street in Oakland, California. The area use is mixed commercial and residential. Cambria understands that an automobile service station occupied the Site from the 1940s until 1978. The underground storage tanks (USTs), including three gasoline USTs and one additional UST (presumably used for waste oil storage), were removed from the Site in 1978. The City of Oakland purchased the property from Texaco in 1983.

Lithology: The site lithology consists primarily of clays. Below approximately 8-10 ft below ground surface (bgs), sands and gravels are encountered, though in the northeastern portion of the site, sands were encountered between 1 and 4 ft bgs. Local lithologic variation is consistent with general categories for soils within the City of Oakland (Merritt sands, sandy silts, and clayey silts), as detailed in the City of Oakland 2000 *Oakland Risk-Based Corrective Action: Technical Background Document*.

Groundwater Depth and Flow Direction: Depth to groundwater is approximately 8 to 11 ft bgs, and groundwater flows towards the west-southwest with an approximate gradient of 0.02 ft/ft.

Oakland, CA
San Ramon, CA
Conoma, CA

Cambria
Environmental
Technology, Inc.

144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

Nearby Surface Water: Sausal Creek is located approximately 500 ft west of the subject site. Peralta Creek is located approximately 1,500 ft east-southeast of the subject site.

Investigation and Remediation: Petroleum hydrocarbons and lead in soil and groundwater have been investigated and remediated under regulatory oversight by the ACHCSA. Additional investigation and remediation information, including a risk evaluation and remediation goals, is presented in Attachment A.



RISK MANAGEMENT PLAN

A copy of this RMP should be provided to the City of Oakland Community and Economic Development Agency for its records. The objective of this RMP is to protect potential future site occupants, construction workers, groundwater resources, and the environment.

1. Notice of change in land use for this property should be sent to:

Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

2. Due to the presence of residual gasoline in the subsurface, construction workers who may handle subsurface soil (soil at depths greater than 3 ft below ground surface) during future construction activities should take appropriate precautions. A health and safety plan should be prepared that requires Level D protection for all workers as per Occupational Health and Safety Administration (OSHA) rules (29 CFR 1910.120). Level D protection generally includes gloves, work clothes, boots, and hard hats, if required. If site excavation activities encounter hydrocarbon odor, hydrocarbon staining, or any other indication of the potential presence of petroleum hydrocarbons, air quality monitoring should be performed. Until air quality in the work area is determined, construction workers should have OSHA Level C protection. Level C protection generally includes at a minimum a half-face filtering respirator with organic vapor cartridges, nitrile or latex gloves, and the protection specified in Level D. In the event that groundwater is encountered during construction activities, direct contact with the groundwater should be avoided.
3. If subsurface soil is excavated during site construction activities, a soil management plan governing sampling of excavated soil to determine disposal or reuse options should be prepared and submitted to the ACHCSA. If it becomes necessary to evacuate any

Mr. Barney Chan
January 14, 2002


groundwater during site construction activities, such groundwater should be stored in temporary containers and analyzed for disposal options.

4. The shallow groundwater beneath the property should *not* be used for any purpose, unless analyzed and treated, if necessary. If shallow groundwater is proposed for use, appropriate notice should be given to the ACHCSA.


CLOSING

If you require any additional information, please contact Cambria at (510) 420-0700.

Sincerely,
Cambria Environmental Technology, Inc.



Ian D. Young
Senior Staff Geologist



Bob Clark-Riddell, P.E.
Principal Engineer

Attachment: A – January 14, 2002, Site Remediation and Closure Report

cc: Mr. Joseph Cotton, R.G., City of Oakland, Public Works Agency,
Environmental Services Division
250 Frank H. Ogawa Plaza, Ste. 5301
Oakland, California 94612-2034

C A M B R I A

SITE REMEDIATION AND CLOSURE REPORT

2662 Fruitvale Avenue
Oakland, California 94621
Cambria Project #153-1664-028

January 14, 2002

Prepared for:

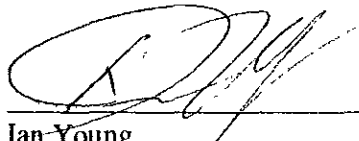
City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Ste. 5301
Oakland, California 94612-2034

Prepared by:


Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, California 94608



Oakland, CA
San Ramon, CA
Sonoma, CA



Ian Young
Senior Staff Geologist



Bob Clark-Riddell, P.E.
Principal Engineer

**Cambria
Environmental
Technology, Inc.**


1144 65th Street
Suite B
Oakland, CA 94608
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Fax (510) 420-9170

SITE REMEDIATION AND CLOSURE REPORT

2662 Fruitvale Avenue
Oakland, California 94621
Cambria Project #153-1664-028

January 14, 2002

INTRODUCTION



Cambria Environmental Technology, Inc. (Cambria) has prepared this site remediation and closure report for the above-referenced site. This report describes the completed activities required by the Alameda County Health Care Services Agency (ACHCSA) to facilitate development of the site. The site background, risk screen evaluation and remediation goals, onsite remediation activities, sensitive receptor survey, conclusions, and a request for a regulatory action are presented below. Having completed the onsite remediation required by the ACHCSA, Cambria concludes that the site is suitable for development.

SITE BACKGROUND

This section summarizes the site background. This site background is based on Cambria's review of the following reports: 1) September 1993 *Phase III Soil and Groundwater Investigation* by Baseline Environmental Consulting (Baseline), 2) September 1995 *Supplemental Groundwater Investigation* by Baseline, and 3) January 30, 2001 *Results of Semi Annual Groundwater Monitoring* by Innovative Technical Solutions, Inc. (ITSI). Previous consultant figures and tables presenting the investigation and analytical data reviewed by Cambria are included Cambria's *Risk Screening Evaluation* dated March 1, 2001 (Appendix A).

Site Location and UST Status: The Site is located on the northeast corner of Fruitvale Avenue and Davis Street in Oakland, California (Figure 1). The area use is mixed commercial and residential. Cambria understands that an automobile service station occupied the Site from the 1940s until 1978. The underground storage tanks (USTs), including three gasoline USTs and one additional UST (presumably used for waste oil storage), were removed from the Site in 1978. The City of Oakland purchased the property from Texaco in 1983.

Lithology: Vadose zone soils consist primarily of clays. Below approximately 8 to 10 ft below ground surface (bgs), sands and gravels are encountered. In the northeastern portion of the site, sands were encountered between 1 and 4 ft bgs in borings MW-F1, F-11, and F-13. The City of Oakland 2000

Cambria compared analytic results to the EPA Region 9 Preliminary Remediation Goal (PRG) of 400 mg/kg. Lead concentrations exceeded the PRG in one area (sample F4-2'), located near the middle of the site.

Table B - Results of Lead Exposure Pathways (Residential)
 Based on Lead Concentrations using
 EPA Region 9 Preliminary Remediation Goal



Exposure Scenario	Target Risk Level	SSTL	Maximum Site Concentration	Result
Lead				
Volatilization from subsurface soil to indoor air	1x10 ⁻⁵	NA	NA	NA
Volatilization from groundwater to indoor air	1x10 ⁻⁵	NA	NA	NA
Ingestion/ Inhalation/ dermal contact with surficial soil	1x10 ⁻⁶	400 mg/kg (EPA PRG)	480 mg/kg	Maximum site concentration exceeds SSTL.
SSTL = Site Specific Target Level NA = Not applicable				

The results of the risk screening indicate that petroleum hydrocarbon concentrations in site soil and groundwater do not exceed the site-specific target levels in the Oakland risk-based corrective action guidance document. This suggests that residual hydrocarbons onsite and immediately adjacent to the site do not pose a significant risk to human health. However, the lead concentrations in one shallow soil sample (480 mg/kg in F4-2' located 2 ft bgs) slightly exceeded the EPA PRG risk screening criteria of 400 mg/kg. The removal of this shallow lead-bearing soil is the focus of the limited excavation described below.

ONSITE SOIL AND GROUNDWATER REMEDIATION

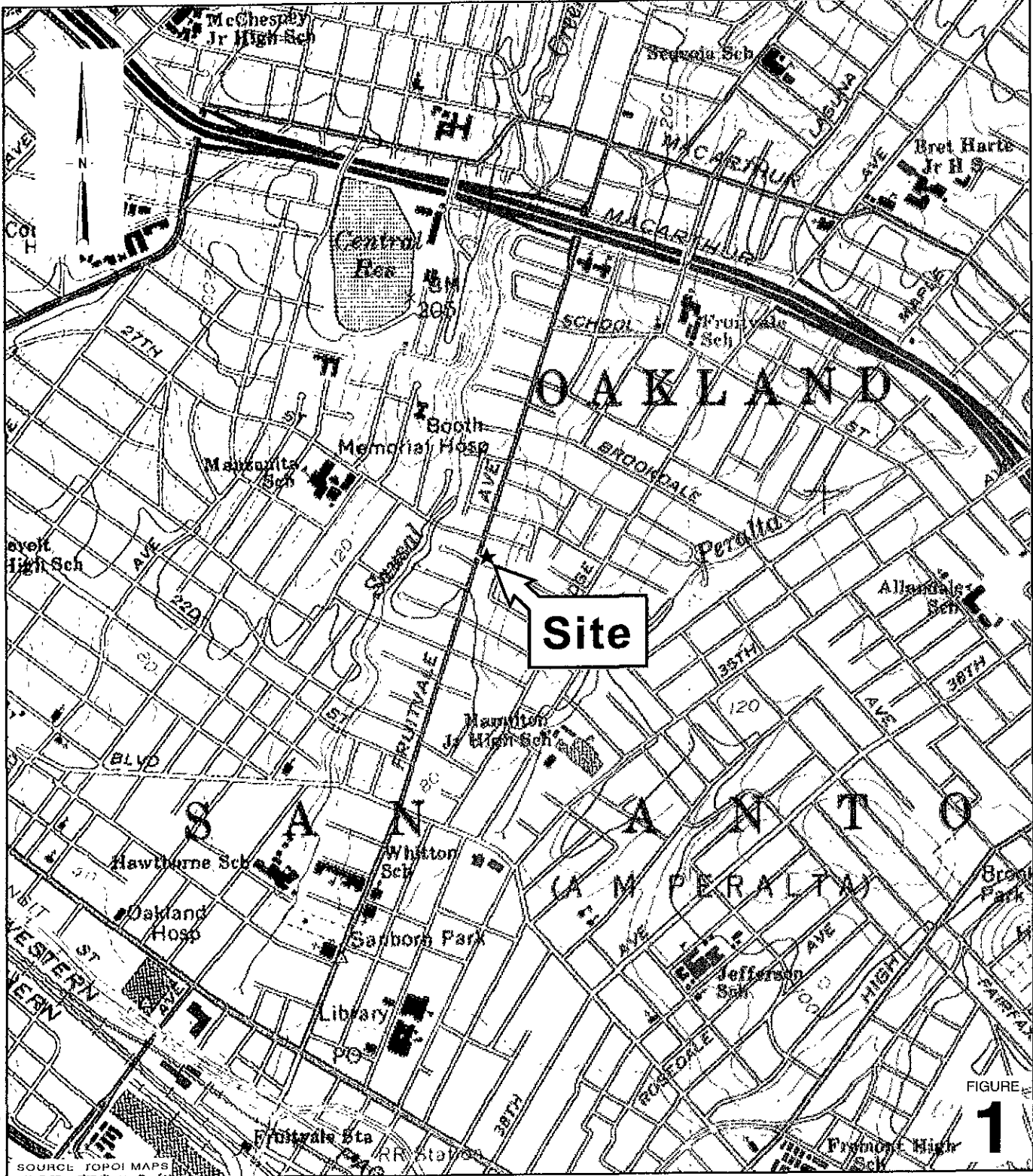
To facilitate site development and case closure, Cambria completed the onsite remedial tasks described in the *Remediation Workplan* dated September 17, 2001. The ACHCSA approved this workplan on September 24, 2001. In a letter dated September 27, 2001, the ACHCSA revised the workplan approval, authorizing closure of onsite well MW-F2 in addition to onsite wells MW-F1 and MW-F3. The ACHCSA letters are included in Appendix C. The procedures, results, and conclusions of the limited soil excavation, ORC treatment trench installation, and well closure are described below.

Limited Soil Excavation

To remove shallow soil impacted by lead and hydrocarbons, Cambria coordinated the excavation of soil near the middle of the site. The excavation targeted lead concentrations (480 mg/kg) detected at 2 ft below grade surface (bgs) in shallow soil sample F4-2'. The remedial goal was the USEPA Preliminary Remediation Goal (PRG) of 400 mg/kg for lead remediation. Excavation also was designed to remove soil impacted by total petroleum hydrocarbons as motor oil (940 mg/kg TPHmo), also detected in sample F4-2'. The 940 mg/kg TPHmo concentration exceeded nuisance thresholds.

Cambria excavated an area approximately 5 ft long by 5 ft wide by 3 ft deep (approximately 10 cubic yards, or 15 tons, of impacted soil) around sample location F4-2'. Field observations (odors, discoloration) were used to determine the need for any additional immediate soil excavation. Excavated soil was stockpiled onsite pending analysis and appropriate offsite disposal. After initial excavation activities, confirmation soil samples were collected from the pit excavation sidewalls (samples TP-1 through TP-4) and bottom (sample TP-5), and submitted for analysis. Laboratory analytical reports are presented in Appendix D. Field data sheets are presented as Appendix E.

Soil analytical data from the excavation sampling is summarized in Table 1. As shown in Table 1, no residual hydrocarbons were detected in the confirmation samples from the sidewalls or bottom of the excavation. Lead was detected in confirmation samples at concentrations ranging from 7.3 to 28 mg/kg, well below the PRG of 400 mg/kg. The detected lead concentrations are likely due to background lead in site soil. Additional details of the limited soil excavation are described below in the section entitled *Field Activity Details of Excavation and ORC Treatment Trench Installation*.



CITY OF OAKLAND 2662 FRUITVALE AVENUE VICINITY-MAP A1

FIGURE 1

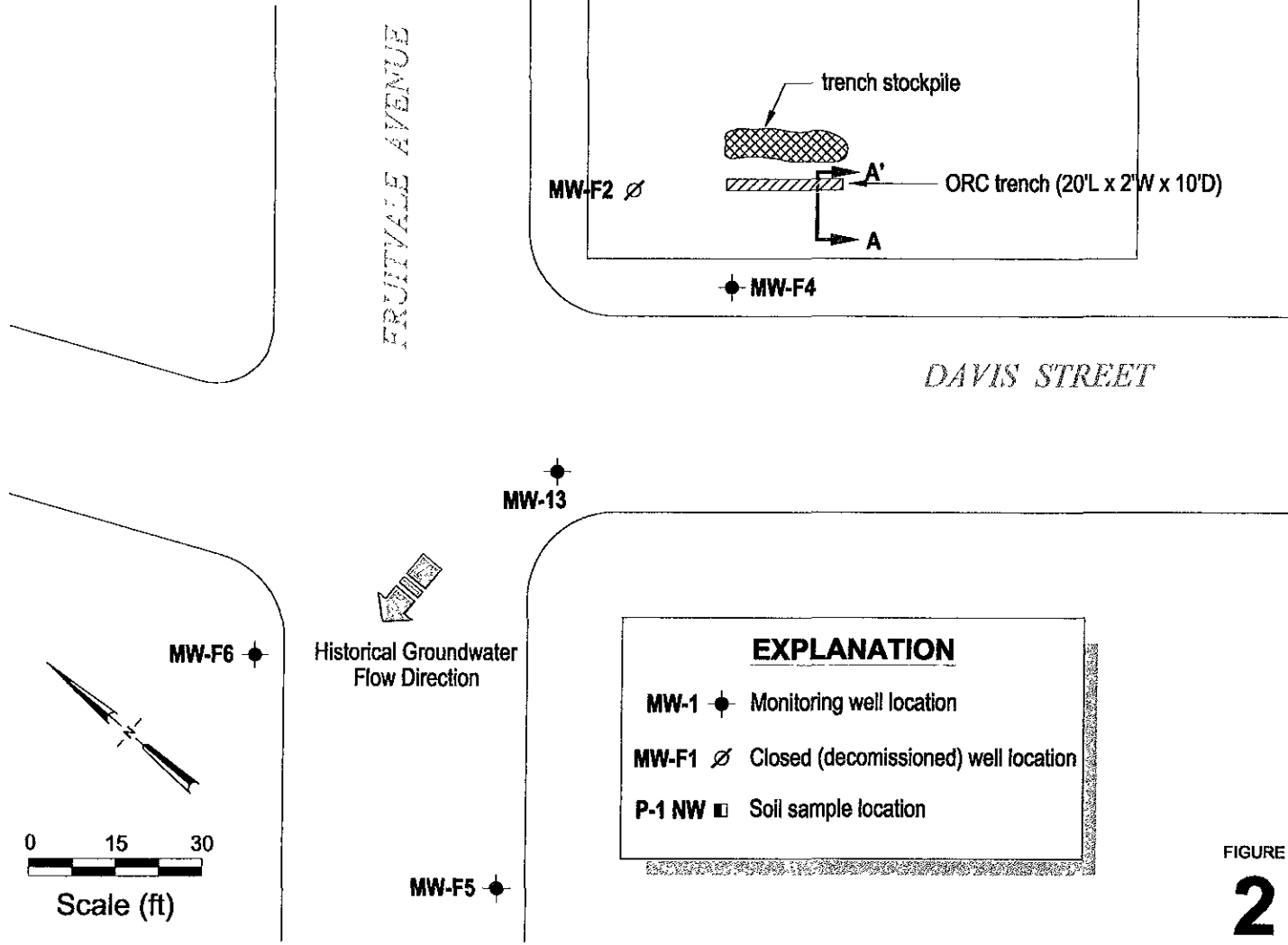
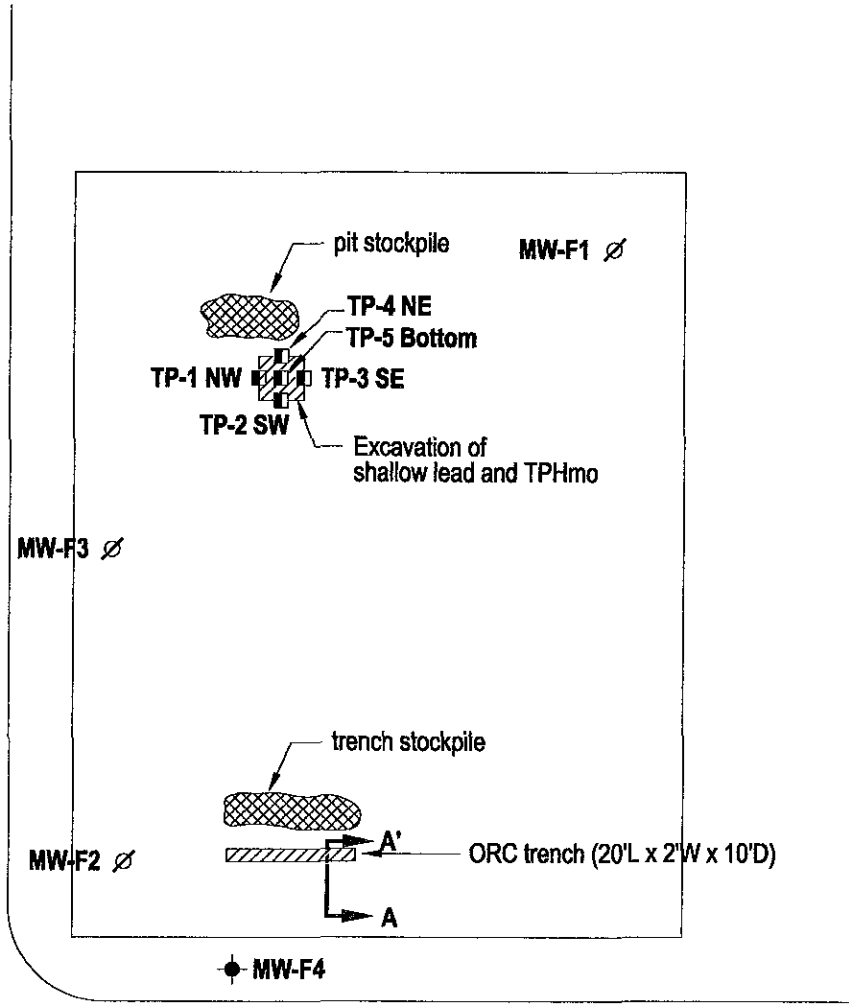
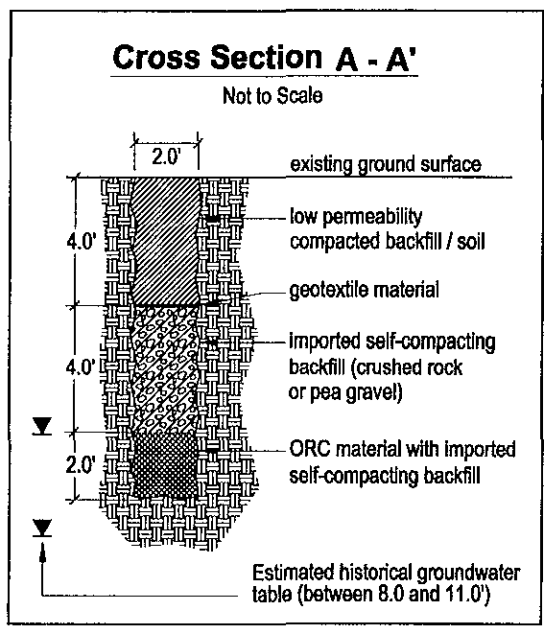
0 1/8 1/4 1/2 1
SCALE : 1" = 1/4 MILE

City of Oakland
2662 Fruitvale Avenue
Oakland, California



C A M B R I A

Vicinity Map



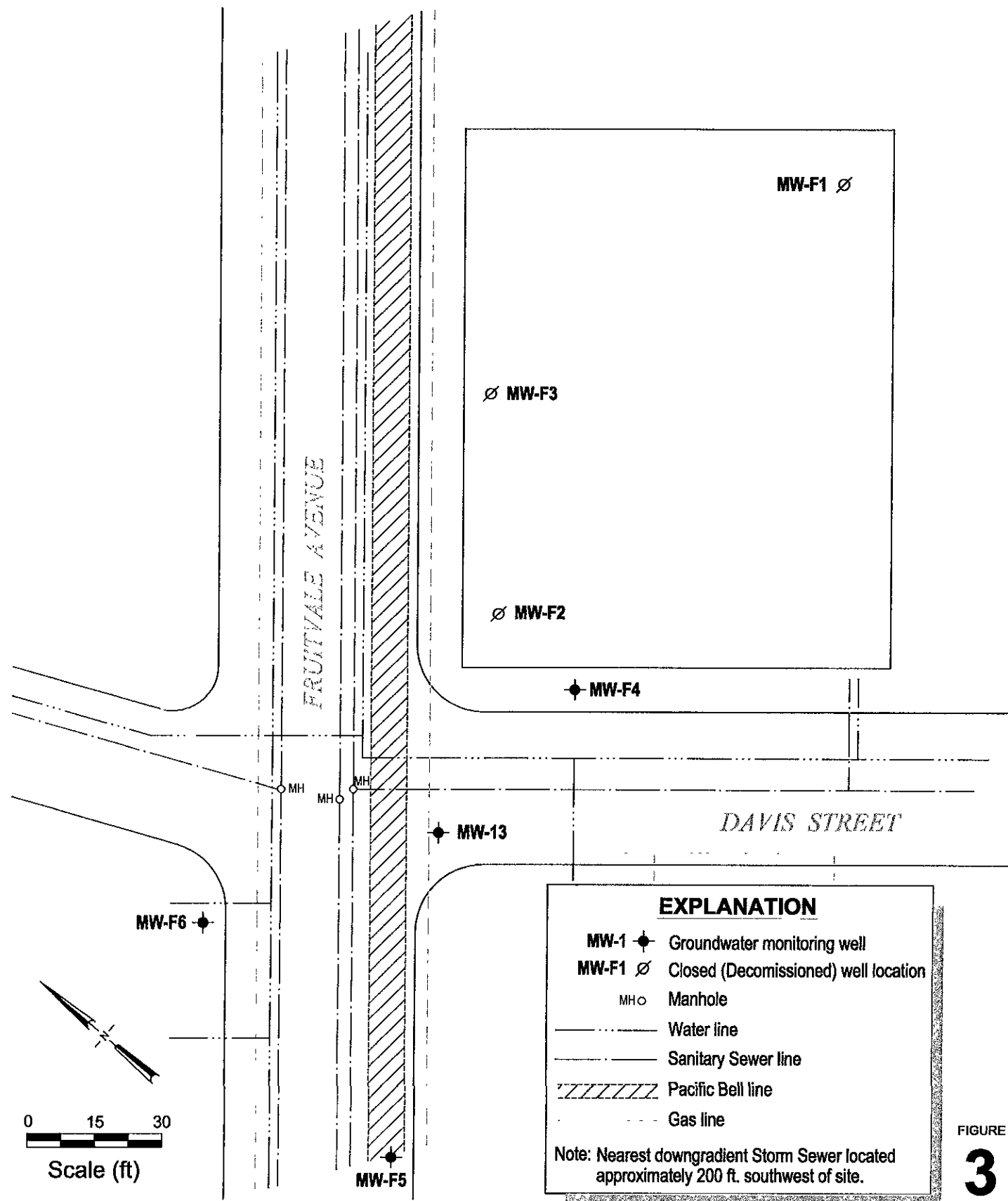
EXPLANATION	
MW-1 ●	Monitoring well location
MW-F1 ∅	Closed (decommissioned) well location
P-1 NW ■	Soil sample location

FIGURE
2

H:\CITY OF OAKLAND\2002 FRUITVALE\FIGURE\EXC-LOC.DWG



H:\CITY OF OAKLAND\3662 FRUITVALE\FIGURES\UTILITIES.DWG



EXPLANATION

- MW-1 ⊕ Groundwater monitoring well
- MW-F1 ∅ Closed (Decommissioned) well location
- MH ∅ Manhole
- Water line
- - - Sanitary Sewer line
- //// Pacific Bell line
- ⋯ Gas line

Note: Nearest downgradient Storm Sewer located approximately 200 ft. southwest of site.

FIGURE 3

City of Oakland
 2662 Fruitvale Avenue
 Oakland, California



C A M B R I A

Underground Utility Locations

CAMBRIA

Table 1. Soil Analytical Data - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Sample ID	Date Sampled	Sample Depth (ft)	TPHg	TPHk	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	Lead
			← mg/kg →							
<i>Confirmation Samples</i>										
TP-1 NW	11/28/01	1.5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	10
TP-2 SW	11/28/01	1.5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	7.3
TP-3 SE	11/28/01	1.5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	28
TP-4 NE	11/28/01	1.5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	8
TP-5 bottom	11/28/01	3.0	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	7.4
<i>Stockpile Samples</i>										
SP 1-4	11/28/01	---	<1.0	4.0	65	<0.005	<0.005	<0.005	<0.005	15
ST 1-6	11/28/01	---	33	28	5.3	<0.005	<0.005	<0.005	<0.005	9.4

Abbreviations and Methods:

mg/kg = Milligrams per kilogram, equivalent to parts per million (ppm)
 TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015
 TPHk = Total petroleum hydrocarbons as kerosene by EPA Method 8015
 TPHmo = Total petroleum hydrocarbons as motor oil by EPA Method 8015
 Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020
 Lead by EPA Method 6010

CAMBRIA

Table 2. Door-to-Door Receptor Survey - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Address	Date	Interviewed occupant	Left Questionnaire	Mailed Questionnaire	Any Wells or Basement?
<i>East side of Fruitvale Avenue</i>					
2604 Fruitvale Ave	11/28/01	---	Yes	---	Left on doorstep - no response
2608 Fruitvale Ave	11/30/01	---	---	Yes	No response
2614 Fruitvale Ave.	11/28/01	Yes	---	---	No known wells or basement
2616 Fruitvale Ave	11/30/01	---	---	Yes	No response
2618 Fruitvale Ave	11/30/01	---	---	Yes	No response
2620 Fruitvale Ave.	11/30/01	---	---	Yes	No response
2622 Fruitvale Ave	11/30/01	---	---	Yes	No response
2624 Fruitvale Ave	11/28/01	Yes	---	---	No known wells or basement
2670 Fruitvale Ave	11/30/01	---	---	Yes	No response
2672 Fruitvale Ave	11/30/01	---	---	Yes	No response
2672A Fruitvale Ave	11/30/01	---	---	Yes	No response
2676 Fruitvale Ave	11/28/01	---	Yes	---	No known wells or basement
2678 Fruitvale Ave	11/30/01	---	---	Yes	No response
2682 Fruitvale Ave.	11/30/01	---	---	Yes	No response
2700 Fruitvale Ave.	11/30/01	---	---	Yes	No response
2702 Fruitvale Ave	11/28/01	---	Yes	---	Left on doorstep - no response
2704 Fruitvale Ave.	11/30/01	---	---	Yes	No response
2708 Fruitvale Ave.	11/28/01	---	Yes	---	Left with occupant - no response
2710 Fruitvale Ave	11/30/01	---	---	Yes	No response
2712 Fruitvale Ave.	11/30/01	---	---	Yes	No response
<i>West side of Fruitvale Avenue</i>					
2603 Fruitvale Ave.	11/28/01	---	Yes	---	Left with occupant - no response
2615 Fruitvale Ave	11/30/01	---	---	Yes	No response
2617 Fruitvale Ave	11/30/01	---	---	Yes	No response
2621 Fruitvale Ave.	11/28/01	Yes	---	---	No known wells or basement
2655 Fruitvale Ave	11/30/01	---	---	Yes	No response
2681 Fruitvale Ave.	11/30/01	---	---	Yes	No response
2701 Fruitvale Ave	11/30/01	---	---	Yes	No response
2703 Fruitvale Ave	11/28/01	Yes	---	---	No known wells or basement
2707 Fruitvale Ave	11/30/01	---	Yes	---	Apartment manager - no response
2709 Fruitvale Ave.	11/30/01	---	---	---	Apt. - see 2709 Fruitvale Ave.
2711 Fruitvale Ave	11/30/01	---	---	---	Apt. - see 2709 Fruitvale Ave
2715 Fruitvale Ave	11/30/01	---	---	---	Apt. - see 2709 Fruitvale Ave.
2717 Fruitvale Ave.	11/30/01	---	---	---	Apt. - see 2709 Fruitvale Ave.
2719 Fruitvale Ave	11/30/01	---	---	---	Apt. - see 2709 Fruitvale Ave

CAMBRIA

Table 2. Door-to-Door Receptor Survey - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Address	Date	Interviewed occupant	Left Questionnaire	Mailed Questionnaire	Any Wells or Basement?
<i>North side of East 27th Street</i>					
3110 East 27th Street	11/30/01	---	---	Yes	No response
3114 East 27th Street	11/28/01	Yes	---	---	No known wells or basement
3118 East 27th Street	11/30/01	---	---	Yes	No response
3128 East 27th Street	11/30/01	---	---	Yes	No response
3140 East 27th Street	11/30/01	---	---	Yes	No response

South side of East 27th Street

3115 East 27th Street	11/30/01	---	---	Yes	No response
3121 East 27th Street	11/30/01	---	---	Yes	No response
3129 East 27th Street	11/30/01	---	---	Yes	No response
3135 East 27th Street	11/30/01	---	---	Yes	No response
3145 East 27th Street	11/28/01	---	---	Yes	No response

North side of Davis Street

3038 Davis Street	11/28/01	Yes	---	---	No known wells or basement
3050 Davis Street	11/28/01	---	Yes	---	Apartment manager - no response
3052 Davis Street	11/28/01	---	---	---	Apt. - see 3050 Davis St.
3054 Davis Street	11/28/01	---	---	---	Apt. - see 3050 Davis St.
3056 Davis Street	11/28/01	---	---	---	Apt. - see 3050 Davis St.
3058 Davis Street	11/28/01	---	---	---	Apt. - see 3050 Davis St.
3118 Davis Street	11/28/01	Yes	---	---	No known wells or basement
3124 Davis Street	11/30/01	---	Yes	---	Left on doorstep - no response
3132 Davis Street	11/30/01	---	---	Yes	No response
3142 Davis Street	11/28/01	Yes	---	---	No known wells or basement

South side of Davis Street

3043 Davis Street	11/28/01	Yes	---	---	No known wells or basement
3049 Davis Street	11/30/01	---	---	Yes	Apartment manager - no response
3051 Davis Street	11/30/01	---	---	Yes	Apt. - see 3049 Davis St.
3053 Davis Street	11/30/01	---	---	Yes	Apt. - see 3049 Davis St.
3055 Davis Street	11/30/01	---	---	Yes	Apt. - see 3049 Davis St.
3115 Davis Street	11/30/01	---	---	Yes	Apartment - no response
3117 Davis Street	11/30/01	---	---	Yes	Apartment - no response
3119 Davis Street	11/30/01	---	---	Yes	Apartment - no response
3121 Davis Street	11/30/01	---	---	Yes	Apartment - no response
3123 Davis Street	11/28/01	Yes	---	---	No known wells or basement

East side of Prentiss Place

2630 Prentiss Place	11/30/01	---	---	Yes	No response
2634 Prentiss Place	11/30/01	---	---	Yes	No response

West side of Prentiss Place

2631 Prentiss Place	11/30/01	---	---	Yes	No response
2637 Prentiss Place	11/30/01	---	---	Yes	No response

CAMBRIA

Table 2. Door-to-Door Receptor Survey - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

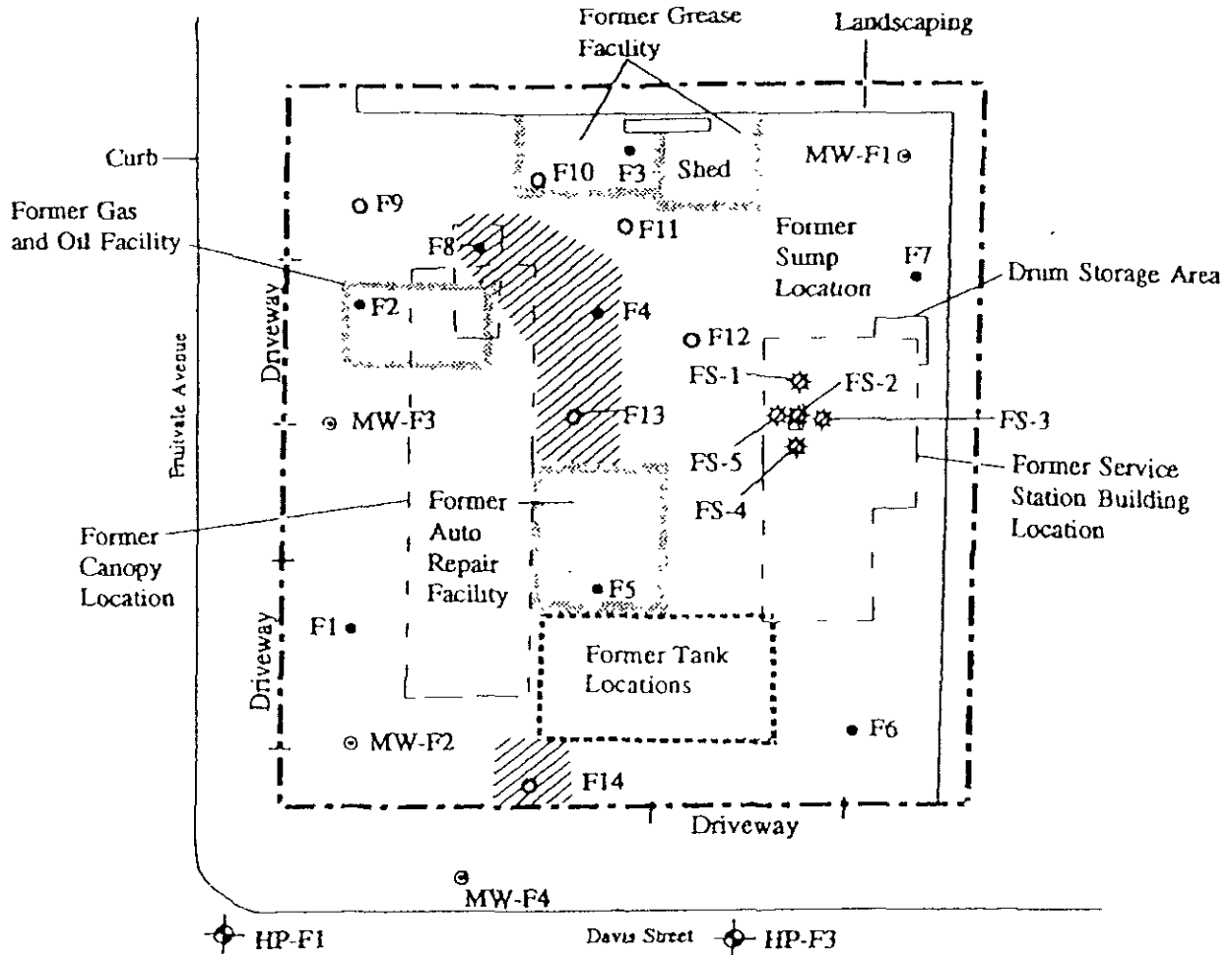
Address	Date	Interviewed occupant	Left Questionnaire	Mailed Questionnaire	Any Wells or Basement?
2639 Prentiss Place	11/30/01	---	---	Yes	No response
2645 Prentiss Place	11/30/01	---	Yes	---	Left on doorstep - no response
<i>North side of Bloom Street</i>					
3070 Bloom Street	11/30/01	---	---	Yes	No response
3072 Bloom Street	11/30/01	---	---	Yes	No response

Appendix A


Soil and Groundwater Data from Site Investigations



SITE PLAN

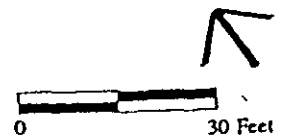
Figure 2



Legend

-  Areas with Elevated TPH Concentrations
- F1 to F8 • Soil Boring Location - Phase II
- F9 to F14 ○ Soil Boring Location - Phase III
- FS-1 ✱ Sump Area Boring Location
- MW-F2 ⊙ Monitoring Well Location

- HP-F1  Temporary Well Location
-  Project Site Boundary



**2662 Fruitvale Avenue
Oakland, California**

BASELINE

TABLE 1
 SUMMARY OF ANALYTICAL RESULTS, SOIL
 2662 Fruitvale Avenue
 Oakland, California
 (mg/kg, unless indicated)

Sample Location	Sample Date	Depth (feet)	TPH as Gasoline ¹	TPH as Kerosene ²	TPH as Motor Oil ²	Total/ Nonpolar Oil & Grease ³	Benzene ⁴	Toluene ⁴	Ethylbenzene ⁴	Xylenes ⁴
<u>Soil Borings</u>										
F1	1-20-93	2.0 ⁵	<1	<1.0	<10	--	<0.005	<0.005	<0.005	<0.005
		9.5 ⁵	6	<1.0	<10	--	<0.005	<0.005	0.014	<0.005
		11.0 ⁵	66	<1.0	<10	--	<0.005	0.072	0.260	<0.005
F2	1-21-93	2.0 ⁵	<1	<1.0	11	--	<0.005	<0.005	<0.005	<0.005
		8.0 ⁵	1.1	<1.0	<10	--	<0.005	<0.005	<0.005	<0.005
F3	1-20-93	2.0	--	<1.0	<10	--/50	--	--	--	--
		8.0	--	<1.0	14	--/300	--	--	--	--
F4	1-20-93	2.0 ⁶	3.7 ¹	<5.0	940 ⁵	--	<0.005	<0.005	0.0064	<0.005
		10.0 ⁵	15	<1.0	<10	--	<0.005	<0.005	0.320	<0.005
F5	1-20-93	2.0 ^{7,8}	<1	<1.0	<10	--	<0.005	<0.005	<0.005	<0.005
		8.0 ^{7,8}	<1	<1.0	<10	--	<0.005	<0.005	<0.005	<0.005
F6	1-21-93	2.0 ^{1,9}	--	<1.0	<10	--	<0.005	<0.005	<0.005	<0.005
		8.0 ^{6,8}	--	<1.0	<10	--	<0.005	<0.005	<0.005	<0.005
F7	1-20-93	2.0 ^{7,8}	--	<1.0	13	--	<0.005	<0.005	<0.005	<0.005
		8.5 ^{7,8}	--	<1.0	<10	--	<0.005	<0.005	<0.005	<0.005
F8	1-20-93	2.0 ⁵	220	<1.0	44	--	<0.005	<0.005	3.400	17.000 ⁵
		8.5 ⁵	810	<1.0	<10	--	<0.005	<0.005	5.400	<0.005
F9	8-10-93	3.0 ¹⁰	<1	<1	<30	--	<0.005	<0.005	<0.005	<0.005
		9.5 ¹⁰	10	76	<30	--	<0.005	<0.005	0.052	0.042
F10	8-10-93	3.0 ¹⁰	<1	<1	<30	--/50	<0.005	<0.005	<0.005	<0.005
		10.0 ¹⁰	30	33	<30	--/50	<0.005	<0.005	0.073	0.250

(Continued)

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Table I - Summary of Analytical Results, Soil (continued)

Sample Location	Sample Date	Depth (feet)	TPH as Gasoline ¹	TPH as Kerosene ²	TPH as Motor Oil ²	Total/ Nonpolar Oil & Grease ²	Benzene ⁴	Toluene ⁴	Ethyl-benzene ⁴	Xylenes ⁴
F11	8-10-93	2.5 ¹⁰	<1	2	<30	--/ <50	<0.005	<0.005	<0.005	<0.005
		10.0 ¹⁰	2	6	<30	--/ <50	<0.005	0.012	<0.005	0.009
F12	8-10-93	2.5 ¹⁰	2	2	<30	--	<0.005	0.007	<0.005	<0.005
		9.5 ¹⁰	2	<1	<30	--	<0.005	<0.005	<0.005	<0.005
F13	8-10-93	3.0 ¹⁰	230	12	90	--	<0.030	0.75	0.55	1.5
		9.5 ¹⁰	1,500	650 S	<30	--	<0.200	3.7 S	8.8 S	8.1
F14	8-10-93	3.0 ¹⁰	<1	<1	<30	--	<0.005	<0.005	<0.005	<0.005
		10.5 ¹⁰	1,600 S	150	<30	--	0.3 S	3.1	5.7	6.0
F-S1	9-8-94	5.5	--	--	--	<50/ <50	--	--	--	--
F-S2	9-8-94	6.0 ^{4,11}	<1	--	650	--/1,600	<0.005	<0.005	<0.005	<0.005
		11.0 ^{4,11}	<1	--	<10	--/ <50	<0.005	<0.005	<0.005	<0.005
F-S3	9-8-94	5.5	--	--	--	<50/ <50	--	--	--	--
F-S4	9-8-94	4.5	--	--	--	<50/ <50	--	--	--	--
F-S5	9-8-94	5.5	--	--	--	210/200	--	--	--	--
<u>Monitoring Wells</u>										
MW-F1	8-11-93	3.0 ¹⁰	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
		10.0 ¹⁰	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
MW-F2	8-10-93	3.0 ¹⁰	<1	<1	<30	--	<0.005	<0.005	<0.005	<0.005
		12.0 ¹⁰	<1	3	<30	--	<0.005	<0.005	<0.005	<0.005
MW-F3	8-11-93	3.0 ¹⁰	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
		10.0 ¹⁰	33	--	<10	--	<0.015	<0.015	0.077	<0.005
MW-F4	9-7-94	9.5	<1	37 ¹³	<30	--	<0.005	<0.005	<0.005	<0.005
		11.0	W 2,100 ^{12,13}	420 ¹³ W	<300	--	1.7 ¹² W	11 ¹² W	66 ¹² W	230 ¹² W

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Table 1 - Summary of Analytical Results, Soil (continued)

Sample Location	Sample Date	Depth (feet)	TPH as Gasoline ¹	TPH as Kerosene ¹	TPH as Motor Oil ²	Total/Nonpolar Oil & Grease ³	Benzene ⁴	Toluene ⁴	Ethylbenzene ⁴	Xylenes ⁴
MW-F5	4-27-95	5.0 ¹⁴	<1	--	--	--	<0.005	<0.005	<0.005	<0.005
		9.5	<1	--	--	--	<0.005	<0.005	<0.005	<0.005
MW-F6	6-26-95	5.0	<1	--	--	--	<0.005	<0.005	<0.005	<0.005
		11.0	<1	--	--	--	<0.005	<0.005	<0.005	<0.005

Notes: <x.x = Compound not identified above detection limits.
 x.x = Bold values indicate compound identified above detection limits.
 -- = Compound not analyzed.
 TPH = Total Petroleum Hydrocarbons.
 Sample locations are shown on Figure 2.
 Laboratory reports for April and June 1995 samples are included in Appendix D.
 TTLC = Total threshold limit concentration.
 STLC = Soluble threshold limit concentration.

¹ Test Method = DOHS Method/LUFT, EPA 5030/8015.

² Test Method = DOHS Method/LUFT, EPA 3550/8015.

³ Test Method = SMWW 17:5520EF for total and 5520E&F for nonpolar.

⁴ Test Method = EPA 5030/8020.

⁵ Sample also analyzed for lead; lead concentration less than TTLC and less than ten times STLC.

⁶ Sample also analyzed for lead; lead concentration (480 mg/kg) less than TTLC, and greater than ten times STLC; soluble lead concentration (1.1 mg/L) less than STLC.

⁷ Sample also analyzed for Title 26 metals; all metal concentrations less than TTLC and less than ten times STLC.

⁸ Sample also analyzed for volatile organic compounds (EPA 8240); no compounds detected above reporting limits.

⁹ Sample also analyzed for Title 26 metals; lead concentration (120 mg/kg) less than TTLC, and greater than ten times STLC; soluble lead concentration (0.6 mg/L) less than STLC.

¹⁰ Sample also analyzed for halogenated hydrocarbons (EPA 8010); no compounds detected above reporting limits.

¹¹ Sample also analyzed for soluble lead; soluble lead not identified above reporting limits.

¹² Results obtained past the recommended holding time.

¹³ Sample chromatogram does not match the pattern of the standard.

¹⁴ Unknown compound (0.53 mg/kg) was identified outside the gasoline range, as reported by the laboratory

TABLE 2
SUMMARY OF ANALYTICAL RESULTS, GROUNDWATER
2662 Fruitvale Avenue
Oakland, California
(mg/L)

Sample Location	Sample Date	TPH as Gasoline ¹	TPH as Motor Oil ²	Benzene ³	Toluene ³	Ethylbenzene ³	Xylenes ³
<u>Monitoring Wells</u>							
MW-F1	08-16-93 ⁴	<0.05	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	06-30-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-F2	08-16-93 ⁴	<0.05	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	0.096	--	<0.0005	<0.0005	<0.0005	<0.0005
	06-30-95	0.34	--	<0.0005	<0.0005	<0.0005	0.0005
MW-F3	08-16-93 ⁴	<0.1	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	0.13	--	<0.0005	0.0013	<0.0005	<0.0005
	06-30-95	0.11	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-F4	09-09-94	3.4-3.5	--	0.029/0.028	0.0030/0.0028	0.038/0.033	0.094/0.099
	12-21-94	37	--	0.66	<0.1	2.3	5.9
	06-30-95	9.2	--	0.18	0.019	0.76	1.0
MW-F5	06-30-95	0.10	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-F6	06-30-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-13	12-21-94	3.3	--	0.33	<0.013	0.024	0.24
	06-30-95	22	--	0.85	<0.0005	1.2	1.6

Table 2 - Summary of Analytical Results, Groundwater (continued)

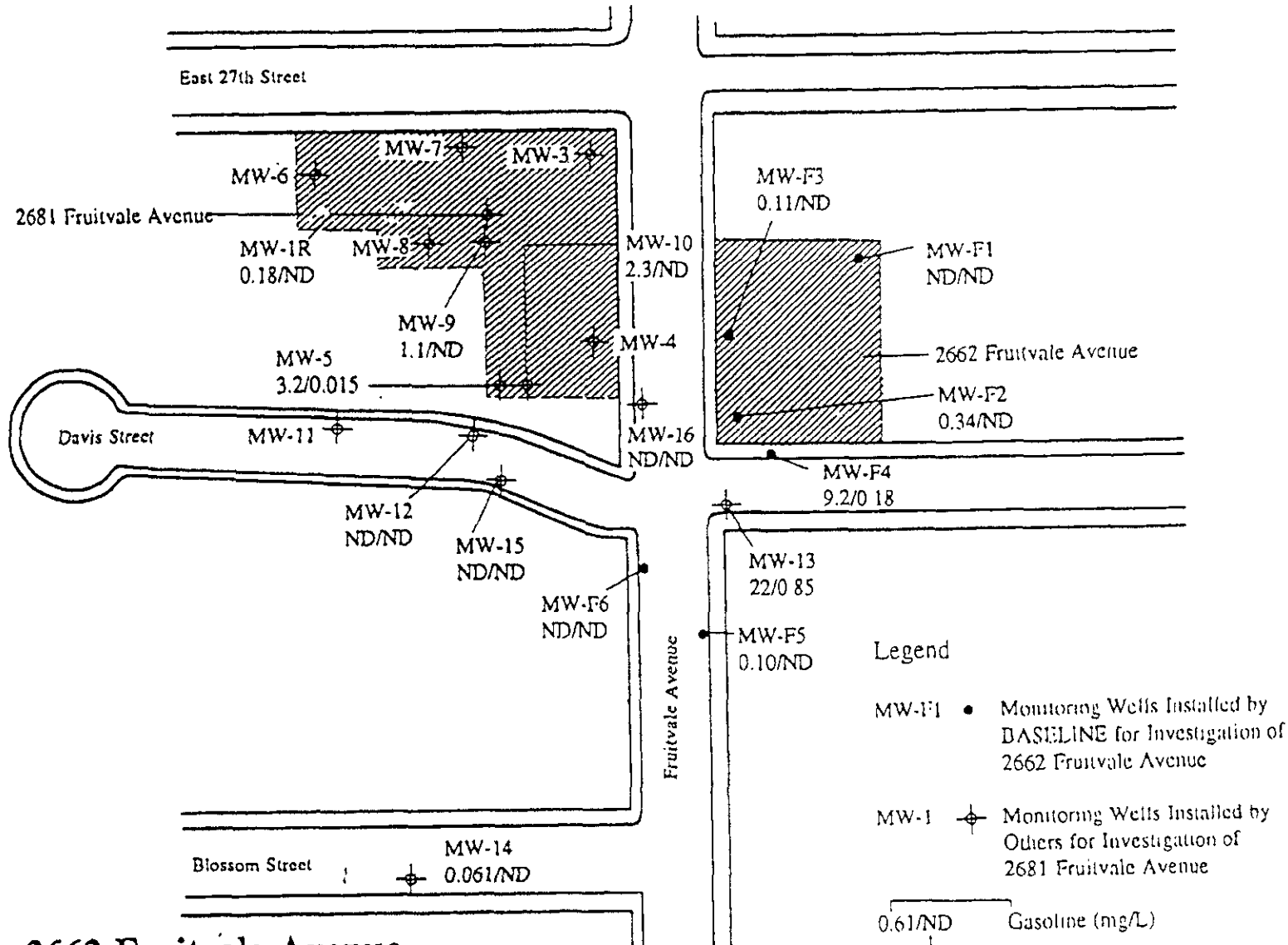
Sample Location	Sample Date	TPH as Gasoline ¹	TPH as Motor Oil ²	Benzene ³	Toluene ³	Ethylbenzene ³	Xylenes ³
<u>Soil Borings</u>							
F1 ⁵	1-20-93	13	<0.5	0.61	<0.018	0.83	0.046
F2 ^{5,6}	1-20-93	6.8	<0.5	0.011	<0.002	0.016	<0.002
F5	1-20-93	<0.05	--	--	--	--	--
F7	1-20-93	<0.05	<0.5	--	--	--	--
<u>Hydropunch</u>							
HP-F1	9-09-94	26	--	0.46	0.16	1.5	4.4
HP-F3	9-09-94	0.21	--	0.0009	0.0007	0.0049	0.02
<u>Wells Monitored by Others⁷</u>							
MW-1R	06-30-95	0.18	--	<0.0005	<0.0005	0.0026	0.00069
MW-5	06-30-95	3.2	--	0.015	<0.005	0.02	0.0073
MW-9	06-30-95	1.1	--	<0.002	<0.002	0.041	0.064
MW-10	06-30-95	2.3	--	<0.005	<0.005	0.013	0.011
MS-12	06-30-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-14	06-30-95	0.061	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-15	06-30-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-16	06-30-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005

Notes: <x.x = Compound not identified above reporting limits.
 x.x = Bold values indicate compound identified above reporting limits.
 x.x/x.x = Analytical testing results for duplicate samples.
 -- = Compound not analyzed.
 TPH = Total Petroleum Hydrocarbons.
 Sample locations are shown on Figures 2 and 3.
 Laboratory reports for June 1995 groundwater analyses are included in Appendix D.

- ¹ Test Method = EPA 5030/8015.
- ² Test Method = EPA 3510/8015.
- ³ Test Method = EPA 602 or 624.
- ⁴ Water collected from open boreholes in January 1993
- ⁵ Sample also analyzed for Title 26 metals; all metal concentrations less than STLC.
- ⁶ Sample contained trans-1,3-dichloropropene
- ⁷ Samples collected by Blaine Tech Services, Inc and analyzed by Sequoia Analytical.

Figure 4

PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER - 30 June 1995



2662 Fruitvale Avenue Oakland, California

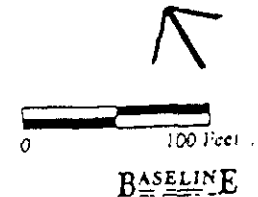
Source: Base Map - Modified from Groundwater Technology, Inc., 1993, Site Plan Map.

92404.DWG 8/1/95 CADD File N

Legend

- MW-F1 • Monitoring Wells Installed by BASELINE for Investigation of 2662 Fruitvale Avenue
- MW-1 ⊕ Monitoring Wells Installed by Others for Investigation of 2681 Fruitvale Avenue

0.61/ND Gasoline (mg/L)
Denzene (mg/L)
(ND = Not Detected)



January 30, 2001

Project No: 97-037

Mr. Joseph Cotton
City of Oakland Environmental Services
250 Frank H. Ogawa Plaza, Suite 5301
Oakland, CA 94612

Results of Semi-Annual Groundwater Monitoring on December 22, 2000
2662 Fruitvale Avenue
Oakland, California

Dear Mr. Cotton:

Innovative Technical Solutions, Inc. (ITSI) is pleased to provide the results of the semi-annual groundwater monitoring performed on December 22, 2000 for the property located at 2662 Fruitvale Avenue in Oakland. Additionally, a discussion of the periodic application of hydrogen peroxide in selected monitoring wells from August through December is provided.

Figure 1 shows the site layout and approximate location of the monitoring wells sampled as part of this semi-annual groundwater monitoring event. The semi-annual groundwater monitoring included monitoring seven monitoring wells, MW-F1 through MW-F6 and MW-13, and sampling five monitoring wells, MW-F2, MW-F4, MW-F5, MW-F6, and MW-13. Monitoring wells MW-F1 and MW-F3 were removed from the semi-annual monitoring program as suggested in the November 18, 1999, letter from Alameda County. Monitoring well MW-F2 was retained to provide an upgradient "background" water quality sample.

The purpose of this groundwater monitoring program is to identify changes in shallow groundwater quality at the site over time, including an evaluation of groundwater conditions that may serve as indicators of intrinsic bioremediation of petroleum hydrocarbons occurring beneath the site. On October 31, 1998, oxygen-releasing compounds (ORC) were placed in the saturated zone along the downgradient property line to enhance natural biodegradation of the petroleum hydrocarbons, and a petroleum hydrocarbon-absorbent sock was placed in MW-13 to recover available free product during this monitoring event. These events were documented in the *Completion Report, Treatment of Groundwater Impacted with Petroleum Hydrocarbons Using Enhanced Natural Bioremediation*, (Innovative Technical Solutions, Inc., December 28, 1998).

Table 1

Groundwater Elevations
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Casing Elevation ¹ (feet)	Date Measured	Product Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Note
MW-F1	104.41	08/16/93	-	11.13	93.28	1
		06/29/94	-	10.38	93.53	1
		09/09/94	-	11.56	92.85	1
		12/21/94	-	8.96	95.45	1
		06/30/95	-	10.49	93.92	1
		12/29/95	-	9.38	95.03	1
		06/27/96	-	10.69	93.72	1
		12/13/96	-	8.55	95.86	1
		06/26/97	-	11.23	93.18	
		03/11/98	-	8.73	95.68	
		12/11/98	-	9.38	95.03	
		06/29/99	-	10.87	93.54	
		01/21/00	-	9.42	94.99	
		06/27/00	-	9.92	94.49	
12/22/00	-	9.91	94.50			
MW-F2	102.22	08/16/93	-	12.15	90.07	1
		06/29/94	-	11.74	90.48	1
		09/09/94	-	12.21	90.01	1
		12/21/94	-	10.34	91.88	1
		06/30/95	-	11.32	90.90	1
		12/29/95	-	9.94	92.28	1
		06/27/96	-	11.51	90.71	1
		12/13/96	-	8.62	93.60	1
		06/26/97	-	11.96	90.26	
		03/11/98	-	7.70	94.52	
		12/11/98	-	10.40	91.82	
		06/29/99	-	11.42	90.80	
		01/21/00	-	10.32	91.9	
		06/27/00	-	10.47	91.75	
12/22/00	-	10.52	91.70			
MW-F3	102.42	08/16/93	-	11.99	90.43	1
		06/29/94	-	11.40	91.02	1
		09/09/94	-	12.39	90.03	1
		12/21/94	-	9.32	93.10	1
		06/30/95	-	11.14	91.28	1
		12/29/95	-	10.08	92.34	1
		06/27/96	-	11.31	91.11	1
		12/13/96	-	8.76	93.66	1
		06/26/97	-	11.85	90.57	
		03/11/98	-	8.82	93.6	
		12/11/98	-	9.61	92.81	
		06/29/99	-	11.25	91.17	
		06/27/00	-	10.28	92.14	
		12/22/00	-	10.24	92.18	

Table 1 (Continued)

Groundwater Elevations
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Casing Elevation ¹ (feet)	Date Measured	Product Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Note
MW-F4	101.56	09/09/94	-	11.21	90.35	1
		12/21/94	-	8.00	93.56	1
		06/30/95	-	10.08	91.48	1
		12/29/95	-	8.52	93.04	1
		06/27/96	-	9.75	91.81	1
		12/13/96	-	6.61	94.95	1
		06/26/97	-	10.94	90.62	
		03/11/98	-	8.40 ²	-	
		12/11/98	-	9.40	92.16	
		06/29/99	-	10.36	91.20	
		01/21/00	-	8.11	93.45	
		06/27/00	-	9.43	92.13	
		10/6/00	-	10.80	90.76	
		11/13/00	-	9.50	92.06	
		12/22/00	-	10.80	90.76	
MW-F5	100.32	06/30/95	-	11.09	89.23	1
		12/29/95	-	9.37	90.95	1
		06/27/96	-	11.33	88.99	1
		12/13/96	-	8.72	91.60	1
		06/26/97	-	11.61	88.71	
		03/11/98	-	8.79	91.53	
		12/11/98	-	9.62	90.70	
		06/29/99	-	11.07	89.25	
		01/21/00	-	9.39	90.93	
		06/27/00	-	10.29	90.03	
		12/22/00	-	9.99	90.33	
		MW-F6	100.11	06/30/95	-	10.96
12/29/95	-			9.84	90.27	1
06/27/96	-			10.98	89.13	1
12/13/96	-			8.44	91.67	1
06/26/97	-			11.35	88.76	
03/11/98	-			8.60	91.51	
12/11/98	-			10.12	89.99	
06/29/99	-			10.96	89.15	
01/21/00	-			9.37	90.74	
06/27/00	-			10.12	89.99	
12/22/00	-			9.85	90.26	

Table 1 (Continued)

Groundwater Elevations
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Casing Elevation ¹ (feet)	Date Measured	Product Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Note
MW-13	101.20	09/09/94	-	12.27	88.93	1
		12/21/94	-	9.32	91.88	1
		06/30/95	-	11.32	89.88	1
		12/29/95	-	9.00	92.20	1
		06/27/96	-	11.49	89.71	1
		12/13/96	-	8.28	92.92	1
		06/26/97	0.02	11.76	89.45 ³	
		03/11/98	0.02	8.11	93.11 ³	
		12/11/98	-	9.30	91.90	
		06/29/99	-	11.08	90.12	
		06/27/00	-	10.48	90.72	
		01/21/00	-	9.22	91.98	
		06/27/00	-	10.48	90.72	
		10/6/00	-	11.19	90.01	
		11/13/00	-	10.50	90.70	
		12/22/00	-	10.31	90.89	

¹ From Table 3, Groundwater Elevation and Gradient Determination Data, February 7, 1997, BASELINE.

² Depth to groundwater not stabilized.

³ Groundwater elevation calculated assuming a specific gravity of 0.75 for product.

Table 2

Summary of Laboratory Results for Groundwater Samples
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-F1	08/16/93	<0.05	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	-	-	-	-	-	-	<0.10	8.5	38	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.1	<0.10	7.7	38	1
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.90	<0.10	11	38	1
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	7.1	38	1
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	30	35	1
	No longer part of semi-annual monitoring program										
MW-F2	08/16/93	<0.05	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	0.096	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	0.34	<0.0005	<0.0005	<0.0005	0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/27/96	0.064	0.0012	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	0.06	<0.0005	<0.0005	<0.0005	<0.0005	-	0.24	0.20	8	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.1	<0.10	<0.05	7.4	1
	03/11/98	0.20	0.00088	<0.0005	<0.0005	<0.0005	4.8	0.18	<0.05	7.1	1
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.25	<0.10	<0.05	7.8	1
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<1.0	<1.0	1
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<0.2	9	1
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	53	<0.10	<1.0	2	1
	12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<1.0	9.9	1
MW-F3	08/16/93	<0.1	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	0.13	<0.0005	0.0013	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	0.11	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	0.35	0.0008	<0.0005	0.0012	0.0007	-	-	-	-	1
	06/27/96	0.088	0.002	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	0.18	<0.0005	<0.0005	<0.0005	<0.0005	-	0.11	0.69	23	1
	6/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.46	0.16	0.70	23	1
	3/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.11	0.20	2.5	28	1
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.31	0.12	0.97	30	1
	6/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	3	38	1
No longer part of semi-annual monitoring program											

Table 2 (Continued)

Summary of Laboratory Results for Groundwater Samples
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-F4	09/09/94*	3.5	0.029	0.003	0.038	0.099	-	-	-	-	1
	12/21/94	37	0.66	28	2.3	5.9	-	-	-	-	1
	06/30/95	9.2	0.18	<0.1	0.76	1.0	-	-	-	-	1
	12/29/95	38	0.61	0.019	4.3	5.8	-	-	-	-	1
	06/27/96	6.2	0.081	0.14	0.52	0.29	-	-	-	-	1
	12/13/96	27	0.39	0.05	3.2	3.7	-	6.6	<0.05	<2	1
	06/26/97	6.2	0.16	0.018	0.71	0.32	2.4	3.1	<0.05	0.2	
	03/11/98	9.5	0.062	0.03	1.0	0.80	1.2	3.0	<0.05	<0.1	
	12/11/98	12	0.34	0.051	2.0	0.62	5.7	5.9	<0.05	1.5	
	06/29/99	10	0.23	0.032	1.8	0.30	0.93	0.90	<1.0	9	
	01/21/00	7.9	0.033	<0.005	1.0	0.25	13	2.7	<0.2	<1.0	
	06/27/00	10	0.08	<0.025	1.1	0.32	160	<0.10	<1.0	<1.0	
	10/6/00	3	0.011	0.0018	0.12	0.069	0.24	<0.10	2.1	38	
	11/13/00	3.9	0.039	0.016	0.84	0.30	0.14	<0.10	<1.0	13	
12/22/00	4.7	0.054	0.0096	0.85	0.34	0.32	0.17	<1.0	11		
MW-F5	06/30/95	0.10	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	0.0007	-	-	-	-	1
	06/27/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	6.6	45	1
	06/26/97	<0.05	0.0032	0.0064	0.00073	0.0042	0.21	<0.1	6.1	45	
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	6.1	45	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.58	0.19	6.0	41	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	23	50	
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.14	<0.10	5.2	42	
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	60	<0.10	20	37	
	12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	23	56	
MW-F6	06/30/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/27/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.10	0.44	39	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.22	0.18	<0.05	47	
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	0.14	49	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.24	0.11	0.06	43	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	0.93	<1.0	54	
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.11	<0.10	0.5	42	
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	10	<0.10	<1.0	9	
	12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.29	0.15	1.1	61	

Table 2 (Continued)

Summary of Laboratory Results for Groundwater Samples
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-13	12/21/94	3.3	0.33	<0.013	0.024	0.24	-	-	-	-	1
	06/30/95	22	0.85	<0.0005	0.12	1.6	-	-	-	-	1
	12/29/95	22	0.97	0.078	0.18	2.4	-	-	-	-	1
	06/27/96	18	0.63	0.026	0.11	1.0	-	-	-	-	1
	12/13/96	16	0.67	0.04	0.12	1.0	-	6.8	<0.05	<2	1
	6/26/97*	11	0.42	0.037	0.64	0.26	7.7	6.9	<0.05	0.3	
	3/11/98*	13	0.30	<0.025	0.60	0.51	4.3	6.7	<0.05	2.3	
	12/11/98	12	0.47	0.048	0.19	0.48	6.6	7.0	<0.05	16	
	06/29/99	7	0.24	0.13	0.44	0.11	1.3	1.3	<1.0	11	
	01/21/00	7.3	0.038	<0.005	0.62	0.22	7.3	6.9	<0.2	<1.0	
	06/27/00	6.1	0.11	<0.025	0.27	0.038	15	<0.10	1	2	
	10/6/00	4.6	0.10	<0.025	0.19	0.036	4.3	3.5	<1	5.4	
	11/13/00	6.0	0.02	0.035	0.47	0.12	4.5	1.4	1.1	1.7	
	12/22/00	9.2	0.27	0.033	0.53	0.12	6.7	6.7	1.0	<1.0	
MCL	-	-	0.001	0.150	0.700	1.75	-	-	-	-	

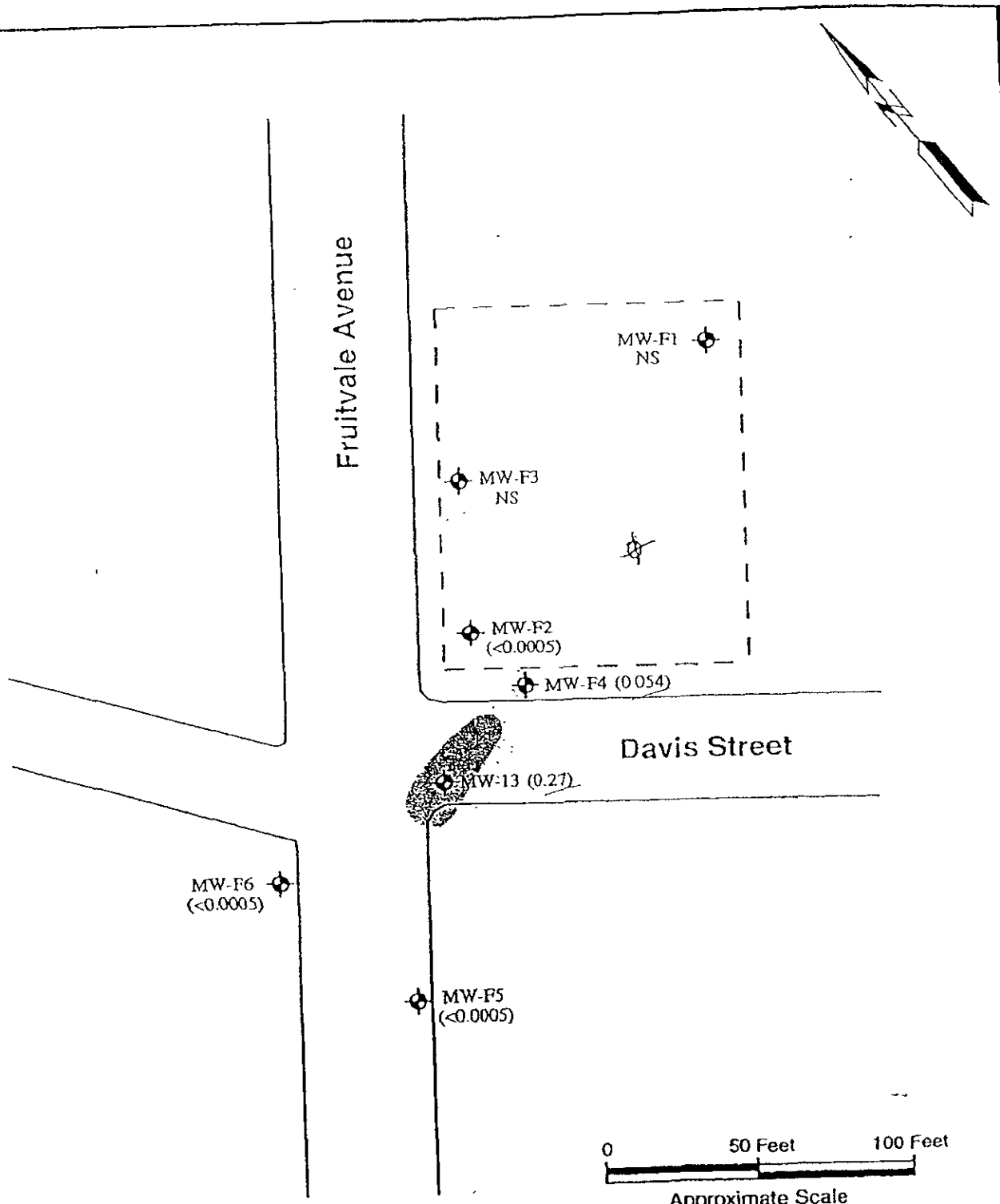
Note: Bold indicates detected concentrations. Shaded indicates concentrations exceeding MCLs.
1) Historical laboratory data provided by Baseline Environmental Consulting.

* Higher concentration reported for either the sample or field duplicate sample (QC/1)

Table 3

Bioremediation Indicator Parameters
2662 Fruitvale Avenue
Oakland, California

Monitoring Well ID	Date	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Dissolved Oxygen (mg/L)	ORP (mV)
MW-F2	1/23/00	<0.10	<0.10	<0.2	9	8.63	121
	6/27/00	53	<0.10	<1.0	2	NA	130
	12/22/00	<0.10	<0.10	<1.0	9.9	9.12	155
MW-F4	1/23/00	13	2.7	<0.2	<1.0	9.19	81
	6/7/00	160	<0.10	<1.0	<1.0	NA	-57
	10/6/00	0.24	<0.10	2.1	38	17.37	283
	11/13/00	0.14	<0.10	<1.0	13	19.23	164
	12/22/00	0.32	0.17	<1.0	11	7.95	164
MW-F5	1/23/00	0.14	<0.10	5.2	42	8.53	189
	6/27/00	60	<0.10	20	37	NA	157
	12/22/00	<0.10	<0.10	23	56	9.69	95
MW-F6	1/23/00	0.11	<0.10	0.5	42	9.17	156
	6/27/00	10	<0.10	<1.0	9	NA	141
	12/22/00	0.29	0.15	1.1	61	8.82	100
MW-13	1/23/00	7.3	6.9	<0.2	<1.0	9.15	87
	6/7/00	15	<0.10	1.0	2	NA	-48
	10/6/00	4.3	3.5	<1.0	5.4	0.80	-36
	11/13/00	4.5	1.4	1.1	1.7	0.06	9.23
	12/22/00	6.7	6.7	1.0	<1.0	8.22	56



Legend

- ⊕ Approximate Location of Monitoring Wells
- 0.035 Concentration of benzene in mg/L
- Benzenes ≥ 0.001 mg/L
- Benzenes ≥ 0.01 mg/L
- Benzenes ≥ 0.1 mg/L

FIGURE 3

**LABORATORY RESULTS FOR
BENZENE FOR SAMPLES COLLECTED ON
DECEMBER 22, 2000**

2662 Fruitvale Avenue
Oakland, California



CITY OF OAKLAND

INNOVATIVE TECHNICAL SOLUTIONS, INC.

Source: Modified from Figure 3, Groundwater Elevation Contour Map, 13 December 1996, BASELINE.

97-0371F e-Graph

Figure 4a: Graph of Historical Concentrations of TPHg in MW-F4 and MW-13

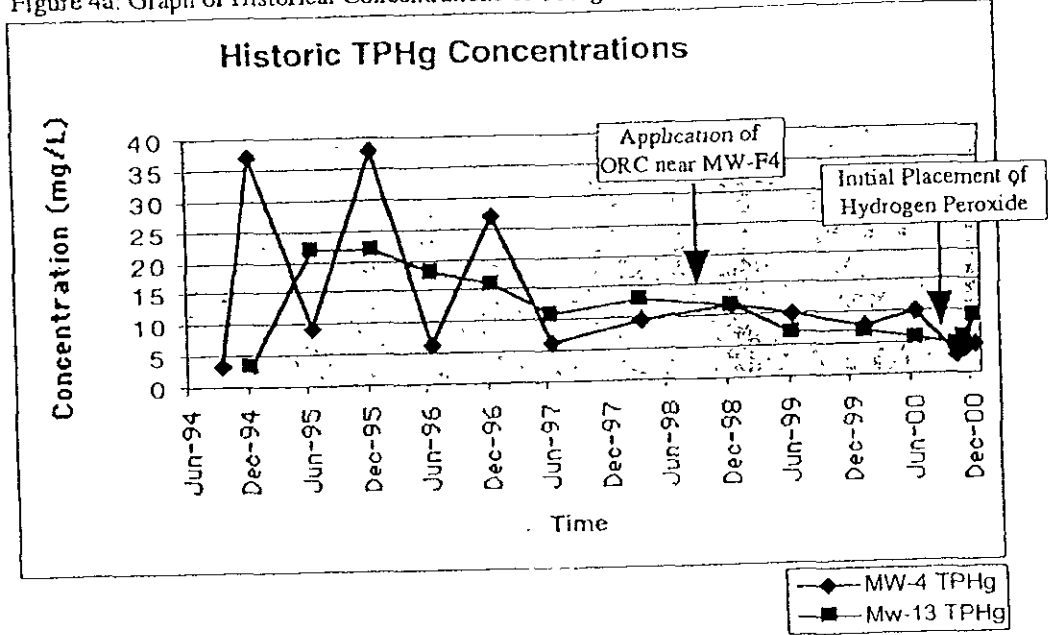


Figure 4b: Graph of Historical Concentrations of TPHg in MW-F4 and MW-13

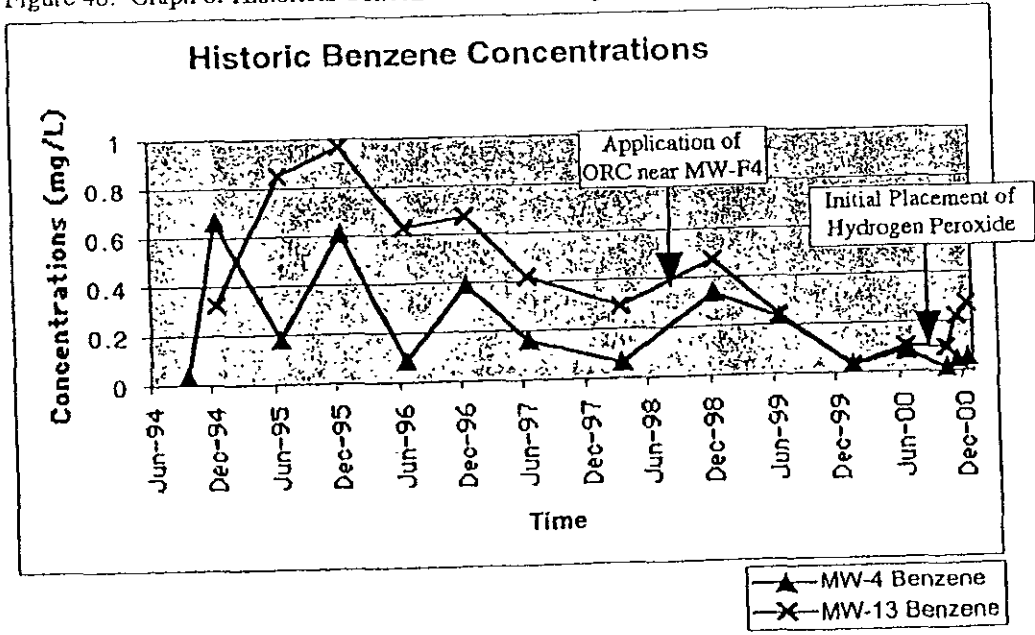


FIGURE 4

GRAPHS OF HISTORICAL CONCENTRATION TRENDS FOR TPHg AND BENZENE

2662 Fruitvale Avenue
 Oakland, California



CITY OF OAKLAND

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Appendix B

Risk Screening Evaluations

C A M B R I A

March 1, 2001

Mr. Joseph Cotton
City of Oakland -Public Works Agency
Environmental Services - Dalziel Building
250 Frank H. Ogawa Plaza, Suite 5301
Oakland CA 94612

Re: **Risk Screening Evaluation**
2662 Fruitvale Avenue
Oakland, California 94621

Dear Mr. Cotton:



Cambria Environmental Technology, Inc. (Cambria) is pleased to provide the City of Oakland (City) with this risk screening evaluation for subsurface compounds at the site referenced above (Site). We understand that the Site was previously occupied by a automobile service station and is to be redeveloped for residential use. This evaluation compares soil and groundwater concentrations primarily to risk-based screening levels in the City of Oakland May 17, 1999 *Oakland Risk-Based Corrective Action: Technical Background Document*. To evaluate lead concentrations in soil, lead concentrations were compared to screening levels in EPA Region 9 Preliminary Remediation Goals. Presented below are a site summary and our risk screening evaluation, conclusions, discussion and recommendations.

SITE SUMMARY

This site summary is based on Cambria's review of the following reports: 1) September 1993 *Phase III Soil and Groundwater Investigation* by Baseline Environmental Consulting (Baseline), 2) September 1995 *Supplemental Groundwater Investigation* by Baseline, and 3) January 30, 2001 *Results of Semi Annual Groundwater Monitoring* by Innovative Technical Solutions, Inc. (ITSI). Previous consultant figures and tables presenting the investigation and analytical data reviewed by Cambria are included as Attachment A.

Site Location and UST Status: The Site is located on the northeast corner of Fruitvale Avenue and Davis Street in Oakland, California. Cambria understands that an automobile service station occupied the Site from the 1940s until 1978. The underground storage tanks (USTs), including three gasoline USTs and one additional UST (presumably used for waste oil storage), were removed from the Site in 1978. The City of Oakland purchased the property from Texaco in 1983.

Oakland, CA
San Ramon, CA
Sonoma, CA
Portland, OR

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Lithology: Vadose zone soils consist primarily of clays. Below approximately 8-10 ft bgs, sands and gravels are encountered. In the north-eastern portion of the site, sands were encountered between 1 and 4 ft bgs in borings MW-F1, F-11, and F-13. The City of Oakland May 17, 1999 *Oakland Risk-Based Corrective Action: Technical Background Document* provides three general categories for soils within the City of Oakland: Merritt sands, sandy silts, and clayey silts. Based on the boring logs included in the reports reviewed by Cambria and on the site location and regional geology, the site soil type is "clayey silt."

Groundwater Depth and Flow Direction: Depth to groundwater is approximately 8 to 11 ft below ground surface (bgs), and groundwater flows towards the west-southwest with an approximate gradient of 0.02 ft/ft.

Contaminants of Concern: Petroleum hydrocarbons have been detected in onsite and offsite soil and groundwater. The petroleum compounds of concern are benzene, toluene, ethylbenzene, and xylenes (BTEX). Lead has been detected in site soil. Tabulated data from the September 1993 *Phase III Soil and Groundwater Investigation Report*, the September 1995 *Supplemental Groundwater Investigation Report* and the January 30, 2001 *Results of Semi-Annual Groundwater Monitoring* are presented in Attachment A.

Contaminant Distribution: Consistent with leakage from former USTs and subsequent migration via groundwater, petroleum hydrocarbons in soil occur primarily at depths of 8 to 11 ft bgs. Potentially elevated concentrations of lead occur in two shallow soil (0 to 3 ft bgs) locations (F-4 and F-6). In groundwater, petroleum hydrocarbons are primarily located offsite (downgradient) beneath the sidewalk (well MW-F4) and Davis Street (MW-13). During the past year (three semi-annual monitoring events), no petroleum hydrocarbons were detected in onsite groundwater.

RISK SCREENING EVALUATION

For the purposes of this evaluation, Cambria assumes no restrictions on future siting of residential buildings within the Site. Areas not within the footprint of any future building are assumed unpaved. Cambria assumes that site groundwater is not a current or potential future drinking water source. This evaluation uses a 1 meter (3.3 ft) bgs cutoff point between surficial and subsurface soil, consistent with the City of Oakland May 17, 1999 *Oakland Risk-Based Corrective Action: Technical Background Document*.

Exposure Scenarios: Based on assumed future site use, potential future residential exposure scenarios would include inhalation of onsite indoor and outdoor air, direct dermal contact with surficial soil, and soil ingestion/particulate inhalation.

Risk Screening Levels: Cambria used risk screening levels for BTEX as published by the City of Oakland in its May 17, 1999 *Oakland Risk-Based Corrective Action: Technical Background Document*. The City of Oakland did not publish a screening level for lead, so we used the EPA Region 9 Preliminary Remediation Goal (PRG) as a screening level. The San Francisco Bay Regional Water Quality Control Board (RWQCB - SFBR) recently published RBSLs for soil and groundwater (August 2000 *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater*, Interim Final) that cover the City of Oakland as well as the San Francisco Bay Area. Cambria confirmed with Dr. Roger Brewer of the RWQCB that the RWQCB-SFBR continues to endorse the City of Oakland risk-based screening levels (RBSLs) and site-specific target levels (SSTLs).

Representative Concentrations: Cambria used maximum detected concentrations for BTEX and lead within each onsite medium: surficial soil (0 to 3.3 ft bgs), subsurface soil (>3.3 ft bgs), and groundwater. The surficial and subsurface soil data sets include all analytical results for onsite soil samples in the reports reviewed by Cambria. The groundwater data set includes analytical results for samples collected from onsite monitoring wells during the past year (semi-annual monitoring events conducted on January 21, 2000, June 27, 2000 and December 22, 2000). To be additionally conservative, Cambria also used maximum concentrations for BTEX within soil and groundwater immediately adjacent the site (from offsite boring MW-F4 and offsite wells MW-F4 and MW-13). For offsite groundwater, Cambria used the maximum concentration detected within the past year (year 2000). Maximum hydrocarbon and lead concentrations are presented below in Tables A and B, respectively.

Comparison to Screening Levels: Table A below presents Cambria's comparison of screening levels and the maximum onsite and offsite hydrocarbon concentrations. Since screening levels for inhalation of indoor air are more restrictive than levels for inhalation of outdoor air, Cambria evaluated inhalation exposure to indoor air only. Table B below presents Cambria's comparison for lead concentrations.

Table A - Results of Hydrocarbon Exposure Pathways (Residential)
Based on Onsite and Offsite Concentrations using
City of Oakland Tier 2 SSTLs for Clayey Silt

Exposure Scenario	Target Risk Level	SSTL	Maximum Site Concentration	Result
Benzene				
Volatilization from subsurface soil to indoor air	1x10 ⁻⁵	3.3 mg/kg	0.3 mg/kg (onsite) 1.7 mg/kg (offsite)	Potential health risk is below target level.
Volatilization from groundwater to indoor air	1x10 ⁻⁵	1.4 mg/l	<0.005 mg/l (onsite) 0.270 mg/l (offsite)	Potential health risk is below target level.
Ingestion/ Inhalation/ dermal contact with surficial soil	1x10 ⁻⁵	19 mg/kg	<0.2 mg/kg	Potential health risk is below target level.
Toluene				
Volatilization from subsurface soil to indoor air	1x10 ⁻⁵	1,600 mg/kg	3.7 mg/kg (onsite) 11 mg/kg (offsite)	Potential health risk is below target level.
Volatilization from groundwater to indoor air	1x10 ⁻⁵	>SOL	<0.005 mg/l (onsite) 0.035 mg/l (offsite)	Potential health risk is below target level.
Ingestion/ Inhalation/ dermal contact with surficial soil	1x10 ⁻⁵	7,100 mg/kg	0.75 mg/kg	Potential health risk is below target level.
Ethylbenzene				
Volatilization from subsurface soil to indoor air	1x10 ⁻⁵	SAT	8.8 mg/kg (onsite) 66 mg/kg (offsite)	Potential health risk is below target level.
Volatilization from groundwater to indoor air	1x10 ⁻⁵	>SOL	<0.005 mg/l (onsite) 1.1 mg/l (offsite)	Potential health risk is below target level.
Ingestion/ Inhalation/ dermal contact with surficial soil	1x10 ⁻⁵	3,900 mg/kg	3.4 mg/kg	Potential health risk is below target level.
Xylenes				
Volatilization from subsurface soil to indoor air	1x10 ⁻⁵	SAT	17 mg/kg (onsite) 230 mg/kg (offsite)	Potential health risk is below target level.
Volatilization from groundwater to indoor air	1x10 ⁻⁵	>SOL	<0.005 mg/l (onsite) 0.34 mg (offsite)	Potential health risk is below target level.
Ingestion/ Inhalation/ dermal contact with surficial soil	1x10 ⁻⁵	53,000 mg/kg	1.5 mg/kg	Potential health risk is below target level.
SSTL = Site Specific Target Level SAT = SSTL exceeds saturated soil concentration of chemical >SOL = SSTL exceeds solubility of chemical in water NA = Not applicable				

Table B - Results of Lead Exposure Pathways (Residential)
Based on Lead Concentrations using
EPA Region 9 Preliminary Remediation Goal

Exposure Scenario	Target Risk Level	SSTL	Maximum Site Concentration	Result
Lead				
Volatilization from subsurface soil to indoor air	1x10 ⁻⁵	NA	NA	NA
Volatilization from groundwater to indoor air	1x10 ⁻⁵	NA	NA	NA
Ingestion/ Inhalation/ dermal contact with surficial soil	1x10 ⁻⁶	400 mg/kg (EPA PRG)	480 mg/kg	Maximum site concentration exceeds SSTL.
SSTL = Site-Specific Target Level NA = Not applicable				

CONCLUSIONS

Petroleum hydrocarbon concentrations in site soil and groundwater do not exceed the site-specific target levels in the Oakland risk-based corrective action guidance document. This suggests that residual hydrocarbons onsite and immediately adjacent to the site do not pose a significant risk to human health. Lead concentrations, however, in one shallow soil sample (480 mg/kg in F4-2' located 2 ft bgs) slightly exceeded the EPA PRG risk screening criteria of 400 mg/kg.

DISCUSSION

Cambria's risk screen evaluation is based primarily on guidance provided by the City of Oakland. During a conversation on February 21, 2001, Mr. Roger Brewer of the RWQCB-SFBR suggested that Cambria use the May 17, 1999 *Oakland Risk-Based Corrective Action: Technical Background Document* for our risk screening. Dr. Roger Brewer is the author of the RWQCB-SFBR guidelines published in its August 2000 *Application of Risk Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater*.

The Oakland guidance document, like the EPA Region 9 PRG document, does not include risk screen levels for total petroleum hydrocarbons (TPH). TPH is a combination of many specific compounds, including compounds like BTEX. Dr. Brewer stated that the TPH risk screening criteria in the RWQCB guidance document are flexible and also reflect nuisance concerns. It is Cambria's opinion that TPH as gasoline (TPHg) concentrations detected in deeper site soil (approximately 10 ft bgs) do not pose a significant human health risk since the BTEX concentrations are below risk screen levels. However, TPHg detected at a concentration of 940 mg/kg (at 2 ft bgs in boring F4), exceeds the TPHg ceiling value of 500 mg/kg, and may pose a potential nuisance. (Ceiling values for TPH in soil and groundwater are recommended to protect against nuisance odors). The detected TPHg in soil has likely partially or fully biodegraded. Residual TPHg could be removed during future site construction grading or foundation preparation. The 940 mg/kg TPHg concentration was detected in the same sample as the lead concentration of concern.

To provide a very conservative risk screening evaluation, Cambria used maximum concentrations in nearby offsite groundwater. A thickness of approximately 0.1 ft of free product has been observed in well MW-13, which is located approximately 40 ft hydraulically downgradient of the site. Free product is limited to offsite well MW-13.

RECOMMENDATIONS

Cambria recommends removal of shallow soil near sample location F4-2', where lead and TPHg were detected. The excavation and removal could be conducted during future site construction grading or foundation preparation. After removal of the shallow lead-bearing and TPHg-bearing soil, additional analyses are recommended to confirm that residual lead concentrations in soil are beneath human health screening levels, and that residual TPHg concentrations are below nuisance concern levels. The City may wish to conduct additional soil sampling for lead and other metals before or during future site development, especially for any unpaved areas.

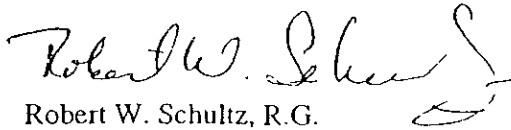
C A M B R I A

Mr. Joseph Cotton
March 1, 2001

CLOSING

Cambria appreciates the opportunity to provide environmental consulting services to the City of Oakland. Please contact Bob Clark-Riddell at (510) 420-3303 if you have any questions or comments

Sincerely,
Cambria Environmental Technology, Inc.



Robert W. Schultz, R.G.
Project Geologist



Bob Clark-Riddell, P E
Principal Engineer

H:\City of Oakland\2662 Fruitvale\Risk Screening2.wpd

Attachment: A - Soil and Groundwater Data and Figures from Site Investigations

Appendix C

Regulatory Approval of Remediation Workplan

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

September 24, 2001
StID 4457/ RO00000238

Mr. Joseph Cotton
City of Oakland Public Works
250 Frank H. Ogawa Plaza, Suite 5301
Oakland CA 94612-2034

Re: Remediation Workplan for 2662 Fruitvale Ave., Oakland CA 94601

Dear Mr. Cotton:

Our office has received and reviewed the September 17, 2001 Remediation Workplan for the referenced property as prepared by *Cambria Environmental*, your consultant. This work plan follows conversations with you and Mr. Bob Clark-Riddell of *Cambria*. The proposal includes a number of tasks, which intend to lead to regulatory site closure and residential development of this parcel. Because of the intended future use, additional remediation is proposed to provide additional insurance against potential health concerns.

As you are aware, the following tasks are proposed:

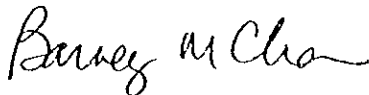
- Perform a utility, conduit and sensitive receptor survey. This includes a well survey within a ¼ mile radius of the site and passing out a questionnaire to homes within a 200 feet radius.
- Perform limited soil excavation near soil sample F4-2', where elevated lead and TPH as motor oil was found. Confirmation soil samples will be collected and analyzed after excavation.
- Install a trench approximately 20'x2'x10' up-gradient of the TPH plume and add approximately 500 pounds of oxygen releasing compound (ORC) within the capillary zone.
- Introduce an approximate 7.5% solution of hydrogen peroxide solution into site wells MW-F4 and MW-13, weekly over a period of four weeks.
- Prepare and submit a Risk Management Plan to be included with the site closure document and implemented during site development.

These tasks are approved. Please monitor wells MW-F4 and MW-13 and consider additional hydrogen peroxide addition if necessary. Your work plan was not explicit in stating the amount of this chemical, which will be added to these wells. The work plan also requests concurrence to close wells MW-F1 through MW-F3. Due to the proximity of MW-F2 to the areas of chemical addition, we request that MW-F2 not be closed, however, the other two well may be closed. Once the excavation has occurred, our office is prepared to approve on-site residential development. Site closure is reserved for the completion of the mentioned tasks and successful treatment of wells MW-F4 and MW-13,

Mr. Joseph Cotton
2662 Fruitvale Ave., Oakland CA 94601
September 24, 2001
StID 4457/ RO00000238
Page 2

Please keep our office informed of the progress in this remediation. You may contact me at (510) 567-6765 if you have any questions.

Sincerely,



Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
✓ Mr. B. Clark-Riddell, Cambria Environmental, 1144 65th St., Suite B, Oakland CA 94608
Remwp2662Fruitvale

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

September 27, 2001
StID 4457/ RO0000238

Mr. Joseph Cotton
City of Oakland Public Works
250 Frank H. Ogawa Plaza, Suite 5301
Oakland CA 94612-2034

Re: Remediation Workplan for 2662 Fruitvale Ave., Oakland CA 94601

Dear Mr. Cotton:

This letter recounts our conversation of September 26, 2001 and approves the closure of monitoring MW-F2 in addition to MW-F1 and MW-F3. It was agreed that there would not be any significant loss of information with the closure of this well.

Please notify our office when you proceed with the previously approved tasks of your remediation work plan.

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files

Mr. B. Clark-Riddell, Cambria Environmental, 1144 65th St., Suite B, Oakland CA 94608

Well MW F2

Appendix D

Laboratory Analytical Report



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: mam@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1664; City of Oakland @ Fruitvale	Date Sampled: 11/28/01
	Client Contact: Bob Clark Riddel	Date Received: 11/29/01
	Client P.O:	Date Extracted: 11/29/01
		Date Analyzed: 11/29/01

Lead*					
EPA analytical methods 6010/200 7, 239 2*					
Lab ID	Client ID	Matrix	Extraction °	Lead*	% Recovery Surrogate
84444	ST-1-6	S	TTLIC	9.4	N/A
84445	SP-1-4	S	TTLIC	15	N/A
84446	TP-1 NW	S	TTLIC	10	N/A
84447	TP-2 SW	S	TTLIC	7.3	N/A
84448	TP-3 SE	S	TTLIC	28	N/A
84449	TP-4 NE	S	TTLIC	8.0	N/A
84450	TP-5 bottom	S	TTLIC	7.4	N/A
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		S	TTLIC	3.0 mg/kg	
		W	TTLIC	0.005 mg/L	
		---	STLC,TCLP	0.2 mg/L	

* soil and sludge samples are reported in mg/kg, wipe samples in ug/wipe, and water samples and all STLC / SPLP / TCLP extracts in mg/L
 ° Lead is analysed using EPA method 6010 (ICP) for soils, sludges, STLC & TCLP extracts and method 239.2 (AA Furnace) for water samples
 @ DISTLC extractions are performed using STLC methodology except that deionized water is substituted for citric acid buffer as the extraction fluid. DISTLC results are not applicable to STLC regulatory limits.
 ° EPA extraction methods 1311(TCLP), 3010/3020(water,TTLIC), 3040(organic matrices,TTLIC), 3050(solids,TTLIC); STLC - CA Title 22
 * surrogate diluted out of range; N/A means surrogate not applicable to this analysis
 & reporting limit raised due to matrix interference
 1) liquid sample that contains greater than ~2 vol. % sediment; this sediment is extracted with the liquid, in accordance with EPA methodologies and can significantly effect reported metal concentrations.



McCAMPBELL ANALYTICAL INC.

110 2nd Ave South, #D7, Pacheco, CA 94553-5560
 Telephone 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

QC REPORT

EPA 8015m + 8020

Date: 11/29/01

Matrix: Soil

Compound	Concentration: mg/kg			%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	

SampleID 112801

Extraction: EPA 5030

Instrument: GC-12

Surrogate1	ND	97.000	98.000	100.00	97	98	1.0
Xylenes	ND	0.316	0.326	0.30	105	109	3.1
Ethylbenzene	ND	0.104	0.108	0.10	104	108	3.8
Toluene	ND	0.100	0.103	0.10	100	103	3.0
Benzene	ND	0.097	0.100	0.10	97	100	3.0
MTBE	ND	0.085	0.086	0.10	85	86	1.2
TPH (gas)	ND	0.937	0.944	1.00	94	94	0.7

SampleID 112801

Extraction: EPA 3550

Instrument: GC-6 A

Surrogate1	ND	86.000	86.000	100.00	86	86	0.0
TPH (diesel)	ND	132.500	131.000	150.00	88	87	1.1

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2 \cdot 100$$

RPD means Relative Percent Deviation



McCAMPBELL ANALYTICAL INC.

110 2nd Ave. South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

QC REPORT

Date: 11/29/01

Extraction: TTLC

Matrix: Soil

Compound	Concentration: mg/kg			%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS : MSD	
SampleID: 112801		Instrument: P-1 AA				
Lead	ND	4.9	4.9	5.00	98 : 97	1.4

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 100$$

RPD means Relative Percent Deviation

McCAMPBELL ANALYTICAL, INC.

130 2ND AVENUE SOUTH, #107
PACIFIC CO, CA 91551

Telephone (925) 798-1420

Fax (925) 798-1622

Report To: Ron Schuele **BOB CLARKE-RIDDEL** Bill To **CAMBRIA**

Company: Cambria Environmental Technology

6162 Hollis Street 1144 65TH STREET, SUITE B

Emeryville, CA 94608 OAKLAND, CA 94608

Tele: (510) 450-1987 420-3303 Fax: (510) 450-8295 420-9170

Project #: 153-1064 Project Name: **CITY OF OAKLAND (FRUIT VALE)**

Project Location: **2662 FRUITVALE AVE., OAKLAND**

Sampler Signature: *[Signature]*

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Analysis Request

Other Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED					Other	Comments																					
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other	BTEX & TPH in Gas (602,800, 8015) NFDL			TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 FR, Y&S)	Total Petroleum Hydrocarbons (418 1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 508 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's (PNA's by EPA 625 / 8270 / 8310)	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239 2/6010)	RCI							
ST-1	TRENCH STOCKPILE	11/28/01	3pm	1	brass tube		X																															
ST-2																																						
ST-3																																						
ST-4																																						
ST-5																																						
ST-6																																						
COMPOSITE SAMPLES																																						
SP-1	PIT STOCKPILE	11/28/01	5pm	1	brass tube		X																															
SP-2																																						
SP-3																																						
SP-4																																						
COMPOSITE SAMPLES																																						

84444

84445

Relinquished By: *[Signature]* Date: 11/28/01 Time: 6:30pm Received By: **SECURE LOCATION**

Relinquished By: *[Signature]* Date: 1/25/02 Time: 10:11 Received By: *[Signature]* #210

Relinquished By: *[Signature]* Date: 11/29/01 Time: 1145 Received By: *[Signature]*

Remarks: **ICE** **GOOD CONDITION** **HEAD SPACE ABSENT** **PRESERVATION APPROPRIATE** **CONTAINERS** **VOAS** **O&G** **METALS** **OTHER**

MCCAMPBELL ANALYTICAL, INC.

110 2ND AVENUE SOUTH, #117
PACIFICCO, CA 94553

Telephone: (925) 798-1620

Fax: (925) 798-1622

Report To: ~~Ron Scheele~~ **Bob Clarke-Riddel** Bill To: **CAMBRIA**

Company: Cambria Environmental Technology

6262 Hollis Street

1144 65TH STREET, SUITE B

Emeryville, CA 94608

OAKLAND, CA 94608

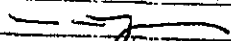
Tele: (510) 450-1987 420-3303

Fax: (510) 450-8295 420-9170

Project #: 153-1664

Project Name: CITY OF OAKLAND / FRUIT VALE

Project Location: 2662 FRUITVALE AVE, OAKLAND

Sampler Signature: 

CHAIN OF CUSTODY RECORD

TURN AROUND TIME RUSH 24 HOUR 48 HOUR 5 DAY

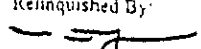
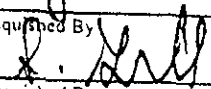
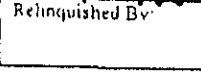
Analysis Request

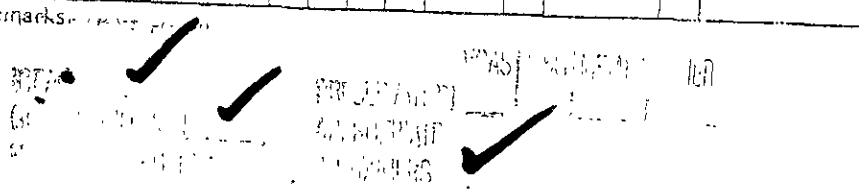
Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED			Other	Comments	
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃			Other
TP-1 NW	PIT NW WALL	11/28/01	4:30pm	1	brass tube		X						X			84446
TP-2 SW	PIT SW WALL	11/28/01											X			84447
TP-3 SE	PIT SE WALL															84448
TP-4 NE	PIT NE WALL															84449
TP-5 bottom	PIT bottom															84450

BTEX & TPH as Gas (602/8070 - 8015) MS/DL	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 E&F/R&F)	
Total Petroleum Hydrocarbons (418 1)	
EPA 601 / 8010	
BTEX ONLY (EPA 602 / 8020)	X
EPA 608 / 8080	
EPA 608 / 8080 PCB'S ONLY	
EPA 624 / 8240 / 8260	
EPA 625 / 8270	
PAH's / PNA's by EPA 625 / 8270 / 8310	
CAM-17 Metals	
LUFT 5 Metals	
Lead (7240/7421/239 2/6010)	X
RCI	
TPH g/k/mo	X

Relinquished By: 	Date: 11/28/01	Time: 6:30pm	Received By: SECURE LOCATION
Relinquished By: 	Date: 11-29-01	Time: 10:16	Received By: FLK #210
Relinquished By: 	Date: 11/29/01	Time: 1145	Received By: Mona V...

Remarks: 

Appendix E

Field Data Sheets

NOTES DAILY FIELD REPORT

Project Name: CITY OF OAKLAND FRUITVALE	Cambria Mgr: BCR	Field Person: M. Meyers
Project Number: 153-1664	Date: 11/28/01	Site Address: 2662 FRUITVALE OAKLAND CA
General Tasks: EXCAVATE, BACKFILL, SAMPLE		

Time	Activity/Comments	Code	Hd
	JOB WAS COMPLETED AS OF 6 pm, 11/28/01		
	TRENCH:		
	SPECS - 20 ft long x 2 ft wide x 10.5 feet deep		
	JOSEPH ASKED VS TO GO TO 10.5 ft depth.		
	FROM 0-8' OBSERVED MOIST TO WET CLAYEY SILT, MED. BRN.		
	FROM 8-10.5' OBSERVED SATURATED GRAVELLY SAND, GRAY		
	VERY STRONG GASOLINE ODOR		
	GROUNDWATER @ 8'		
	SOME SLOUGHING FROM 8-10.5'		
	WATER WAS OBSERVED WITH A SHEEN		
	BEGAN ADDING PEA GRAVEL & ORC		
	FIRST 6 BUCKET OF ORC ADDED BY DUMPING		
	ONLY ORC INTO TRENCH. AFTER OPENING A		
	BUCKET I FOUND THE DIRECTIONS AND BEGAN		
	WETTING ORC PRIOR TO DUMPING IN TRENCH.		
	THIS CBT DOWN ON LOSS OF ORC DUE TO		
	WIND & DUST CLOUDS. ORC SLURRY & PEA GRAVEL		
	BROUGHT TO UNDER 6' BGS. PROBABLY MORE AROUND		
	7.5' BGS.		
	GEOTEXT. FILTERED FABRIC ADDED @ 5' BGS.		
	THEN ADDED CLEAN IMPORTED SAND W/ SOME FINES &		
	COMPACTED IN 1 FT LIFTS WITH SHEEPS FOOT		
	ATTACHMENT TO BACKHOE. UP TO SURFACE		
	TOOK 6 SAMPLES OF ST TRENCHES STOCKPILES (ST-1		
	MATERIAL FOR COMPOSITE TESTING. THRU ST		
	STOCKPILES WERE BOTH ON VISQUENE & COVERED WITH VISQUENE		
	PIT WAS DUG BETWEEN 3-4 ft deep and 5' square.		
	SAMPLES WERE TAKEN FROM BOTTOM AND ALL FOUR SIDES.		
	4 SAMPLES WERE ALSO TAKEN FROM PIT'S STOCK PILE		
	BY THE TIME PIT WAS DUG IT WAS DARK MAKING IT		
	VERY DIFFICULT TO NOTICE COLOR DIFFERENCES.		
	PIT WAS BACKFILLED W/ CLEAN MATERIAL, SAME AS ABOVE		
	SAND w/ SOME FINE, COMPACTED IN 1 FOOT LIFTS.		

DAILY FIELD REPORT

Project Name:	Cambria Mgr:	Field Person:
Project Number:	Date:	Site Address:
General Tasks.		

Time	Activity/Comments	Code	Hour
	BLUEWATER LEFT MATERIALS & BACKHOE ON SITE WANT SAID THEY WOULD PICK UP IN THE FOLLOWING MORNING 11/29/01.		
	I LEFT SITE AT 6:10 PM & THEY WERE ON THEIR WAY OUT.		

DAILY FIELD REPORT

Project Name: CITY OF OAKLAND FRUITVALE	Cambria Mgr: B. CLARK-RIDDELL	Field Person: M. MEYERS
Project Number: 153-1664	Date 11/28/2001	Site Address: 2662 FRUITVALE AVE OAKLAND, CA
General Tasks: EXCAVATION, SAMPLING, BACKFILL		

Time	Activity/Comments	Code	Hours
7:10 AM	ARRIVED ONSITE, ACCESSED SITE, MARKED EXCAVATION AREAS		
8:05	MR. CROSS ARRIVES ONSITE		
9:00	BACKHOE ARRIVES ONSITE		
9:15	BACKHOE UNLOADED OFF OF TRAILER & MOVED ONSITE. - USING H ₂ O FROM HOSE BID @ 3118 DAVIS ST.		
9:35	HELD SITE SAFETY MEETING		
9:45	BEGAN TRENCH AT WEST CORNER OF SITE 35' FROM FRUITVALE AVE ~22' FROM DAVIS ST.		
10:30	FROM CITY OF OAKLAND ARRIVES ONSITE - ASK US TO TAKE IT DOWN TO 10.5'		
11:00	TRENCH FINISHED - BREAK		
11:30	PEA GRAVEL ARRIVES & FILL MATERIAL 0-5' FILL 5' GEO TEXTILE MEMBRANE 5-10.5' PEAGRAVEL 6-10.5' PEAGRAVEL/ORC SLURRY		
4 pm	FINISH BACKFILL OF TRENCH		
4-4:20	FILLING BACKHOE RIGHT REAR TIRE WITH AIR.		
4:30	VISQUENE LAID OUT FOR OTHER STOCK PILE (SP)		
4:50	FINISHED EXCAVATION OF 5' x 5' x 3' DEEP PIT SAMPLES TAKEN FROM SIDEWALLS ⁽⁴⁾ AND BOTTOM ⁽¹⁾		
5:00	SAMPLES TAKEN FROM PIT'S STOCKPILE ⁽⁴⁾ TO BE COMPOSITED.		
5:15	TRENCH STOCK PILE COVERED		
5:25	PIT STOCK PILE COVERED		
5:45	PIT FILLED & COMPACTED		
6:10	LEFT SITE.		



CAMBRIA

Cambria Environmental Technology, Inc
1144 65th Street, Suite B
Oakland, CA 94608
Tel (510) 420-0700 Fax (510) 420-9170

Boring Well Name TRENCH T-1 page 1 of 1
Client Name CITY OF OAKLAND
Job/Site Name 2662 FRUITVALE
Project Number 153-1664

Depth/Sample Interval	Time	Sample ID	PID/Odor	Well Construction	USC Class	Soil Type and Comments	Color	Penetration Resistance/ Blow Counts	Moisture	Percentages				Plasticity	Estimated Permeability
										Clay	Silt	Sand	Gravel		
0'	9:45	/	/	/		CLAYEY SILT	MD BRN		MOIST					POOR MOD	FAIR
5'															
7'															
8'			GAS			BECOMES WET SATURATED SILTY SAND M-VL SMELLS OF GASOLINE	GRAY		WET SAT		15	85		POOR	GOOD
10.5'						BOTTOM MED SAND W/ SOME FINE COMPACTED IN 1' LIFTS GEOTEXTILE FABRIC GW 5' 6' - LIMIT OF ORC SURVEY 8' PEA GRAVEL FROM 5' TO 10.5' SHOWN ON WATER BOTTOM OF TRENCH @ 10.5' FIRED UP TO 5' MARK WITH PEA GRAVEL ORC UP TO 6' MARK GEO MEMBRANE @ 5' DEPTH SILTY SAND FROM 0-5'									

Q:\SPECIALTY FIGURES\BORING-2ndSHEET.A1

Appendix F

Excavation Sampling Procedures

EXCAVATION SAMPLING PROCEDURES

After confirming a release from underground gasoline storage tanks, product piping or pump islands, soil excavation is often done to remove hydrocarbon bearing soils that may pose a threat to ground water quality beneath a site. Soil samples are routinely collected to monitor the progress of the excavation and to confirm that soils containing hydrocarbons above regulatory limits have been completely removed. Cambria has developed standard operating procedures for collecting soil samples during routine excavation operations to ensure that the samples are collected, handled and documented in compliance with State and local regulatory agency regulations.

Excavation Sampling

Prior to collecting soil samples during excavation operations, Cambria field staff screen the removed soils with a portable photoionization detector (PID) to qualitatively assess the presence or absence of volatile hydrocarbons. The removed soil is typically segregated based on hydrocarbon concentration and stockpiled on site on plastic sheeting. When the PID measurements indicate that the hydrocarbon bearing soil has been completely removed, Cambria collects soil samples from the excavation sidewalls and bottom for confirmatory analysis at a State certified analytic laboratory.

The soil samples are collected in steam cleaned brass or steel tubes from either a driven split-spoon type sampler or the bucket of a backhoe or excavator. When a backhoe or excavator is used, approximately three inches of soil are scraped from the surface and the tube is driven into the exposed soil.

Upon removal from the sampler or the backhoe, the samples are trimmed flush, capped with Teflon tape and plastic end caps, labeled, logged and refrigerated for delivery under chain of custody to a State certified analytic laboratory.

Appendix G

Soil Stockpile Sampling Procedures

SOIL STOCKPILE SAMPLING PROCEDURES

After confirming a release from underground gasoline storage tanks, product piping or pump islands, soil excavation is often completed to remove hydrocarbon bearing soils which for pose a threat to ground water quality beneath a site. The removed soils are typically stockpiled on site pending the results of laboratory analysis for soil samples collected from the stockpiles. Cambria has developed standard sampling procedures to characterize stockpiled soils for on- or off-site treatment, or offsite disposal. The procedures ensure that the samples are collected, handled, and documented in compliance with Federal, State and local regulatory agency guidelines.

Cambria's stockpile sampling procedures are based primarily on Bay Area Air Quality Management District regulations¹ and those of the anticipated landfill. One composite soil sample is collected for every 20 to 50 cubic yards of excavated soil. Each composite sample consists of four discreet soil samples collected from the stockpile which are combined in the laboratory. The samples are collected by dividing each 20 to 50 cubic yard volume into 4 sectors. One discreet soil sample is collected from each sector.

The samples are collected by digging away approximately 2 ft of the surface soils. A clean brass tube is then driven into the exposed soils. The ends of the tube are trimmed flush, capped with Teflon tape and plastic end caps, labeled, refrigerated and transported under chain of custody to a State certified laboratory.

¹ San Francisco Bay Area Air Quality Management District, 1989, Regulation 8, Organic Compounds, Rule 40, Aeration of Contaminated Soil and Removal of Underground Storage Tanks, February 15, 1989 7 pp.

Appendix H

Well Abandonment Report



consulting, inc.

2101 Webster Street, 12th Floor Oakland, CA 94612
tel (510) 663-4257 fax (510) 663-4141
www.gaiainc.com

December 12, 2001

Mr. Bob Clark-Riddell
Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, CA 94608

SUBJECT: Well Abandonment Report

Dear Bob,

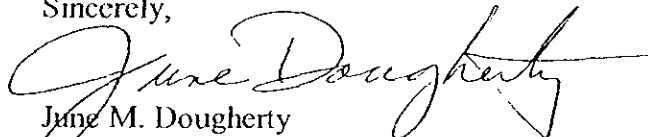
This letter report summarizes the activities completed for well abandonment at the 2662 Fruitvale Avenue site in Oakland. Included in this letter report are copies of the permits from the Alameda County Public Works Agency and a figure showing the location of the wells.

In preparation for redevelopment, at the City of Oakland's request, three on-site wells, MW-F1, MW-F2, and MW-F3, have been abandoned. Well abandonment began at 9:00AM on December 11, 2001. The following activities occurred:

- At 9:00 AM, all field personnel arrived at the site and went over the Health and Safety Plan.
- Wells MW-F1, MW-F2, and MW-F3 were located.
- Portland cement mixture was prepared.
- Wells MW-F1, MW-F2, and MW-F3 were filled in the following manner:
A funnel and pump was attached to the casing inside the well. The casing was filled to the top with cement, as was the outer cylinder surrounding the casing. The outer cylinder was filled close to the top of the well box. (The casing at well MW-F3 was bent on one side. The top of the casing was cut off to allow the funnel to connect properly.) After settling, additional cement and bentonite were used to fill each well to the surface of the well box.
- Upon completion the site was secured by locking the gate.

This completes GAIA's tasks for abandonment and closure of the wells. We appreciate the opportunity to provide these services to Cambria Environmental on behalf of the City of Oakland.

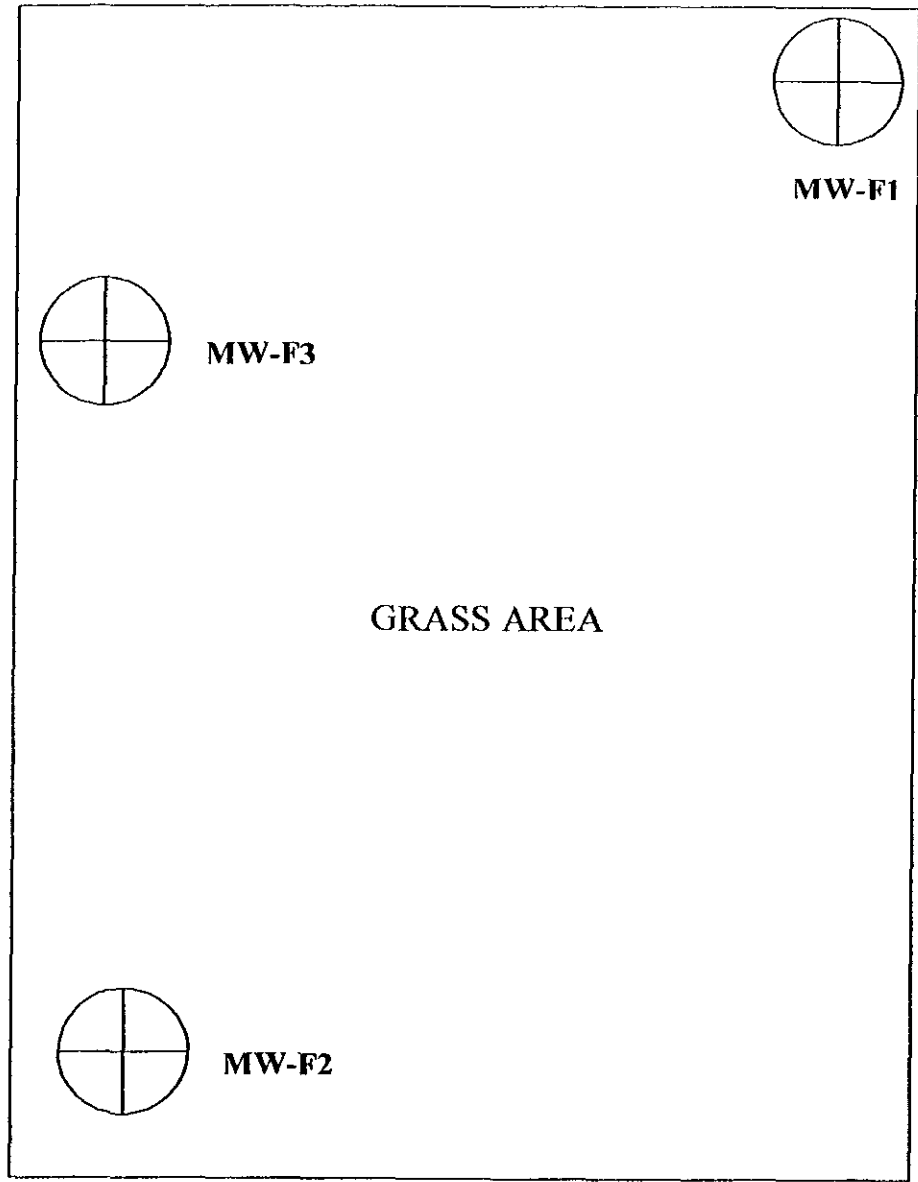
Sincerely,



June M. Dougherty
President

GAIA Consulting, Inc.

FRUITVALE AVENUE



GRASS AREA

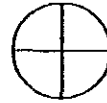
MW-F3

MW-F1

MW-F2

DAVIS STREET

2662 FRUITVALE AVENUE
OAKLAND, CA



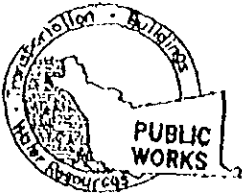
Abandoned Well



Fence



Street



ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
 399 ELMHURST ST. HAYWARD CA. 94544-1399
 PHONE (510) 676-5554
 FAX (510) 782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 2662 Fruitvale Ave.
Oakland, CA
Closest cross st. = Davis St.

PERMIT NUMBER WD1-2104
 WELL NUMBER _____
 APN _____

CLIENT
 Name City of Oakland
 Address Frank Ogawa Plaza Phone _____
 City Oakland, CA Zip 94612

APPLICANT
 Name GARA Consulting, Inc. Fax 925-943-5389
 Address 3000 Civic Center Blvd Phone 925-943-5187
 City Walnut Creek, CA Zip 94598

TYPE OF PROJECT

Well Construction Geotechnical Investigation
 Cathodic Protection General
 Water Supply Contamination
 Monitoring Well Destruction

PROPOSED WATER SUPPLY WELL USE

New Domestic Replacement Domestic
 Municipal Irrigation
 Industrial Other _____

DILLING METHOD:

Mud Rotary Air Rotary Auger
 Cable Other

DRILLER'S NAME Precision Sampling (May Change)

DRILLER'S LICENSE NO. 636387

WELL PROJECTS

Drill Hole Diameter 7 1/4 in. Maximum Depth 22 ft.
 Casing Diameter 2 1/2 in. Owner's Well Number MW-E2
 Surface Seal Depth 20 ft.

GEOTECHNICAL PROJECTS

Number of Borings _____ Maximum Depth _____ ft.

ESTIMATED STARTING DATE 12/12/01
 ESTIMATED COMPLETION DATE 12/12/01

Applicant hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Craig M. Zeff DATE 12/5/01

APPLICANT'S PRINT NAME Craig M. Zeff Rev. 5-13-00

PERMIT CONDITIONS
 Circled Permit Requirements Apply

A. GENERAL

1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL

Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC

Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION

Send a map of work site. A separate permit is required for wells deeper than 45 feet.

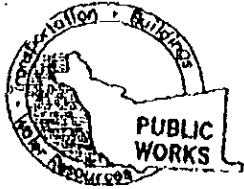
G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED

Pressure Grant

DATE 12-5-01



ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
 399 ELMHURST ST. HAYWARD CA. 94544-1395
 PHONE (510) 670-5554
 FAX (510) 782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 2662 Fruitvale Ave
Oakland, CA
Closest Cross St. = Davis St.

PERMIT NUMBER W01-2106
 WELL NUMBER _____
 APN _____

PERMIT CONDITIONS
 Circled Permit Requirements Apply

CLIENT
 Name City of Oakland
 Address Frank Ogawa Plaza Phone _____
 City Oakland, CA Zip 94612

A. GENERAL

1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

APPLICANT
 Name GAIA Consulting, Inc.
 Address 2500 Civic Center Mall Phone 925-943-5389
 City Walnut Creek, CA Zip 94598

B. WATER SUPPLY WELLS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 30 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL

Backfill bore hole by tremie with cement grout or cement grout and mixture. Upper two-thirds foot replaced in kind or with compacted cuttings.

E. CATHODIC

Fill hole anode zone with concrete placed by tremie

F. WELL DESTRUCTION

Send a map of work site. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED _____

DATE 12/5/01

TYPE OF PROJECT
 Well Construction Geotechnical Investigation
 Cathodic Protection General
 Water Supply Contamination
 Monitoring Well Destruction

PROPOSED WATER SUPPLY WELL USE
 New Domestic Replacement Domestic
 Municipal Irrigation
 Industrial Other _____

DRILLING METHOD:
 Mud Rotary Air Rotary Auger
 Cable Other

DRAWER'S NAME Precision Sampling (May change)
 DRAWER'S LICENSE NO. 636387

WELL PROJECTS
 Drill Hole Diameter 7 1/4 in. Maximum _____
 Casing Diameter 2 1/2 in. Depth _____ ft.
 Surface Seal Depth 26 ft. Owner's Well Number MN-E3

GEOTECHNICAL PROJECTS
 Number of Borings _____ Maximum _____
 Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE 12/12/01
 ESTIMATED COMPLETION DATE 12/12/01

Applicant agrees to comply with all requirements of this permit and Alameda County Ordinance No. 73-66.

APPLICANT'S SIGNATURE Craig M. Zeff DATE 12/05/01
 APPLICANT'S PRINT NAME Craig M. Zeff



ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
 399 ELMHURST ST. HAYWARD CA. 94544-1395
 PHONE (510) 670-5554
 FAX (510) 782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 2662 Fruitvale Ave
Oakland, CA
Claycross St. - Davis St.

PERMIT NUMBER WO 1-2105
 WELL NUMBER _____
 APN _____

PERMIT CONDITIONS

Circled Permk Requirements Apply

A. GENERAL.

1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL.

Backfill bore hole by tremie with cement grout or cement grout/sand mixture Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC

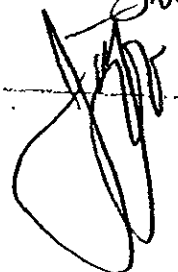
Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION

Send a map of work site. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

Pressure grout
 APPROVED  DATE 12-5-01

CLIENT
 Name City of Oakland
 Address Frank Ogawa Plaza Phone _____
 City Oakland Zip 94612

APPLICANT
 Name GAIN Consulting, Inc.
 Address 3000 Lakeside Blvd. Ste 111 Fax 925-943-5389
 City Walnut Creek, CA Phone 925-943-4987
 Zip 94598

TYPE OF PROJECT

- | | | | |
|---------------------|--------------------------|----------------------------|-------------------------------------|
| Well Construction | | Geotechnical Investigation | |
| Cathodic Protection | <input type="checkbox"/> | General | |
| Water Supply | <input type="checkbox"/> | Contamination | <input type="checkbox"/> |
| Monitoring | <input type="checkbox"/> | Well Destruction | <input checked="" type="checkbox"/> |

PROPOSED WATER SUPPLY WELL USE

- | | | | |
|--------------|--------------------------|----------------------|--------------------------|
| New Domestic | <input type="checkbox"/> | Replacement Domestic | <input type="checkbox"/> |
| Municipal | <input type="checkbox"/> | Irrigation | <input type="checkbox"/> |
| Industrial | <input type="checkbox"/> | Other | <input type="checkbox"/> |

DRILLING METHOD:

- | | | | | | |
|------------|--------------------------|------------|--------------------------|-------|--------------------------|
| Mud Rotary | <input type="checkbox"/> | Air Rotary | <input type="checkbox"/> | Auger | <input type="checkbox"/> |
| Cable | <input type="checkbox"/> | Other | <input type="checkbox"/> | | |

DRAWER'S NAME Precision Sampling (Magchanel)

DRAWER'S LICENSE NO. 636387

P.L. PROJECTS

Drill Hole Diameter 7 1/4 in. Maximum Depth 20 ft.
 Casing Diameter 2.0 in. Owner's Well Number MW-FL
 Surface Seal Depth 21 ft.

GEOTECHNICAL PROJECTS

Number of Borings _____ Maximum Depth _____ ft.
 Hole Diameter _____ in.

ESTIMATED STARTING DATE 12/12/01
 ESTIMATED COMPLETION DATE 12/12/01

Applicant agrees to comply with all requirements of this permit and Alameda County Ordinance No. 71-68.

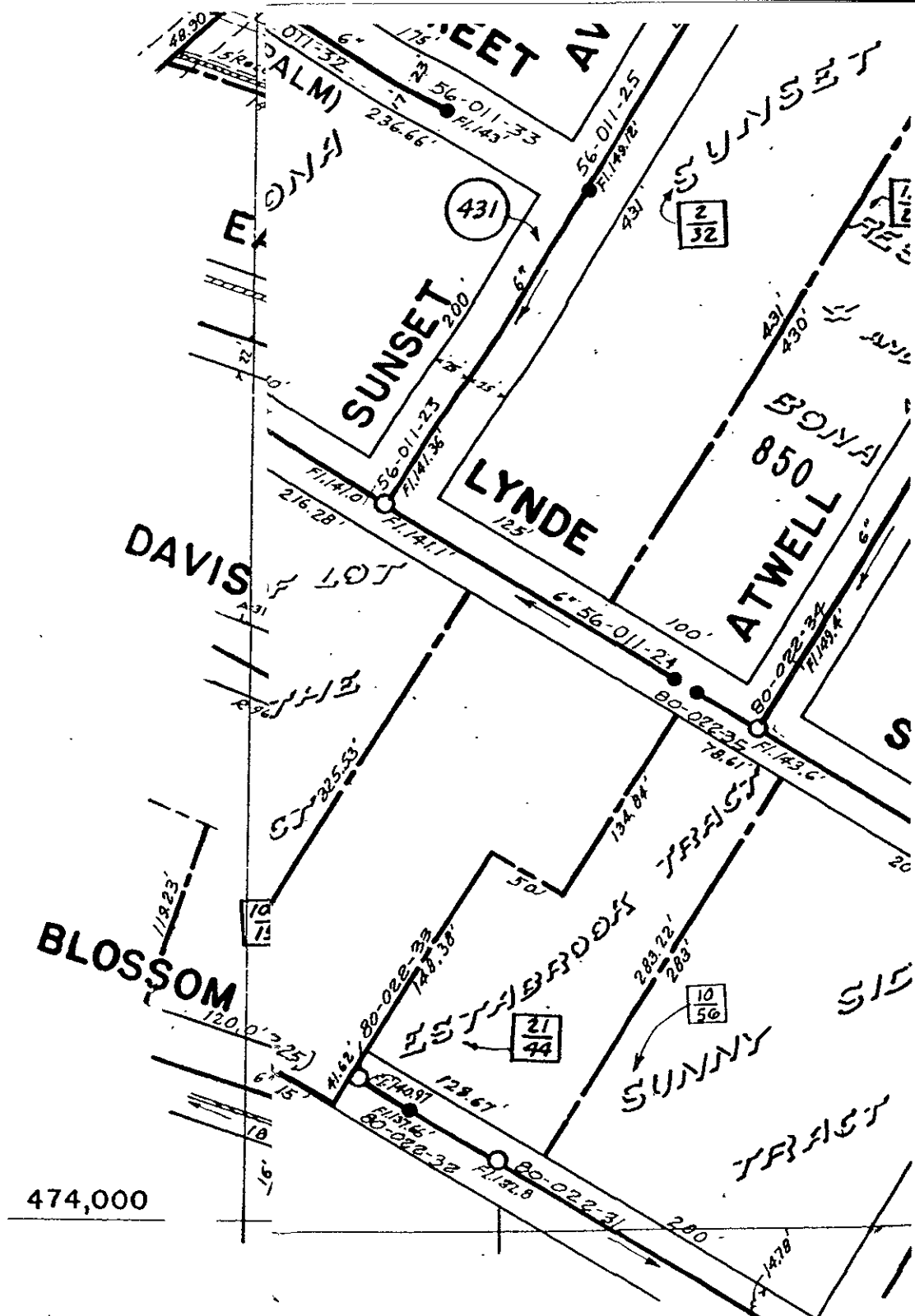
APPLICANT'S SIGNATURE Craig M. Zeff DATE 12/05/01

APPLICANT'S PRINT NAME Craig M. Zeff Rev. 5-13-00

Appendix I

City of Oakland Department of Engineering Subsurface Utility Map

FC 12-93 BROOKDALE & HUMBOLDT 2-27-79
 C39310 - 55 SUNSET AVE 6-24-92



474,000

1,503,000

1,504,000

SCALE: 0 900 1000 FEET

Appendix J

Department of Water Resources Well Survey Report

DEPARTMENT OF WATER RESOURCES

CENTRAL DISTRICT
3251 S STREET
SACRAMENTO, CA 95816-7017



DEC 20 2001

Mr. Ian Young
Cambria Environmental Technology
1144 - 65th Street, Suite C
Oakland, California 94608

Dear Mr. Young:

As you requested, a search of our records was done for *Water Well Drillers Reports* for wells at the following location:

A one-quarter mile radius of 2662 Fruitvale Avenue, Oakland
Township 02 South, Range 03 West, Section 5-D, E, and F
Township 02 South, Range 03 West, Section 6-A and H

We found no well reports for this area.

If you need additional information or have any questions, please contact Anne Roth at (916) 227-7632 or fax (916) 227-7600.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Niblack".

for

Robert L. Niblack, Chief
Geology and Groundwater Section

Appendix K

Door-to-Door Well Survey Questionnaire Responses

CAMBRIA

November 28, 2001

Dear Tenant,

Cambria Environmental Technology Inc. (Cambria) is distributing this questionnaire on behalf of the owner of the property located at 2626 Fruitvale Avenue in Oakland, California. The owner of this property has been required by the Alameda County Health Care Services Agency (ACHCSA) to conduct a survey of potential sensitive receptors to groundwater within 200 feet of the property.

Underground Storage tanks (USTs), formerly used to store gasoline, were removed from the property in 1978. A subsequent investigation determined that the materials stored in the USTs had impacted groundwater beneath the site, prompting regulatory oversight from the ACHCSA. The ACHCSA is evaluating data to allow regulatory closure, and requires sensitive receptor data from the surrounding community. Cambria is asking that you complete the questions below and return the questionnaire in the envelope provided, unless provided to the questionnaire distributor. If you have any questions, please contact Bob Clark-Riddell at (510) 420-3303. A stamped envelope is provided to return this questionnaire. Thank you for your assistance.



Questionnaire

Please return by Wednesday, December 5, 2001

C/O Bob Clark-Riddell, Cambria Environmental, 1144 65th Street, Suite B, Oakland, CA 94608

1. To the best of your knowledge, does the property where you live have any irrigation, monitoring, or domestic wells?

Yes _____ No

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No

If Yes, please describe: _____

3. Address (mandatory): 3442 DAVIS ST

4. Name (optional): VEN MESUI

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria
Environmental
Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

C A M B R I A

November 28, 2001

Dear Tenant,

Cambria Environmental Technology Inc. (Cambria) is distributing this questionnaire on behalf of the owner of the property located at 2626 Fruitvale Avenue in Oakland, California. The owner of this property has been required by the Alameda County Health Care Services Agency (ACHCSA) to conduct a survey of potential sensitive receptors to groundwater within 200 feet of the property.

Underground Storage tanks (USTs), formerly used to store gasoline, were removed from the property in 1978. A subsequent investigation determined that the materials stored in the USTs had impacted groundwater beneath the site, prompting regulatory oversight from the ACHCSA. The ACHCSA is evaluating data to allow regulatory closure, and requires sensitive receptor data from the surrounding community. Cambria is asking that you complete the questions below and return the questionnaire in the envelope provided, unless provided to the questionnaire distributor. If you have any questions, please contact Bob Clark-Riddell at (510) 420-3303. A stamped envelope is provided to return this questionnaire. Thank you for your assistance.

Questionnaire

Please return by Wednesday, December 5, 2001

C/O Bob Clark-Riddell, Cambria Environmental, 1144 65th Street, Suite B, Oakland, CA 94608

1. To the best of your knowledge, does the property where you live have any irrigation, monitoring, or domestic wells?

Yes _____ No

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No

If Yes, please describe: _____

3. Address (mandatory): 2624 Fruitvale

4. Name (optional): _____

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria
Environmental
Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

November 28, 2001

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Underground Storage tanks (USTs), formerly used to store gasoline, were removed from the property in 1978. A subsequent investigation determined that the materials stored in the USTs had impacted groundwater beneath the site, prompting regulatory oversight from the ACHCSA. The ACHCSA is evaluating data to allow regulatory closure, and requires sensitive receptor data from the surrounding community. Cambria is asking that you complete the questions below and return the questionnaire in the envelope provided, unless provided to the questionnaire distributor. If you have any questions, please contact Bob Clark-Riddell at (510) 420-3303. A stamped envelope is provided to return this questionnaire. Thank you for your assistance.



Questionnaire

Please return by Wednesday, December 5, 2001

C/O Bob Clark-Riddell, Cambria Environmental, 1144 65th Street, Suite B, Oakland, CA 94608

1. To the best of your knowledge, does the property where you live have any irrigation, monitoring, or domestic wells?

Yes _____ No

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No

If Yes, please describe: _____

3. Address (mandatory): 2614 Fruitvale

4. Name (optional): _____

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

Oakland, CA
San Ramon, CA
Sonoma, CA

**Cambria
Environmental
Technology, Inc.**

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

November 28, 2001

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Questionnaire

Please return by Wednesday, December 5, 2001

C/O Bob Clark-Riddell, Cambria Environmental, 1144 65th Street, Suite B, Oakland, CA 94608

1. To the best of your knowledge, does the property where you live have any irrigation, monitoring, or domestic wells?

Yes _____ No X

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No X

If Yes, please describe: _____

3. Address (mandatory): 2621 Fruitvale Ave

4. Name (optional): Isabell Florist

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

Oakland, CA
San Ramon, CA
Sonoma, CA
Cambria
Environmental
Technology, Inc.
1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

November 28, 2001

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Questionnaire

Please return by Wednesday, December 5, 2001

C/O Bob Clark-Riddell, Cambria Environmental, 1144 65th Street, Suite B, Oakland, CA 94608

1. To the best of your knowledge, does the property where you live have any irrigation, monitoring, or domestic wells?

Yes _____ No

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No

If Yes, please describe: _____

3. Address (mandatory): 2703 Fruitvale

4. Name (optional): Black & White

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria
Environmental
Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

November 28, 2001

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Underground Storage tanks (USTs), formerly used to store gasoline, were removed from the property in 1978. A subsequent investigation determined that the materials stored in the USTs had impacted groundwater beneath the site, prompting regulatory oversight from the ACHCSA. The ACHCSA is evaluating data to allow regulatory closure, and requires sensitive receptor data from the surrounding community. Cambria is asking that you complete the questions below and return the questionnaire in the envelope provided, unless provided to the questionnaire distributor. If you have any questions, please contact Bob Clark-Riddell at (510) 420-3303. A stamped envelope is provided to return this questionnaire. Thank you for your assistance.

Questionnaire

Please return by Wednesday, December 5, 2001

C/O Bob Clark-Riddell, Cambria Environmental, 1144 65th Street, Suite B, Oakland, CA 94608

1. To the best of your knowledge, does the property where you live have any irrigation, monitoring, or domestic wells?
Yes _____ No ✓

2. To the best of your knowledge, does the property where you live have an accessible basement?
Yes _____ No ✓

If Yes, please describe: _____

3. Address (mandatory): 3114 E 27th

4. Name (optional): _____

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

Oakland, CA
San Ramon, CA
Conoma, CA

Cambria
Environmental
Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

November 28, 2001

Dear Tenant,

Cambria Environmental Technology Inc. (Cambria) is distributing this questionnaire on behalf of the owner of the property located at 2626 Fruitvale Avenue in Oakland, California. The owner of this property has been required by the Alameda County Health Care Services Agency (ACHCSA) to conduct a survey of potential sensitive receptors to groundwater within 200 feet of the property.

Underground Storage tanks (USTs), formerly used to store gasoline, were removed from the property in 1978. A subsequent investigation determined that the materials stored in the USTs had impacted groundwater beneath the site, prompting regulatory oversight from the ACHCSA. The ACHCSA is evaluating data to allow regulatory closure, and requires sensitive receptor data from the surrounding community. Cambria is asking that you complete the questions below and return the questionnaire in the envelope provided, unless provided to the questionnaire distributor. If you have any questions, please contact Bob Clark-Riddell at (510) 420-3303. A stamped envelope is provided to return this questionnaire. Thank you for your assistance.



Questionnaire

Please return by Wednesday, December 5, 2001

C/O Bob Clark-Riddell, Cambria Environmental, 1144 65th Street, Suite B, Oakland, CA 94608

1. To the best of your knowledge, does the property where you live have any irrigation, monitoring, or domestic wells?

Yes _____ No ✓

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No ✓

If Yes, please describe: _____

3. Address (mandatory): 3123 Davis

4. Name (optional): _____

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria
Environmental
Technology, Inc.

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Yes _____ No

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No

If Yes, please describe: _____

3. Address (mandatory): 3118 Davis

4. Name (optional): _____

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

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Yes _____ No L

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No ✓

If Yes, please describe: _____

3. Address (mandatory): 3038 Divisadero

4. Name (optional): _____

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

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Sonoma, CA

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C/O Bob Clark-Riddell, Cambria Environmental, 1144 65th Street, Suite B, Oakland, CA 94608

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Yes _____ No ✓

2. To the best of your knowledge, does the property where you live have an accessible basement?

Yes _____ No ✓

If Yes, please describe: _____

3. Address (mandatory): 3043 Dennis

4. Name (optional): _____

5. Contact Information (optional) _____

6. Additional Information/Comments: _____

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APPENDIX B

Offsite Remediation Report

2662 Fruitvale Avenue

Oakland, California 94612

July 10, 2002

Cambria Environmental Technology, Inc.

July 10, 2002

Mr. Joseph Cotton
City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Suite 5301
Oakland, California 94612-2034

FILE COPY

Re: **Offsite Remediation Report**
2662 Fruitvale Avenue
Oakland, California 94621
Cambria Project No. 153-1664-029

Dear Mr. Cotton:

Cambria Environmental Technology, Inc. (Cambria) is pleased to present this *Offsite Remediation Report* for the site referenced above (Site). The work described in this report was performed in accordance with Cambria's *Remediation Workplan* dated September 17, 2001. The Alameda County Health Care Services Agency (ACHCSA) approved the remediation workplan in their September 24, 2001 letter, and again in their January 28, 2002 letter, which followed the submittal of Cambria's *Site Remediation and Closure Report*. The hydrogen peroxide introduction, results, and conclusions are described below.

HYDROGEN PEROXIDE INTRODUCTION

Hydrogen peroxide was introduced into offsite wells MW-13 and MW-F4 to chemically oxidize hydrocarbons and to supply oxygen to stimulate hydrocarbon biodegradation.

Task 1 - Pre-Field Preparation and Coordination

To introduce hydrogen peroxide into Site groundwater, Cambria coordinated with two small local businesses within Oakland – GAIA Consulting, Inc. (GAIA) and Morgan Environmental Services, Inc. (Morgan). GAIA provided a site-specific health and safety plan as well as a technician for the field activities. The signed health and safety plan is presented in Attachment A. Morgan provided 7% hydrogen peroxide solution (peroxide) in 5-gallon containers, which were transported to the Site on introduction events by GAIA.

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Cambria
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Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
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Task 2 - Hydrogen Peroxide Introduction



The 7% hydrogen peroxide solution was introduced into offsite wells MW-13 and MW-F4. The peroxide introduction events were conducted twice per week over a four-week period, for a total of eight introduction events. In conjunction with the peroxide introduction, the following items were measured: depth to groundwater, groundwater temperature, and dissolved oxygen (DO) concentrations. The DO concentrations were measured by lowering a probe approximately 3 feet below the groundwater table surface then waiting for the reading to stabilize. As much peroxide as practical was introduced into Site wells MW-F4 and MW-13 during each event. Field forms are presented in Attachment B.


The schedule for the peroxide introduction plan was:

<u>Activity</u>	<u>Date</u>
Measured depth to water in wells	March 29, 2002
Began four weeks of H ₂ O ₂ introduction	May 20, 2002
Completed H ₂ O ₂ introduction	June 13, 2002
Measured DO (4 days after final introduction)	June 17, 2002
Measured DO (11 days after final introduction)	June 24, 2002

In accordance with the site-specific health and safety plan, all field personnel that could come in contact with the hydrogen peroxide solution wore appropriate personal protective equipment. In addition, a portable eye wash station was onsite during field activities. The following additional precautions were taken:

- The infiltration rate of the hydrogen peroxide solution was monitored to prevent any overflowing of the well.
- Absorbent pads were kept onsite to help contain any overflows.
- The groundwater temperature was monitored during and after the peroxide introduction.
- Water was added to the well to help cool the reaction and force peroxide into the formation.
- After sealing the well and replacing the well vault, the field personnel observed the wells. The initial observation lasted approximately two hours after sealing the well. Subsequent observation lasted 30 minutes.

PEROXIDE INTRODUCTION RESULTS



Approximately 88 gallons of 7% hydrogen peroxide solution were introduced into groundwater during this remedial action. During each event, approximately 3 gallons of peroxide were introduced into well MW-F4 and approximately 8 gallons of peroxide were introduced into well MW-13. The amount of hydrogen peroxide injected per event was limited by the infiltration rate for each well. The total volume of peroxide introduced into each well was approximately 23.1 gallons into well MW-F4 and approximately 64.5 gallons into well MW-13. The actual peroxide introduction volumes and the field measurements are presented in Table 1.

Before peroxide introduction, the DO concentrations were 4.0 mg/L (milligrams/liter) and 6.7 mg/L in wells MW-F4 and MW-13, respectively. Two days after the initial peroxide introduction event the DO concentrations were significantly higher in both wells – 17.1 mg/L and 15.9 mg/L in wells MW-F4 and MW-13, respectively. Three days after the initial peroxide introduction event the DO concentrations had decreased to 13.6 mg/L but remained elevated in well MW-F4. For well MW-13, three days after the initial peroxide introduction event the DO concentrations decreased to 4.9 mg/L, which is below the initial DO concentration of 6.7 mg/L for MW-13. Measurements following subsequent peroxide introductions indicate that DO concentrations remained elevated after each introduction. By the final introduction event of June 13, 2002, the DO concentrations in wells MW-F4 and MW-13 exceeded the measurement range of the field instrument of 19.9 mg/L. Four days following the final introduction event the DO concentrations remained above 19.9 mg/L in both wells. Eleven days after the final introduction event the DO concentrations still remained above 19.9 mg/L in well MW-F4 and remained elevated in well MW-13 (10.5 mg/L).

DO measurements indicate that the utilization of DO reduced significantly by the end of the peroxide introduction events. As shown in well MW-13, the DO concentrations decreased to below the initial DO concentration within three days of the initial peroxide introduction while the DO concentrations remained >19.9 mg/L for at least eleven days following the final peroxide introduction event.

CONCLUSIONS

The results of this offsite remedial action suggest that the hydrogen peroxide introduction has supplied sufficient dissolved oxygen to stimulate hydrocarbon biodegradation. Having successfully implemented the approved onsite and offsite remedial plans, Cambria recommends requesting regulatory case closure. In their January 28, 2002 letter, the ACHSCA indicated their office would recommend case closure for the Site upon satisfactory completion of offsite groundwater remediation. Prior reports have indicated that there is no significant risk associated with residual hydrocarbons located offsite and downgradient of the Site.



CLOSING

If you have any questions or comments, please contact me at (510) 420-3303.

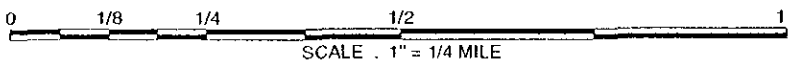
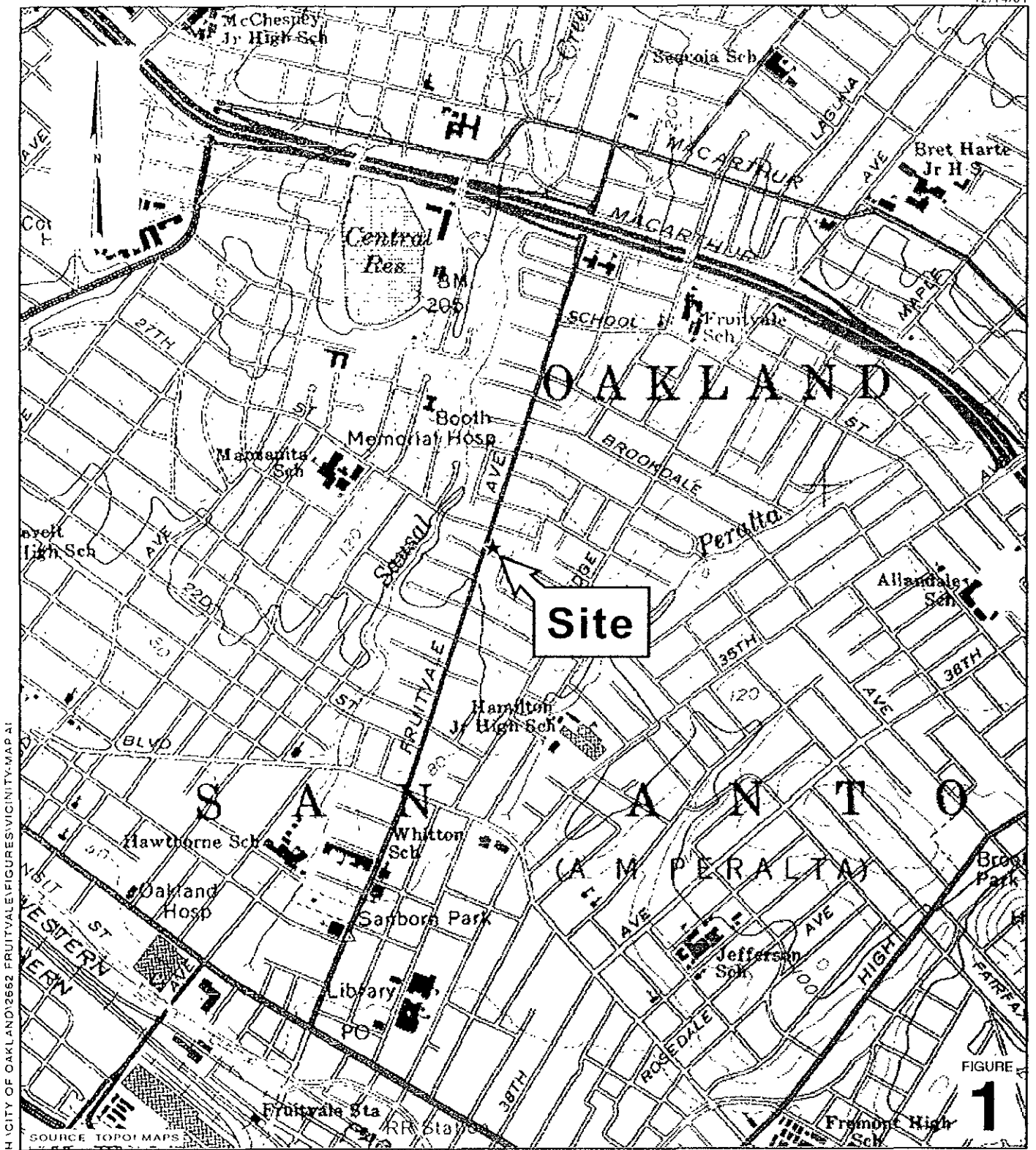
Sincerely,
Cambria Environmental Technology, Inc.

Bob Clark-Riddell, P.E.
Principal Engineer



H:\City of Oakland\2662 Fruitvale\Remediation Implementation\h202 report-final.doc

- Attachments: Figure 1 – Vicinity Map
 Figure 2 - Site Plan
 Table 1 – Hydrogen Peroxide Introduction Parameters
 Attachment A – Health and Safety Plan
 Attachment B - Field Notes



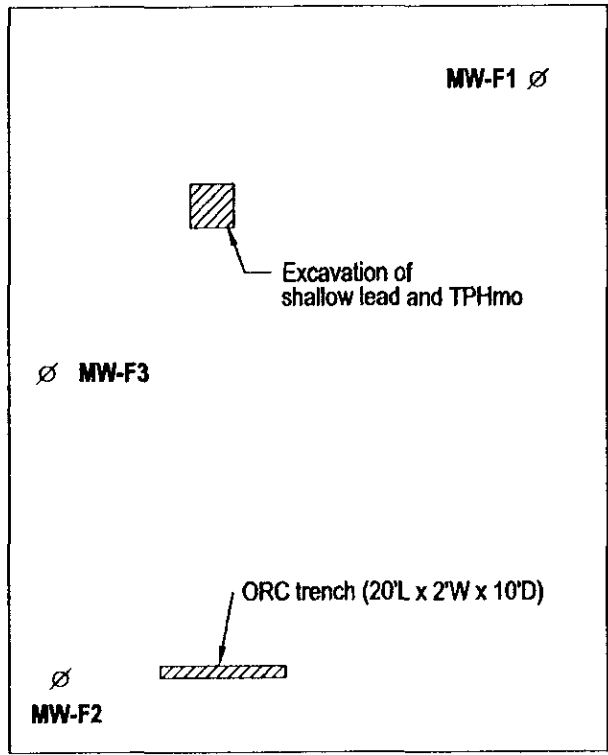
City of Oakland
 2662 Fruitvale Avenue
 Oakland, California



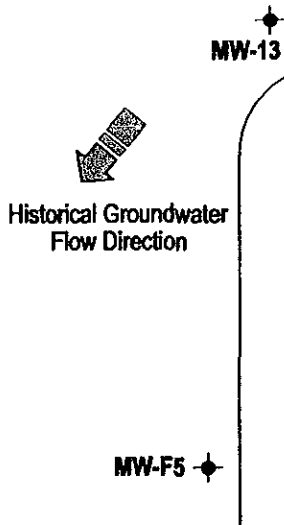
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Vicinity Map

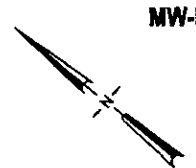
M:\CITY OF OAKLAND\2662 FRUITVALE\FIGURES\SITEPLAN.DWG



DAVIS STREET



EXPLANATION	
MW-1 ◆	Monitoring well location
MW-F1 ∅	Closed (decomissioned) well location



0 15 30

Scale (ft)

FIGURE

2

City of Oakland
 2662 Fruitvale Avenue
 Oakland, California



C A M B R I A

Site Plan

CAMBRIA

Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-F4	3/29/2002	12:30	7.40	--	--	--
MW-F4	5/20/2002	13:00	8.4	--	18.8	4.0
MW-F4	5/20/2002	16:20	--	3.3	19.0	--
Gallons of H₂O₂ injected this event:				3.3		
MW-F4	5/22/2002	9:30	9.6	--	--	17.1
MW-F4	5/23/2002	9:00	9.1	--	21.9	13.6
MW-F4	5/23/2002	9:30	--	3.3	--	--
MW-F4	5/23/2002	11:00	--	--	23.1	--
MW-F4	5/23/2002	12:15	--	--	22.4	--
MW-F4	5/23/2002	13:30	--	--	23.4	--
Gallons of H₂O₂ injected this event:				3.3		
MW-F4	5/28/2002	10:45	12.0	--	20.5	19.1
MW-F4	5/28/2002	11:20	--	2.5	--	--
MW-F4	5/28/2002	12:05	--	--	21.8	--
MW-F4	5/28/2002	12:30	--	--	21.4	--
MW-F4	5/28/2002	13:00	--	--	21.3	--
MW-F4	5/28/2002	13:30	--	--	22.8	--
MW-F4	5/28/2002	14:00	--	--	22.1	--
Gallons of H₂O₂ injected this event:				2.5		
MW-F4	5/30/2002	12:00	12.2	--	23.1	19.8
MW-F4	5/30/2002	13:00	--	3	--	--
MW-F4	5/30/2002	13:10	--	--	24.7	--
MW-F4	5/30/2002	13:30	--	--	24.8	--
MW-F4	5/30/2002	14:00	--	--	24.6	--
MW-F4	5/30/2002	14:30	--	--	24.5	--
MW-F4	5/30/2002	15:00	--	--	24.5	--
MW-F4	5/30/2002	15:30	--	--	24.3	--
MW-F4	5/30/2002	16:00	--	--	24.1	--
Gallons of H₂O₂ injected this event:				3		
MW-F4	6/3/2002	13:30	11.3	--	21.2	15.2
MW-F4	6/3/2002	14:00	--	2.5	--	--
MW-F4	6/3/2002	15:00	--	--	21.2	--
MW-F4	6/3/2002	15:30	--	--	24.2	--
MW-F4	6/3/2002	16:00	--	--	24.4	--
MW-F4	6/3/2002	16:30	--	--	24.4	--
MW-F4	6/3/2002	17:00	--	--	23.4	--
MW-F4	6/3/2002	17:30	--	--	24.3	--
MW-F4	6/3/2002	18:00	--	--	24.1	--
Gallons of H₂O₂ injected this event:				2.5		
MW-F4	6/6/2002	10:30	9.2	--	21.7	12.4
MW-F4	6/6/2002	11:15	--	2.5	--	--
MW-F4	6/6/2002	11:30	--	--	25.3	--
MW-F4	6/6/2002	12:00	--	--	24.4	--
MW-F4	6/6/2002	12:30	--	--	23.7	--
MW-F4	6/6/2002	13:00	--	--	23.5	--
MW-F4	6/6/2002	13:30	--	--	23.6	--
MW-F4	6/6/2002	14:30	--	--	22.8	--
Gallons of H₂O₂ injected this event:				2.5		

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Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-F4	6/10/2002	11:30	10.1	--	24.1	15.4
MW-F4	6/10/2002	12:00	--	3	--	--
MW-F4	6/10/2002	12:30	--	--	24.8	--
MW-F4	6/10/2002	13:00	--	--	24.8	--
MW-F4	6/10/2002	13:30	--	--	25.6	--
MW-F4	6/10/2002	14:00	--	--	25.3	--
MW-F4	6/10/2002	15:00	--	--	25.5	--
MW-F4	6/10/2002	15:15	--	--	25.7	--
Gallons of H₂O₂ injected this event:				3		
MW-F4	6/13/2002	10:45	9.3	--	19.4	>19.9
MW-F4	6/13/2002	11:30	--	3	--	--
MW-F4	6/13/2002	12:00	--	--	20.8	--
MW-F4	6/13/2002	12:30	--	--	22.9	--
MW-F4	6/13/2002	13:00	--	--	22.4	--
MW-F4	6/13/2002	13:30	--	--	22.2	--
MW-F4	6/13/2002	14:30	--	--	22.2	--
Gallons of H₂O₂ injected this event:				3		
MW-F4	6/17/2002	9:20	10.9	--	--	>19.9
MW-F4	6/24/2002	12:50	10.05	--	--	>19.9
Total gallons of H₂O₂ injected in to MW-F4:				23.1		

MW-13	3/29/2002	12:35	10.30	--	--	--
MW-13	5/20/2002	13:30	10.4	--	19.6	6.7
MW-13	5/20/2002	14:00	--	--	20.3	--
MW-13	5/20/2002	16:20	--	10	19.2	--
Gallons of H₂O₂ injected this event:				10		
MW-13	5/22/2002	9:30	13.4	--	--	15.9
MW-13	5/23/2002	10:00	10.2	--	21.4	4.9
MW-13	5/23/2002	10:30	--	5	--	--
MW-13	5/23/2002	11:00	--	--	23.4	--
MW-13	5/23/2002	12:15	--	1	24.1	--
MW-13	5/23/2002	13:30	--	--	23.9	--
Gallons of H₂O₂ injected this event:				6		
MW-13	5/28/2002	11:30	13.9	--	21.5	11.7
MW-13	5/28/2002	12:00	--	5	22.3	--
MW-13	5/28/2002	12:05	--	1.5	--	--
MW-13	5/28/2002	12:30	--	--	24.1	--
MW-13	5/28/2002	13:00	--	--	22.6	--
MW-13	5/28/2002	13:30	--	--	23.7	--
MW-13	5/28/2002	14:00	--	--	23.3	--
Gallons of H₂O₂ injected this event:				6.5		

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Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-13	5/30/2002	12:00	15.85	--	21.7	18.9
MW-13	5/30/2002	13:00	--	5	--	--
MW-13	5/30/2002	13:10	--	--	26.9	--
MW-13	5/30/2002	13:30	--	--	25.0	--
MW-13	5/30/2002	13:40	--	0.5	--	--
MW-13	5/30/2002	14:00	--	--	25.5	--
MW-13	5/30/2002	14:05	--	1.5	--	--
MW-13	5/30/2002	14:30	--	--	25.2	--
MW-13	5/30/2002	15:00	--	--	25.1	--
MW-13	5/30/2002	15:30	--	--	25.5	--
MW-13	5/30/2002	16:00	--	--	27.1	--
Gallons of H₂O₂ injected this event:				7		
MW-13	6/3/2002	13:30	14.7	--	21.4	17.4
MW-13	6/3/2002	14:00	--	3.5	--	--
MW-13	6/3/2002	15:00	--	3	22.3	--
MW-13	6/3/2002	15:30	--	1	22.6	--
MW-13	6/3/2002	16:00	--	--	25.1	--
MW-13	6/3/2002	16:30	--	--	24.1	--
MW-13	6/3/2002	17:00	--	--	25.3	--
MW-13	6/3/2002	17:30	--	--	23.9	--
MW-13	6/3/2002	18:00	--	--	24.7	--
Gallons of H₂O₂ injected this event:				7.5		
MW-13	6/6/2002	10:30	15.1	--	23.9	18.2
MW-13	6/6/2002	11:15	--	9	--	--
MW-13	6/6/2002	11:30	--	--	26.6	--
MW-13	6/6/2002	11:45	--	1	--	--
MW-13	6/6/2002	12:00	--	--	26.3	--
MW-13	6/6/2002	12:15	--	1	--	--
MW-13	6/6/2002	12:30	--	--	26.5	--
MW-13	6/6/2002	12:45	--	1	--	--
MW-13	6/6/2002	13:00	--	--	27.3	--
MW-13	6/6/2002	13:15	--	0.5	--	--
MW-13	6/6/2002	13:30	--	--	25.3	--
MW-13	6/6/2002	13:50	--	0.5	--	--
MW-13	6/6/2002	14:30	--	--	27.5	--
Gallons of H₂O₂ injected this event:				13		
MW-13	6/10/2002	11:30	10.8	--	23.5	18.9
MW-13	6/10/2002	12:00	--	5	--	--
MW-13	6/10/2002	12:30	--	--	25.4	--
MW-13	6/10/2002	12:45	--	0.5	--	--
MW-13	6/10/2002	13:00	--	--	27.2	--
MW-13	6/10/2002	13:30	--	1	27.7	--
MW-13	6/10/2002	14:00	--	1	28.2	--
MW-13	6/10/2002	15:00	--	--	30.5	--
MW-13	6/10/2002	15:15	--	--	29.4	--
Gallons of H₂O₂ injected this event:				7.5		

CAMBRIA

Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-13	6/13/2002	10:45	15.95	--	20.9	>19.9
MW-13	6/13/2002	11:30	--	5	--	--
MW-13	6/13/2002	12:00	--	--	21.2	--
MW-13	6/13/2002	12:15	--	1	--	--
MW-13	6/13/2002	12:30	--	--	22.7	--
MW-13	6/13/2002	12:45	--	0.5	--	--
MW-13	6/13/2002	13:00	--	--	22.9	--
MW-13	6/13/2002	13:15	--	0.5	--	--
MW-13	6/13/2002	13:30	--	--	22.8	--
Gallons of H₂O₂ injected this event:				7		
MW-13	6/13/2002	14:30	--	--	22.0	--
MW-13	6/17/2002	9:40	14.6	--	--	>19.9
MW-13	6/24/2002	12:25	11.07	--	--	10.5
Total gallons of H₂O₂ injected in to MW-13:				64.5		

Abbreviations and Methods:

TOC in feet = Depth to water measured from the top of well casing in feet.

°C = degrees Celsius

mg/L = Milligrams per liter

>19.9 = Dissolved oxygen concentration exceeds meter measurement limit of 19.9 mg/L.

Peroxide, H₂O₂ = Hydrogen Peroxide

C A M B R I A



ATTACHMENT A

Health and Safety Plan

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

Page 1

Project Title: Fruitvale Avenue H2O2 Injection
Project No.: 192
Client: Cambria
For the City of Oakland

Date: May 15, 2002

This form may be used for those site activities that pose a significant threat of exposure to site contaminants or hazards (e.g., well installation, soil borings, water/soil sampling, excavation/trenching). The GAIA Consulting, Inc. Health and Safety Director will determine whether or not this form is appropriate for any given activity at the site. It is the responsibility of the Project Manager to complete the Health and Safety Plan (HSP). The Health and Safety Director must sign the HSP. All project personnel must receive a copy of this form, familiarize themselves with its contents, and sign the signature page before work begins.

1. Site Name and Address

2662 Fruitvale Avenue
Oakland CA 94612

2. Site Personnel and Assigned Responsibilities

Principal-in-Charge: Bob Clark-Riddell (Cambria)
Project Manager: Mary Holland-Ford (Cambria); June Dougherty (GAIA)
Site Safety Officer: June Dougherty
Other Field Personnel: Craig Zeff (GAIA) (510) 682-3003

3. Site Description and Background (attach site map)

Two site wells, MW- F4 and MW-13, are located at the intersection of Fruitvale Avenue and Davis Street. MW-F4 is located on the sidewalk of DAVIS Street and MW-13 is

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

Page 2

located on the southeast corner of Fruitvale and Davis in the street. (See attached site map).

4. Planned Site Activities

- 15 gallons of 7% Hydrogen Peroxide solution will be introduced into each well during each event. Events will occur 2 times per week for 4 weeks. The 7% H₂O₂ solution will be picked up at Morgan Environmental prior to each event and transported in appropriate containers in the back of the Pick-up truck. If Morgan Environmental determines that H₂O₂ still requires ventilation at the 7% solution, then be sure to keep product in ventilated containers.
- Water level, water temperature and dissolved oxygen (DO) will be measured as per the work plan and scope during each event. Water level and DO will also be measured two days after the first event and two days after the final event.

5. Chemical Compounds at the Site (complete 5a and/or 5b, as appropriate)

5a. Chemical Data Summary

Available Chemical Information has been requested from client.

No Known or Suspected Chemical Contamination

Known Compounds	Source (soil/water/drum, etc.)	Known Concentrations Range (ppm, mg/kg, mg/l)	
		Lowest	Highest
Hydrogen Peroxide	Introduced		
Organic Hydrocarbons	Potentially in wells		

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

Page 3

5b. Chemical Data/Information

Hydrogen Peroxide at 7% solution is not a Hazardous Material, however, it can still cause irritation to the eyes and skin with contact.

The wells may contain free standing product (hydrocarbons). Wells will be tested with a bailer first to determine if any product is present. If affirmative, **DO NOT PROCEED WITH H2O2 INTRODUCTION. THE COMBINATION OF H2O2 WITH FREE PRODUCT WILL PRODUCE A DANGEROUS REACTION.**

Hydrogen peroxide is reactive and incompatible with many organic compounds, and metals and can cause fires, explosions and excessive heat when high concentrations of H2O2 come in contact with these compounds and elements.

Use H2O2 in a well ventilated area; Keep away from heat sources; Keep away from incompatible products; Prevent all contact with organics; Use only compatible equipment (glass, plastic, stainless steel, or aluminum) and containers; Keep an adequate supply of water on hand for dilution and rinsing in the event of a spill or splash.

If clothing comes in contact with H2O2, rinse thoroughly and submerge in water before drying.

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

Page 4

6. Potential Physical, Mechanical, Electrical, and Biological Hazards

(Check all boxes that potentially apply to the project)

<input checked="" type="checkbox"/>	Do not stand in traffic lanes. Set up traffic cones around each well before beginning work. Set up at least 30 feet of traffic cones spaced no less than 10 feet apart to detour oncoming traffic from the work area at well MW-13. Place the truck between the oncoming traffic and the well/work area to use the truck as a physical barrier to workers from the traffic. Also, set up traffic cones and warning tape around the MW-F4 work area.
<input checked="" type="checkbox"/>	Wear protective equipment as described in Item # when handling H2O2.
<input checked="" type="checkbox"/>	Do not permit any unauthorized personnel (i.e., public pedestrians) to enter the work area.
<input checked="" type="checkbox"/>	Wear traffic safety vest when at site.
<input checked="" type="checkbox"/>	Verify that all equipment is in good condition.
<input type="checkbox"/>	Do not stand or walk under elevated loads or ladders.
<input type="checkbox"/>	Do not stand near unguarded excavation and trenches.
<input type="checkbox"/>	Do not enter excavation or trenches over 5 feet deep that are not properly guarded, shored, or sloped.
<input checked="" type="checkbox"/>	Consult Health and Safety Director if other mechanical hazards exist.
<input type="checkbox"/>	Discuss location of buried utilities with client.
<input type="checkbox"/>	Locate and mark buried utilities, and notify USA (Date: _____ USA Tag No. _____)
<input type="checkbox"/>	Have buried utilities cleared by private utility locating company.
<input type="checkbox"/>	Maintain at least 10-foot clearance from overhead power lines.
<input type="checkbox"/>	Contact utility company for minimum clearance from high voltage power lines. If unavoidably close to buried or overhead power line, have power turned off, with circuit breaker locked and tagged.
<input type="checkbox"/>	Properly ground all electrical equipment.
<input type="checkbox"/>	Avoid standing in water when operating electrical equipment.
<input type="checkbox"/>	If equipment must be connected by splicing wires, make sure all connections are properly taped.
<input type="checkbox"/>	Be familiar with specific operating instructions for each piece of equipment.
<input type="checkbox"/>	Avoid contact with poison oak and poison ivy.
<input type="checkbox"/>	Avoid contact with potentially infectious waste.
<input type="checkbox"/>	Be aware of and avoid contact with potentially rabid animals.
<input type="checkbox"/>	Use appropriate insect repellent to avoid disease carrying or poisonous insects. Avoid breathing dust in dry desert or central valley areas (valley fever, Hanta virus, etc.).

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

7. Health and Safety Procedures Required by the Facility

Contact Mr. Joseph Cotton of the City of Oakland and Mr. Bob Clark-Riddell (510-420-3303) of Cambria, via fax, phone or email prior to each event.

Verify from Mr. Cotton whether or not any other City agencies or departments need to be informed of traffic detour procedures during operations.

8. Special Procedures and Precautions

<input type="checkbox"/>	Not Applicable.
X	Wear the following PPE when handling 7% Hydrogen Peroxide solution and measuring water parameters: Steel toed PVC boots, hard hat with splash shield, chemical goggles, heavy duty neoprene gloves, heavy duty PVC jacket and pants, latex or neoprene inner gloves. Respirator should not be necessary at these concentrations and provided area is well ventilated.
X	If H ₂ O ₂ comes in contact with PPE, or clothing rinse thoroughly for with clean water. Rinse skin for at least 15 minutes.
X	If H ₂ O ₂ comes in contact with eyes, use portable eye wash station and rinse eye(s) for a minimum of 15 minutes. Contact June Dougherty at 510-774-6972 immediately. Seek medical attention if severe.
X	If water in well increases in temperature after adding hydrogen peroxide by more than 5 degrees F, add water to well until temperature stabilizes and/or decreases.
X	If small spill occur, immediately flush with large amounts of water (minimum of a 3:1 ratio or the equivalent of reducing the H ₂ O ₂ to less than a 3% solution).
X	For large spills use absorbent pads to clean up spill. Place pads in a container and submerge in water till disposal.
X	Use a plastic, glass, stainless steel, or aluminum funnel to pour H ₂ O ₂ into wells.

9. Air Monitoring Procedures

Note: If applicable, see last page of this HSP for Total Dust Equivalency calculation instructions.

X	Not Applicable	Because no chemical contamination or excessive dust is expected, no air monitoring will be performed.
<input type="checkbox"/>	Volatile organics only	VOC concentrations in the breathing zone will be monitored using a PID or FID, during intrusive activities, or any time activities or site conditions change.
<input type="checkbox"/>	Uncontaminated dust only; Total dust monitoring w/Real	Monitoring will be performed when there is visual dust, using a Real Time Total Dust Meter, to detect if

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

	Time Dust Monitors	total dust levels are above the OSHA PEL for dust of 10 mg/m ³ .
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SITE-SPECIFIC HEALTH AND SAFETY PLAN

Page 7

<input type="checkbox"/>	<p>Contaminated dust only; Total dust monitoring w/Real Time Dust Monitors</p>	<p>To obtain current information about potential exposure conditions to contaminated airborne dust, Real Time Total Dust Meter(s) will be used to monitor the breathing zone or immediate work area. Calculations have been done to determine the total airborne dust level necessary to reach the Permissible Exposure Level (Cal/OSHA, PEL-TWA) of given it's highest known concentration in soil. The compound with the highest soil concentration, and the lowest PEL is _____. Subsequently, it has the lowest Total Dust Equivalency Level of _____. This is the amount of total dust necessary in the breathing zone to create an inhalation exposure exceeding the PEL of _____. Since, the number is above/below the OSHA PEL for simple Nuisance Dust/Particulate (non-toxic) of 10 mg/m³, then the Action Level to upgrade to respiratory protection during site activities will be the more conservative limit, mg/m³. See item #10 for a detailed description of Action Levels, Activities, and corresponding PPF.</p>
<input type="checkbox"/>	<p>Volatile organics and uncontaminated dust</p>	<p>VOC concentrations in the breathing zone will be monitored using a PID or FID, during intrusive activities, or any time activities or site conditions change. Monitoring will be performed when there is visual dust, using a Real Time Total Dust Meter, to detect if total dust levels are above the OSHA PEL for dust of 10 mg/m³.</p>

<input type="checkbox"/>	<p>Volatile organics and contaminated dust</p>	<p>VOC concentrations in the breathing zone will be monitored using a PID or PID, during intrusive activities, or any time activities or site conditions change.</p> <p>To obtain current information about potential exposure conditions to contaminated airborne dust, Real Time Total Dust Meter(s) will be used to monitor the breathing zone or immediate work area. Calculations have been done to determine the total airborne dust level necessary to reach the Permissible Exposure Level (Cal/OSHA, PEL-TWA) of _____ given its highest known concentration in soil. The compound with the highest soil concentration, and the lowest PEL is _____.</p> <p>Subsequently, it has the lowest Total Dust Equivalency Level of _____. This is the amount of total dust necessary in the breathing zone to create an inhalation exposure exceeding the PEL of _____. Since, the number is above/below the OSHA PEL for simple Nuisance Dust/Particulate (non-toxic) of 10 mg/m³, then the Action Level to upgrade to respiratory protection during site activities will be the more conservative limit, _____ mg/m³. See item #10 for a detailed description of Action Levels, Activities, and corresponding PPE.</p>
<input type="checkbox"/>	<p>Methane</p>	<p>Methane will be monitored using an LEL/O₂ meter (Combustible Gas Indicator such as a GasTech) during excavation or confined space activities, to protect against explosion hazards. Methane is an asphyxiant and is not considered to be an inhalation hazard.</p>

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

Page 9

10. Action Levels

X	Not Applicable (No air monitoring will be performed) See section 8 for appropriate personal protective equipment to wear/use while handling H2O2.
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Note: If PID/FID readings in the breathing zone exceed 5 ppm consistently and Level C is required, contact the Project Manager before proceeding.

Volatile Organics		PID/FID	
	Activities/Locations	Action Level	Level of Protection
<input type="checkbox"/>	Drilling/sampling of soil and groundwater	0 to 5 ppm	Level D with steel toed boots, safety glasses, hard hat, and latex inner gloves and nitrile or neoprene outer gloves. Regular or polycoated Tyvek is optional.
		5 to 50 ppm	Level C: Level D as above plus a half face respirator with organic vapor cartridges, and chemical goggles, and polycoated tyvek.
		50 to 250 ppm	Level C as above EXCEPT with a Full FACE respirator.
		> 250 ppm	Upgrade to Level B or Cease operations until vapors dissipate and readings are below 200 ppm.

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

Uncontaminated Dust		Total Dust Meter	
	Activities/Locations	Action Level	Level of Protection
<input type="checkbox"/>	Drilling/sampling of soil and groundwater	0<10 mg/m ³	Level D with steel toed boots, safety glasses, hard hat, and latex inner gloves and nitrile or neoprene outer gloves. Regular or polycoated Tyvek is optional.
		> 10 mg/m ³	Level C: Level D as above plus a half face respirator with dust/mist cartridges, chemical goggles, and regular or polycoated tyvek. Or use dust suppression methods.

Contaminated Dust		Total Dust Meter	
	Activities/Locations	Action Level	Level of Protection
<input type="checkbox"/>	Drilling/sampling of soil and groundwater	0<10 mg/m ³ or _____ mg/m ³ level calculated in Item #9	Level D with steel toed boots, safety glasses, hard hat, and latex inner gloves and nitrile or neoprene outer gloves. Regular or polycoated Tyvek is optional.
		>10 mg/m ³ or _____ mg/m ³ level calculated in Item #9	Level C: Level D as above plus a half face respirator with dust/mist cartridges, chemical goggles, and regular or polycoated tyvek. Or use dust suppression methods.

Other			
	Activities/Locations	Action Level	Level of Protection
<input type="checkbox"/>	Drilling/sampling of soil and groundwater		

11. Decontamination

Not Applicable.

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

Page 11

<input type="checkbox"/>	General: A designated decontamination area will be setup within the Contamination Reduction Zone prior to the commencement of work. The designated area will accommodate both personnel and vehicles that have been in the Exclusion Zone and then pass through the Contamination Reduction Zone to enter the Support zone.
<input checked="" type="checkbox"/>	Specific: Rinse PPE after handling H2O2 if any splashing occurred. Wash and rinse hands and face.

12. Sample Handling and Investigation – Derived Waste Management

<input type="checkbox"/>	Chemical contamination not suspected. If contamination is encountered, contact the project manager regarding special sample handling or waste management requirements.
<input type="checkbox"/>	Sample contamination known or suspected. Wear gloves when handling samples.
<input type="checkbox"/>	Place soil cuttings and equipment rinsate wastewater in <u>labeled</u> 55 gallon drums or other appropriate containers.

13. Emergency Contacts (names and telephone numbers)

Police: 911

Fire: 911

Ambulance: 911

Hospital: Alameda County Medical Center 510-437-4701

Facility Health and Safety Officer (if applicable):

GAIA Health and Safety Director: 510-774-6972, June Dougherty (GAIA)

Mary Holland-Ford (Cambria) Project Manager 510-450-1982

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

Page 13

TO THE SUBCONTRACTOR: *This plan has been prepared solely for the use of GAIA Consulting, Inc. personnel. It is supplied to you for informational purposes only. You are responsible for your own health and safety program.*

16. Checklist

This HSP contains the following attachments. If they are not present with this document, it is incomplete.

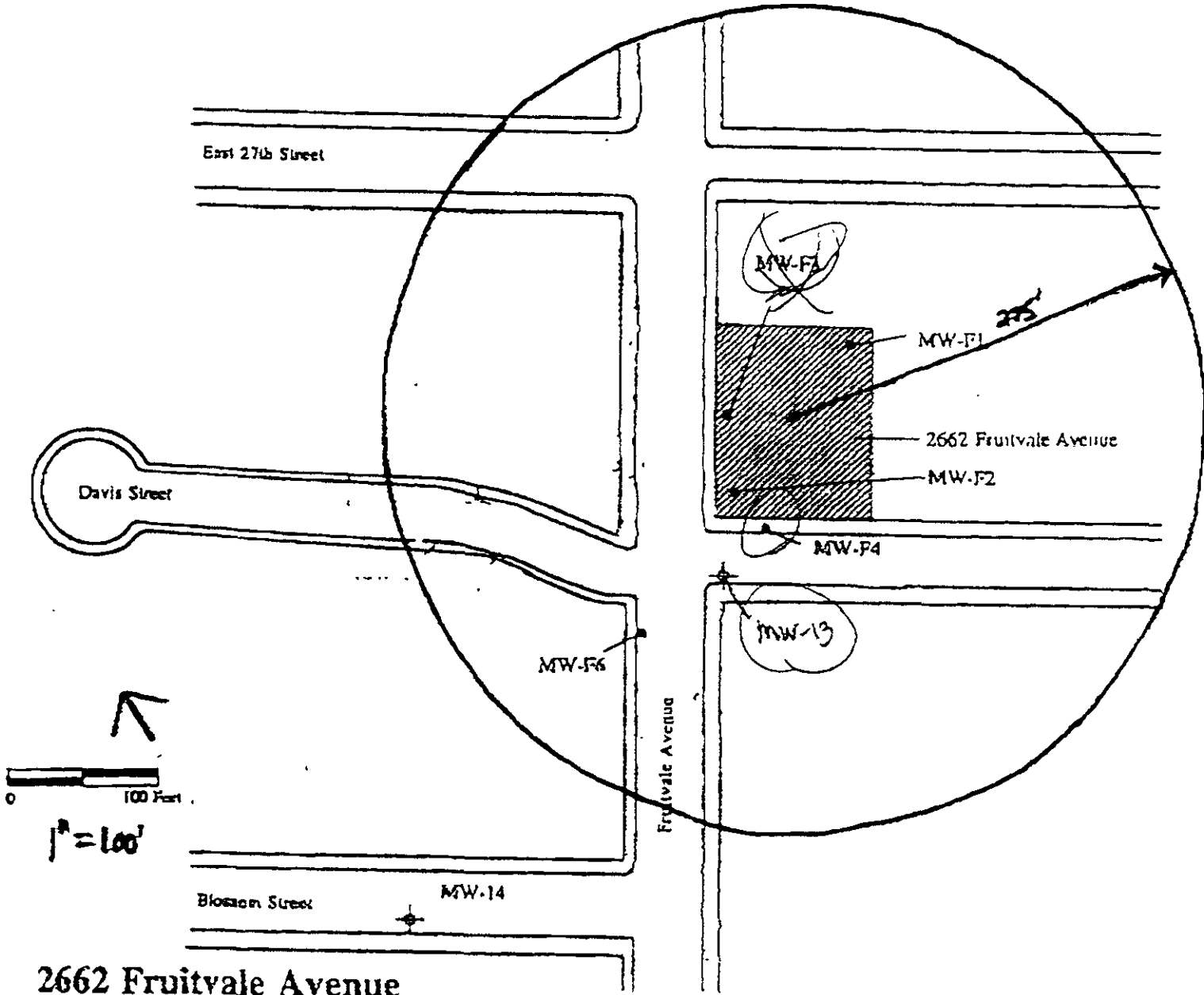
- X Site Map (see Item 3)
- X Hospital Route Map (see Item 14)

17. Signatures

Note: For sites with known or suspected chemical contamination, the HSP must be reviewed and approved by the Health and Safety Director or her designee.


GAIA Consulting, Inc. Health and Safety Director

5-19-02
Date



**2662 Fruitvale Avenue
Oakland, California**

Source: Base Map Modified from Groundwater Technology, Inc. 1999 File

ST-1 1/10/02 10:20:02 AM 'R'...



Welcome, Guest User

[Create My Locations - Sign](#)

Yahoo! Yellow Pages

Starting from: 2662 Fruitvale Ave, Oakland, CA 94601-2033

[Email Directions](#)

★ Alameda County Medical Ctr
1411 E 31st St, Oakland, CA 94602

[Get Reverse Directions](#)

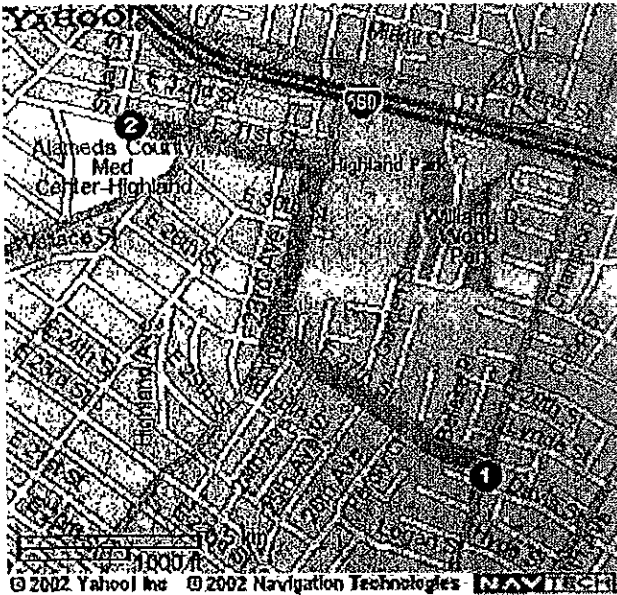
Arriving at:

(510) 437-4701

[Text Only Driving Directions](#)

Distance: 1.1 miles

Approximate Travel Time: 3 mins



Full Route



Destination

Directions

1. Start on FRUITVALE AVE going towards E 27TH ST
2. Turn Left on E 27TH ST
3. Turn Right on 23RD AVE
4. Turn Left on E 31ST ST
5. Arrive at destination

Miles

- 0.0
- 0.4
- 0.3
- 0.3

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

[Driving Directions](#)

[New Location](#)

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

14. Written Directions to Nearest Hospital (attach route map)

Take Fruitvale to East 27th street. Turn left on 27th, right on 23rd, left on 31st street. See attached map and directions.

15. By my signature below, I hereby indicate that I have read and understand this HSP and I agree to follow the guidelines therein.

Name (Print)	Name (Signature)	Date
Craig Zett	S/20/02	5/20/02
Craig Zett	CZ - 7	5/22/02
Craig Zett	CZ - 7	5/23/02
Craig Zett	CZ - 7	5/24/02
Craig Zett	CZ - 7	5/30/02
Craig Zett	CZ - 7	6/3/02
Craig Zett	CZ - 7	6/6/02
Craig Zett	CZ - 7	6/10/02
Craig Zett	CZ - 7	6/13/02
Craig Zett	CZ - 7	6/17/02

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

14. Written Directions to Nearest Hospital (attach route map)

Take Fruitvale to East 27th street. Turn left on 27th, right on 23rd, left on 31st street. See attached map and directions.

15. By my signature below, I hereby indicate that I have read and understand this HSP and I agree to follow the guidelines therein.

Name (Print)

Name (Signature)

Date

Ian Young (Cambria)



5/23/02

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

14. Written Directions to Nearest Hospital (attach route map)

Take Fruitvale to East 27th street. Turn left on 27th, right on 23rd, left on 31st street. See attached map and directions.

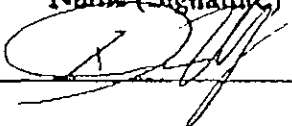
15. By my signature below, I hereby indicate that I have read and understand this HSP and I agree to follow the guidelines therein.

Name (Print)

Name (Signature)

Date

Iran Young
(Cambria)



5/20/02



Job Safety Analysis

Hydrogen Peroxide Injection



JSA Type: SAR Operations Transport Office Construction New Revised Date: 02/20/02

Co: _____ Dept: _____ Div: _____ Org Unit: _____ Loc: _____

Work Type: Environmental Work Activity: GWE and/or SVE Pilot Testing

Personal Protective Equipment (PPE):
 Minimum PPE is Level D including: safety goggles, rubber or vinyl rainsuit, hard hat with face shield, rubber steel-toed and shank boots, hearing protection, and rubber or nitrile gloves
 Additional PPE may be required in the Health & Safety Plan (HSP). Also refer to the HSP for required traffic control, air monitoring, and emergency procedures.

Development Team	Position/Title	Reviewed By	Position/Title	Date
Berry, Thomas R.	Operations Manager	N. Scott MacLeod	Principal Geologist	
Barbara Jakub	Project Geologist			
Brian Busch	Project Scientist			

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Self Performance Safety Analysis (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightning) must also be considered.

① Job Steps	② Potential Hazard	③ Critical Actions
Order H ₂ O ₂ delivered to site if concentration is above 7.5 % or volume is greater than 1000 lbs.	Accident during transportation could cause H ₂ O ₂ release.	Follow DOT regulations for H ₂ O ₂ transport.
Review hydrogen peroxide hazards	Reacts with anything organic, incompatible with iron, steel, brass, bases, acids, lime ammonia Can cause personal burns, ignition of combustible organic material, and/or pressure bursts caused by contamination or lack of ventilation.	Ensure that no organic or incompatible chemicals are anywhere near H ₂ O ₂ . Ensure that no H ₂ O ₂ gets onto skin or in eyes by wearing appropriate PPE. Do not drop anything in drums containing H ₂ O ₂ .
Pick up H ₂ O ₂ and transport to site.	Accident during transportation could cause H ₂ O ₂ release. H ₂ O ₂ can cause personal burns, ignition of combustible material, pressure bursts caused by contamination or lack of ventilation.	Follow DOT regulations for H ₂ O ₂ transport. Ensure that the proper emergency response equipment is in your truck in case of spill. Ensure that the proper MSDS are in your truck. Ensure that containers are properly labeled, ventilated, and in proper shipping containers.
Mobilize with proper equipment/ safety supplies for testing.	Vehicle accident. Lifting hazards. Delay or improper performance of work due to improper equipment onsite.	Follow safe driving procedures. Employ safe lifting procedures. Make sure sub-contractors are aware of their responsibilities for labor, equipment and supplies. Review HSP and permit conditions and gather necessary PPE.
Inspect injection wells for separate phase hydrocarbons (SPH) H ₂ O ₂ injection	SPH and H ₂ O ₂ can react and cause an explosion.	Do not inject H ₂ O ₂ in a well that contains SPII.
Set up necessary traffic control.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	Use buddy system for placing traffic control. Reference traffic control plan section of HSP (may include specific requirements based on permits).
Unload H ₂ O ₂ drum and set up equipment.	Struck by vehicle. Trip hazards. Accident when maneuvering equipment. Lifting hazard. Adverse impacts to station sales. Contamination of equipment may cause ignition of material.	Place equipment away from pump islands or other high traffic areas. Protect drums with traffic control equipment (cones, barricades, etc). Provide as-needed hand signals and guidance to driver when placing dropping off large quantities of H ₂ O ₂ . Visually inspect equipment (fire extinguisher on board/available on site, no damaged hoses, all hoses and connections firmly connected?). Use proper lifting

		techniques. Use dedicated equipment
Set up exclusion zone(s) including eyewash, safety shower and decon station, and workstation.	Struck by vehicle during set up. Slp/fall hazards, lifting hazard.	Implement exclusion zone set-up instructions of HSP. Set up workstation with clear walking paths to all testing locations. Face oncoming traffic.
Bring H ₂ O ₂ drum to injection wells		
Gauge water levels and product thickness (where applicable).	Back strain. Inhalation or dermal exposure to chemical hazards. Repetitive motion. Traffic hazards.	Don necessary PPE and initiate air quality monitoring in accordance with the HSP. Maintain safe distance from well heads. Bend at knees, not waist. Decontaminate equipment between each measurement. Face oncoming traffic.
Commence testing	Explosion or fire. Trip hazards. Unauthorized release of contaminants. Exposure to contaminants (inhalation, dermal contact). Noise. Electrical hazards.	Follow equipment-specific operation instructions. Monitor influent vapor and oxygen concentrations if applicable. Keep work area tidy and free of loose equipment. Monitor treatment system and collect data to ensure discharge is within permit parameters and capacity of any storage containers (concentrations and flow rates). Wear PPE in accordance with HSP (including ear protection as necessary). Use GFIC and inspect cords.
H ₂ O ₂ injection	Burns to skin and eyes. Accelerating reaction with leather/metal can lead to explosion or fire. Unvented containers can build pressure and explode Oxygen-enriched atmosphere.	Wear rubber gloves, boots, coveralls, rain suit, and hard hat with eye shield (no leather!) in accordance with HSP. Use dilute concentration (<8% when possible). Store and transport H ₂ O ₂ in approved and labeled containers in accordance with DOT regulations. Refer to H ₂ O ₂ -specific safety procedures for all work with H ₂ O ₂ . Do not use H ₂ O ₂ unless you know and understand the hazards and safety procedures.
Collect samples in accordance with sampling plan.	Cross-contamination. Improper sample labeling or storage. Exposure to contaminants. Repetitive motion. Body position	Label samples in accordance with sampling plan. Keep samples stored in proper containers, at correct temperature, and away from work area. Perform air monitoring and wear proper PPE.
Store waste (water, carbon canisters, etc) in accordance with site-specific requirements	Back strain. Traffic hazard. Improper storage or disposal. If disposing through onsite treatment system, damage or injury from improper use of equipment	Use proper equipment to transport waste containers (pumps, drum dollies, etc) Have proper storage containment and labeling available onsite. Place materials in isolated location away from traffic and other site functions. Label waste. Coordinate proper disposal offsite (where applicable) Review instructions for use of onsite treatment systems.
Clean site/demobilize	Traffic hazard. Lifting hazards. Safety hazards left on site. Leaving H ₂ O ₂ on surfaces to react.	Use buddy system as necessary to remove traffic control. Use proper lifting techniques. Leave site clean of refuse and debris. Notify station personnel of departure and location of any stored waste. Ensure that no H ₂ O ₂ is has been spilled and not rinsed down with water. Rinse down any spills with copious amounts of water.
Package and deliver samples to lab.	Bottle breakage, back strain.	Handle and pack bottles carefully (bubble wrap bags are helpful). Use proper lifting techniques.

F:\Safety\LPS Forms\USA-H2O2Draft.doc

AUTOTYPE INTERNATIONAL LTD -- HYDROGEN PEROXIDE SOLUTION
MATERIAL SAFETY DATA SHEET
NSN: 681000N052088
Manufacturer's CAGE: AUTTY
Part No. Indicator: A
Part Number/Trade Name: HYDROGEN PEROXIDE SOLUTION

=====
General Information
=====

Company's Name: AUTOTYPE INTERNATIONAL LTD
Company's Street: GROVE RD
Company's City: WANTAGE, OXON, ENGLAND
Company's Zip Code: OX12 7BZ
Company's Emerg Ph #: 800-424-9300
Company's Info Ph #: 708-303-5900
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 01MAY91
Safety Data Review Date: 09AUG94
MSDS Serial Number: BVLQP
Hazard Characteristic Code: NK

=====
Ingredients/Identity Information
=====

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: COLORLESS LIQUID (WATER).
Boiling Point: 212F,100C
Melting Point: N/A
Vapor Pressure (MM Hg/70 F): AS WATER
Vapor Density (Air=1): AS WATER
Specific Gravity: 1.0 (H*20=1)
Solubility In Water: COMPLETE

=====
Fire and Explosion Hazard Data
=====

Flash Point: N/A
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).
Special Fire Fighting Proc: USE NIOSH/MSHA APPROVED SCBA AND FULL
PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: OXIDIZER. CONTACT WITH COMBUSTIBLE MATERIAL
WILL ASSIST COMBUSTION.

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): HEAT.
Materials To Avoid: REDUCING AGENTS, ORGANICS.

=====
Health Hazard Data
=====

=====
Precautions for Safe Handling and Use
=====

=====
Control Measures
=====

=====
Transportation Data
=====

=====
Disposal Data
=====

=====
Label Data
=====

Label Required: YES
Technical Review Date: 09AUG94
Label Date: 05AUG94
Label Status: G
Common Name: HYDROGEN PEROXIDE SOLUTION
Chronic Hazard: NO
Signal Word: WARNING!
Acute Health Hazard-Moderate: X
Contact Hazard-Moderate: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE: EYES: IRRITATING. SKIN: BURNS/
IRRITATION. INGESTION: HARMFUL; STOMACH DISTENSION, NAUSEA, VOMITING,
BLEEDING. CHRONIC: NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: AUTOTYPE INTERNATIONAL LTD
Label Street: GROVE RD
Label City: WANTAGE, OXON, ENGLAND
Label Zip Code: OX12 7BZ
Label Emergency Number: 800-424-9300

BELL FUELS -- LEAD-FREE GASOLINE; NO-LEAD GASOLINE - GASOLINE, UNLEADED
MATERIAL SAFETY DATA SHEET
NSN: 9130012084172
Manufacturer's CAGE: 8P539
Part No. Indicator: A
Part Number/Trade Name: LEAD-FREE GASOLINE; NO-LEAD GASOLINE

=====
General Information
=====

Item Name: GASOLINE, UNLEADED
Company's Name: BELL FUELS, INC
Company's Street: 4116 WEST PATERSON AVE
Company's City: CHICAGO
Company's State: IL
Company's Country: US
Company's Zip Code: 60646
Company's Emerg Ph #: 312-286-0200
Company's Info Ph #: 312-286-0200
Record No. For Safety Entry: 060
Tot Safety Entries This Stk#: 064
Status: SP
Date MSDS Prepared: 23FEB90
Safety Data Review Date: 21OCT94
Supply Item Manager: KY
MSDS Serial Number: BVHJT
Specification Number: VV-G-1690
Spec Type, Grade, Class: CIVGAS
Hazard Characteristic Code: F2
Unit Of Issue: DR
Unit Of Issue Container Qty: 55 GALLONS
Type Of Container: DRUM, 18 GAGE
Net Unit Weight: 325.2 LBS

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: HYDROCARBONS, AROMATIC
Ingredient Sequence Number: 01
Percent: 15-35
NIOSH (RTECS) Number: 1008732HA
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: SATURATED HYDROCARBONS
Ingredient Sequence Number: 02
Percent: 60-75
NIOSH (RTECS) Number: 1006886SH
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: UNSATURATED HYDROCARBONS
Ingredient Sequence Number: 03
Percent: 1-15
NIOSH (RTECS) Number: 1006887UH
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: DYE AND OTHER ADDITIVES
Ingredient Sequence Number: 04
Percent: 0.02
NIOSH (RTECS) Number: 1003746AD

OSHA PEL. NOT ESTABLISHED
ACGIH TLV. NOT ESTABLISHED
Other Recommended Limit. NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: BLUE OR CLEAR, TYPICAL HYDROCARBON ODOR.
Boiling Point: 90.0F, 32.2C
Vapor Pressure (MM Hg/70 F): 414 @100C
Vapor Density (Air=1): 3-4
Specific Gravity: 0.71-0.77
Solubility In Water: NEGLIGIBLE.

Fire and Explosion Hazard Data

Flash Point: -50F, -46C
Flash Point Method: TCC
Lower Explosive Limit: 1.3
Upper Explosive Limit: 6
Extinguishing Media: ANY UL APPROVED CLASS B MEDIA SUCH AS FOAM, CARBON DIOXIDE, DRY CHEMICAL.
Special Fire Fighting Proc: NONE SPECIFIED BY MFG; HOWEVER USE APPROPRIATE PROTECTIVE EQPMT INCLUDING SELF-CONTAINED BREATHING APPARATUS.
Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MFG; HOWEVER MATL IS HEAVIER THAN AIR AND WILL TRAVEL LONG DISTANCES & FLASHBACK. EXPLOSIVE MIXTURE FORMS W/GASOLINE & AIR.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NONE SPECIFIED BY MFG; HOWEVER AVOID OPEN FLAMES/HEAT/SPARKS/OTHER IGNITION SOURCES.
Materials To Avoid: OXIDIZERS.
Hazardous Decomp Products: NONE SPECIFIED BY MFG.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE:EYE:IRRIT @ HIGH VAP LEVELS OR DIRECT CONTACT W/FLUID. SKIN:IRRIT ON PROLONG CONTACT W/LIQ, DERM RESULTING FROM DEFATTING NATURE OF LIQ. SYSTEMATIC:CNS EFFECTS (NARCOSIS) @ HIGH VAP LEVELS; MUC MEMBRANE IRRIT, PNEUMONIA. INGEST:GASTROINTESTINAL DISTURBANCES. CHRONIC:PERIPHERAL NERVOUS SY EFFECTS, BLOOD ALTERATIONS
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: PER MSDS:NONE STATED; HOWEVER CONTAINS GASOLINE WHICH IS CONSIDERED BY IARC TO BE POTENTIAL CARCINOGEN.
Signs/Symptoms Of Overexp: EYE & SKIN IRRITATION. DERMATITIS. NARCOSIS. GI DISTURBANCES:NAUSEA, DIARRHEA, STOMACH PAINS.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MFG.
THOROUGHLY WASH AREA W/SOAP & WATER. INHAL:REMOVE FROM CONTAMINATED AREA. ADMINISTER ARTIFICIAL RESP IF NECESSARY. CALL PHYSICIAN. INGEST:GIVE A VEGETABLE OIL TO RETARD ABSORPTION. DO NOT INDUCE VOMITING. CALL PHYSICIAN. FATAL DOSE ADULT HUMAN APPROX 350G, CHILD APPROX 10-13G.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: KEEP PUBLIC AWAY. SHUT OFF SOURCE W/O RISK. ADVISE POLICE & NAT RESP CENTER 800-424-8802 IF SUBSTANCE HAS ENTERED A WATER COURSE OR SEWER. CONTAIN LIQ W/EARTH, SAND. RECOVER FREE LIQ BY PPUMPING OR W/SUITABLE ABSORBENT.

Neutralizing Agent: NONE SPECIFIED BY MFG.

Waste Disposal Method: UNDER MANY SPILL SITUATIONS LIQ CAN BE RECOVERED & RECLAIMED. WHERE SOLID ABSORBENTS ARE USED THEY SHOULD BE INCINERATED PER APPLICABLE STATE & LOCAL REGULATIONS.

Precautions-Handling/Storing: USE APPROPRIATE GROUNDING-DISPENSING PROCEDURES. STORE IN RELATIVELY COOL PLACE. DO NOT EXPOSE TO HEAT, OPEN FLAME OR OXIDANTS.

Other Precautions: NONE SPECIFIED BY MFG.

Control Measures

Respiratory Protection: FOR EXPOSURES IN EXCESS OF EXPOSURE LIMITS CHEMICAL CARTRIDGE RESPIRATOR OR AIR SUPPLIED EQUIPMENT.

Ventilation: LOCAL EXHAUST REQUIRED & EXPLOSION PROOF EQUIPMENT.

Protective Gloves: IMPERMEABLE GLOVES.

Eye Protection: NONE SPECIFIED HOWEVER SAF GLASSES/GOGG

Other Protective Equipment: NONE SPEICFIED BY MFG.

Work Hygienic Practices: WASH HANDS AFTER HANDLING & PRIOR TO EAT/DRINK/ SMOKE/USE OF TOILET FACILITIES. FOLLOW GOOD WORK HYGIENE PRACTICES.

Transportation Data

Trans Data Review Date: 94294

DOT PSN Code: GTN

DOT Proper Shipping Name: GASOLINE

DOT Class: 3

DOT ID Number: UN1203

DOT Pack Group: II

DOT Label: FLAMMABLE LIQUID

IMO PSN Code: HRV

IMO Proper Shipping Name: GASOLINE

IMO Regulations Page Number: 3141

IMO UN Number: 1203

IMO UN Class: 3.1

IMO Subsidiary Risk Label: -

IATA PSN Code: MUC

IATA UN ID Number: 1203

IATA Proper Shipping Name: GASOLINE

IATA UN Class: 3

IATA Label: FLAMMABLE LIQUID

AFI PSN Code: MUC

AFI Prop. Shipping Name: GASOLINE

AFI Class: 3

AFI ID Number: UN1203

AFI Pack Group: II

AFI Basic Pac Ref: 7-7

Disposal Data

Label Data

Label Required: YES

Technical Review Date: 21OCT94

Label Status: F

Common Name: LEAD-FREE GASOLINE; NO-LEAD GASOLINE

Signal Word: DANGER!

Acute Health Hazard-Moderate: X

Contact Hazard-Moderate: X

Fire Hazard-Severe: X

Reactivity Hazard-None: X

Special Hazard Precautions: ACUTE:EYE:IRRIT @ HIGH VAP LEVELS OR DIRECT CONTACT W/FLUID. SKIN:IRRIT ON PROLONG CONTACT W/LIQ, DERM RESULTING FROM DEFATTING NATURE OF LIQ. SYSTEMATIC:CNS EFFECTS (NARCOSIS) @ HIGH VAP LEVELS; MUC MEMBRANE IRRIT, PNEUMONIA. INGEST:GASTROINTESTINAL DISTRUBANCES. CHRONIC:PERIPHERAL NERVOUS SYS EFFECTS, BLOOD ALTERATIONS. 1ST AID:EYE:FLUSH FOR @ LEAST 15MINS W/WATER. SKIN:THOROUGHLY WASH AREA W/

SOAP & WATER. INHAL.:REMOVE FROM CONTAMINATED AREA. ADMINISTER ARTIFICIAL
RESP IF NECESSARY. CALL PHYSICIAN. INGEST:GIVE A VEGETABLE OIL TO RETARD
ABSORPTION. DO NOT INDUCE VOMITING. CALL PHYSICIAN. FATAL DOSE ADULT HUMAN
APPROX 350G, CHILD APPROX 10-13G.

Protect Eye: Y

Protect Skin: Y

Protect Respiratory: Y

Label Name: BELL FUELS, INC

Label Street: 4116 WEST PATERSON AVE

Label City: CHICAGO

Label State: IL

Label Zip Code: 60646

Label Country: US

Label Emergency Number: 312-286-0200

POLYSCIENCE -- BENZENE, PRODUCT #: 251C-1 - BENZENE, ACS.

MATERIAL SAFETY DATA SHEET

NSN: 6810002815266

Manufacturer's CAGE: 58378

Part No. Indicator: A

Part Number/Trade Name: BENZENE, PRODUCT #: 251C-1

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General Information
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Item Name: BENZENE, ACS.
Company's Name: POLYSCIENCE
Company's Street: 7800 MERRIMAC AVE
Company's City: NILES
Company's State: IL
Company's Country: US
Company's Zip Code: 60648
Record No. For Safety Entry: 003
Tot Safety Entries This Stk#: 006
Status: SE
Date MSDS Prepared: 01MAR92
Safety Data Review Date: 05AUG94
Supply Item Manager: CX
MSDS Serial Number: BTSWC
Specification Number: 0-C-265C (RED SPEC)
Hazard Characteristic Code: F3
Unit Of Issue: CN
Unit Of Issue Container Qty: 20 LITERS
Type Of Container: METAL/PLASTIC
Net Unit Weight: 36.4 LBS

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: BENZENE (SARA III)
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: CY1400000
CAS Number: 71-43-2
OSHA PEL: SEE 1910.1028
ACGIH TLV: 10 PPM; A2; 9394
Other Recommended Limit: NONE RECOMMENDED

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: COLORLESS LIQUID.
Boiling Point: 176F, 80C
Vapor Pressure (MM Hg/70 F): 7403 @20C
Vapor Density (Air=1): 2.77
Specific Gravity: 0.874
Autoignition Temperature: 928F

=====
Fire and Explosion Hazard Data
=====

Flash Point: 12F, -11C
Lower Explosive Limit: 1.3
Upper Explosive Limit: 7.1
Extinguishing Media: CARBON DIOXIDE, DRY CHEM POWDER OR APPROPRIATE FOAM.
WATER MAY BE EFFECTIVE FOR COOLING BUT MAY NOT EFFECT EXTINGUISHMENT
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS AND
PROTECTIVE CLOTHING TO PREVENT CONTACT W/SKIN & EYES. USE WATER SPRAY TO
COOL FIRE-EXPOSED CONTAINERS.
Unusual Fire And Expl Hazrds: EXTREMELY FLAMMABLE. VAPOR MAY TRAVEL
CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASHBACK. CONTAINER
EXPLOSION MAY OCCUR UNDER FIRE CONDITIONS.

Reactivity Data

=====
 Cond To Avoid (Stability): HIGHT TEMPERATURES. SOURCES OF IGNITION.
 Materials To Avoid: OXIDIZING AGENTS.
 Hazardous Decomp Products: TOXIC FUMES OF CARBON MONOXIDE AND CARBON
 DIOXIDE.
 =====

Health Hazard Data

=====
 LD50-LC50 Mixture: LD50 (ORAL,RAT)=930 MG/KG
 Route Of Entry - Inhalation: YES
 Route Of Entry - Skin: YES
 Route Of Entry - Ingestion: NO
 Health Haz Acute And Chronic: ACUTE:HARMFUL IF SWALLOWED,INHALED,ABSORBED
 THRU SKIN.IRRIT TO MUC MEM & UPPER RESP TRACT.CAUSES SKIN & SEVERE EYE
 IRRIT.CHRONIC:CARCINOGEN.MAY ALTER GENETIC MATERIAL.BLOOD EFFECTS.
 Carcinogenicity - NTP: YES
 Carcinogenicity - IARC: YES
 Carcinogenicity - OSHA: YES
 Explanation Carcinogenicity: CONTAINS Benzene [71-43-2] WHICH IS LISTED BY
 NTP AND IARC AND REGULATED BY OSHA AS A CARCINOGEN.
 Signs/Symptoms Of Overexp: NAUSEA,DIZZ,HEAD,NARCOTIC EFFECT.CANCER.
 EXHILARATION,NERVOUS EXCITATION &/OR GIDD,DEPRESS,DROWSINESS,FATIGUE.
 TIGHTNESS IN CHEST,BREATHLESSNESS,LOSS OF CONSC,TREMORS,CONVULS,DEATH DUE
 TO RESP PARA OR CIRCULATORY COLLAPSE.DRYING,SCALING DERM,2NSD SKIN
 INFECTIONS.BLEEDING FROM NOSE/GUMS/MUC MEM,SMALL,BLISTERS,LEUKOPENIA.
 Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
 Emergency/First Aid Proc: IMMED FLUSH EYES OR SKIN W/COPIOUS AMTS OF WATER
 FOR @ LEAST 15MINS WHILE REMOVING CONTAMINATED CLOTHING/SHOES. IF INHALED,
 REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION. IF
 BREATHING IS DIFFICULT GIVE OXYGEN. IF SWALLOWED WASH OUT MOUTH W/WATER
 PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.
 =====

Precautions for Safe Handling and Use

=====
 Steps If Matl Released/Spill: EVACUATE AREA.SHUT OFF ALL IGNITION SOURCES.
 WEAR SCBA,RUBBER BOOTS & HEAVY RUBBER GLOVES.COVER W/ACTIVATED CARBON
 ADSORBENT.TAKE UP & PLACE IN CLOSED CONTAINERS.TRANSPORT OUTDOOORS.
 VENITLATE AREA & WASH SITE AFTER MATL PICKUP IS COMPLETE.
 Neutralizing Agent: NOT RELEVANT.
 Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN
 AFTERBURNER & SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS
 HIGHLY FLAMMABLE. OBSERVE ALL LOCAL, STATE AND FEDERAL LAWS.
 Precautions-Handling/Storing: WEAR APPROPRIATE NIOSH/MSHA APPROVED RESP,
 CHEM-RESIST GLOVES,SAFTY GOGGLES,OTHER PROTECTIVE CLOTH.USE ONLY IN
 CHEMICAL FUME HOOD.USE NONSPARKING TOOLS
 Other Precautions: DON'T BREATHE VAPOR.DON'T GET IN EYES,ON SKIN,ON
 CLOTHING.AVOID PROLONG/REPEAT EXPOSURE.KEEP TIGHTLY CLOSED.KEEP AWAY FROM
 HEAT,SPARKS,OPEN FLAME.STORE IN COOL DRY PLACE.IF FEEL UNWELL SEEK MED
 ADVICE(SHOW LABEL WHERE POSSIBLE).
 =====

Control Measures

=====
 Respiratory Protection: WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR.
 Ventilation: CHEMICAL FUME HOOD WHICH IS EXPLOSION PROOF.
 Protective Gloves: CHEMICAL RESISTANT GLOVES.
 Eye Protection: SAFETY GOGGLES.
 Other Protective Equipment: PROTECTIVE SUITABLE CLOTHING TO MINIMIZE SKIN
 CONTACT. SAFETY SHOWER & EYE BATH.
 Work Hygienic Practices: WASH CONTAMINATED CLOTHING PROMPTLY.WASH
 THOROUGHLY AFTER HANDLING.
 =====

Transportation Data

=====
 Trans Data Review Date: 94217
 =====

DOT PSN Code: BRS
DOT Proper Shipping Name: BENZENE
DOT Class: 3
DOT ID Number: UN1114
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: BXB
IMO Proper Shipping Name: BENZENE
IMO Regulations Page Number: 3185
IMO UN Number: 1114
IMO UN Class: 3.2
IMO Subsidiary Risk Label: -
IATA PSN Code: DBA
IATA UN ID Number: 1114
IATA Proper Shipping Name: BENZENE
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: DBA
AFI Symbols: 0
AFI Prop. Shipping Name: BENZENE
AFI Class: 3
AFI ID Number: UN1114
AFI Pack Group: II
AFI Basic Pac Ref: 7-7
N.O.S. Shipping Name: BENZENE.
Additional Trans Data: PER CTDF SHIPPING NAME: BENZENE, UNIT CAN CONTAINS
20 LITERS. FOR PALLETIZATION REQMTS: METAL OR PLASTIC 5 GALLON CONTAINER.

=====
Disposal Data
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Label Data
=====

Label Required: YES
Technical Review Date: 05AUG94
Label Status: F
Common Name: BENZENE, PRODUCT #: 251C-1
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Moderate: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: HARMFUL IF SWALLOWED, INHALED, ABSORBED THRU
SKIN. IRRIT TO MUC MEM & UPPER RESP TRACT. CAUSES SKIN & SEVERE EYE IRRIT.
CHRONIC: CARCINOGEN. MAY ALTER GENETIC MATERIAL (MUTAGEN). BLOOD EFFECTS.
TARGET ORGANS: BLOOD/BLOOD MARROW/CNS. FIRST AID: IMMEDIATELY FLUSH EYES OR SKIN W/
COPIOUS AMTS OF WATER FOR @ LEAST 15MINS WHILE REMOVING CONTAMINATED
CLOTHING/SHOES. IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE
ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT GIVE OXYGEN. IF SWALLOWED
WASH OUT MOUTH W/WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: POLYSCIENCE
Label Street: 7800 MERRIMAC AVE
Label City: NILES
Label State: IL
Label Zip Code: 60648
Label Country: US

MOTOR OIL HELLAS CORINTH REFINERIES SA -- DIESEL FUEL, ARTIC (DFA) - DIESEL FUEL
MATERIAL SAFETY DATA SHEET
NSN: 9140002865282
Manufacturer's CAGE: G0262
Part No. Indicator: A
Part Number/Trade Name: DIESEL FUEL, ARTIC (DFA)

=====
General Information
=====

Item Name: DIESEL FUEL
Company's Name: MOTOR OIL/HELLAS/CORINTH REFINERIES SA
Company's Street: 2 CAR SERVIAS
Company's City: ATENS GREECE
Company's Country: GR
Company's Zip Code: GREECE
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 004
Status: SMU
Date MSDS Prepared: 24JAN92
Safety Data Review Date: 24JUN92
Supply Item Manager: KY
MSDS Serial Number: BMZSY
Specification Number: VV-F-800
Spec Type, Grade, Class: DF-A-GRADE
Hazard Characteristic Code: F4

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: PETROLEUM HYDROCARBONS (PREDOMINANTLY IN THE RANGE C15 TO C30)
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: 1000099PH
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: 5 MG/M3 AS OIL MIST

Proprietary: NO
Ingredient: ADDITIVES AND OTHER INGREDIENTS (MAY INCLUDE ANTIOXIDANTS,
CETANE IMPROVERS, CORROSION INHIBITOR OR FUEL ICING INHIBITOR)
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 1003746AD
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: PALE YELLOW/STRAW COLORED LIQUID, KEROSENE/DIESEL
ODOR
Boiling Point: 150 - 300C
Melting Point: -60F,-51C
Vapor Pressure (MM Hg/70 F): NIL
Vapor Density (Air=1): NOT GIVEN
Specific Gravity: 0.78 -0.80
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: NOT GIVEN
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume: SLIGHT
Corrosion Rate (IPY): UNKNOWN

=====
Fire and Explosion Hazard Data
=====

Flash Point: 100F,38C
Lower Explosive Limit: 0.6 %
Upper Explosive Limit: 4.6 %
Extinguishing Media: DRY POWDER, FOAM, BCF, CARBON DIOXIDE OR WATER FOG
Special Fire Fighting Proc: USE BREATHING APPARATUS IN ENCLOSED AREAS.

COOL TANKS AND CONTAINERS EXPOSED TO FIRE WITH WATER BUT ENSURE THE WATER DOES NOT SPREAD THE FIRE OVER A LARGE AREA.
Unusual Fire And Expl Hazrds: ANY SPILLAGE SHOULD BE CONSIDERED A POTENTIAL FIRE HAZARD. FLAMMABLE VAPORS RELEASED WHEN HEATED ABOVE FLASH POINT WHICH ARE EXPOSED TO IGNITION SOURCES BURN.

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): HEAT, SPARKS, OPEN FLAMES
Materials To Avoid: STRONG OXIDIZING AGENTS
=====

Health Hazard Data
=====

Precautions for Safe Handling and Use
=====

Control Measures
=====

Transportation Data
=====

Disposal Data
=====

Label Data
=====

Label Required: YES
Technical Review Date: 24JUN92
MFR Label Number: NONE
Label Status: G
Common Name: DIESEL FUEL, ARTIC (DFA)
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-Slight: X
Reactivity Hazard-None: X
Special Hazard Precautions: STORE AND DISPENSE ONLY IN WELL VENTILATED AREAS AWAY FROM HEAAT OR SOURCES OF IGNITION. SAMPLE CONTAINERS MUST BE PROPERLY LABELLED AND CLOSED. FIRST AID: INHALATION: REMOVE TO FRESH AIR. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST. EYES: FLUSH WITH LOW PRESSURE WATER, ENSURING EYELIDS ARE KEPT OPEN. SEEK MEDICAL ADVICE IF REDNESS OR PAIN DEVELOPS. SKIN: WASH CONTACTED AREA WITH SOAP AND WATER. SEEK MEDICAL ATTENTION IF PAIN OR REDNESS DEVELOPS. INGESTION: DO NOT INDUCE VOMITING. SEEK IMMEDIATE MEDICAL ATTENTION. RINSE MOUTH.
Protect Eye: Y
Protect Skin: Y
Label Name: MOTOR OIL/HELLAS/CORINTH REFINERIES SA
Label Street: 2 CAR SERVIAS
Label City: ATENS GREECE
Label Zip Code: GREECE
Label Country: GR

C A M B R I A



ATTACHMENT B

Field Notes

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments
MW-F4	12:30		7.40			
MW-13	12:35		10.30			

RECEIVED
PCR

Project Name: Fruitvale (City of Oakland)

Project Number: 153-1664-029

Measured By: J. Hill

Date: 3-29-02

DAILY FIELD REPORT

Project Name: <i>Fruitvale</i>	Cambria Mgr: <i>Mary Holland-Ford</i>	Field Person: <i>Jon Young</i>
Project Number: <i>153-1653</i>	Date: <i>5/20/02</i>	Site Address: <i>2662 Fruitvale Ave. Oakland CA</i>
General Tasks: <i>H₂O₂ Well Injection</i>		

Time	Activity/Comments	Hours
<i>12:15 pm</i>	<i>Depart for site. Beginning mileage: 20</i>	
<i>12:35 pm</i>	<i>Arrive on site. First hour. Conduct preliminary site walk. Box lid missing from MW-F4; some debris in box, but casing and cap appear to be in good condition. MW-B intact.</i>	
<i>1:00</i>	<i>GMA staff arrives on site. Craig Zeff. Quick site walk.</i>	
<i>1:10</i>	<i>H₂S meeting Setting up at MW-F4</i>	
<i>1:25</i>	<i>Joseph Cotton from City of Oakland arrives on site to observe.</i>	
<i>1:30</i>	<i>Begin gauging and taking measurements from wells - 20, temp</i>	
<i>2:00</i>	<i>Joseph departing site. Setting up to gauge at MW-B</i>	
<i>2:10</i>	<i>Absorbent sock found in well. Checked in with Bob Clark-Piddell of Cambria by phone and sanctioned that it may be disposed of. No steam</i>	
<i>2:25</i>	<i>Completed gauging, preparing for H₂O₂ introduction at MW-B. No odor</i>	
<i>2:40</i>	<i>Begin H₂O₂ introduction to MW-B</i>	
<i>2:55</i>	<i>First 3 gal in MW-B; will wait before gauging again. Setting up at MW-F4</i>	
<i>3:00</i>	<i>Begin H₂O₂ introduction at MW-F4</i>	
<i>3:20</i>	<i>Taking temp readings on MW-B. Introducing another 3 gal. H₂O₂ Fluid level in MW-F4 has risen to top of casing and is not receding quickly. Allowing it to sit while H₂O₂ is poured into MW-B.</i>	
<i>3:35</i>	<i>Joseph Cotton returns to site</i>	
<i>3:40</i>	<i>Noted steam in MW-B and increasing odor Joseph recommends that if MW-F4 does not accept more H₂O₂, take note and pour extra H₂O₂ in MW-B</i>	
<i>3:45</i>	<i>Fluid noted rising to top of casing in both wells. Perhaps couplings from funnel to casing is possible in future.</i>	
<i>3:55</i>	<i>Reported in to Mary Holland-Ford of Cambria to provide her with progress report.</i>	
<i>4:05</i>	<i>Fluid level in MW-B has risen to TOC and is now dropping very slowly</i>	
<i>4:10</i>	<i>Joseph Cotton departing site</i>	

DAILY FIELD REPORT

Project Name: Fruitvale	Cambria Mgr: Mary Holland Ford	Field Person: Ian Young
Project Number: 153-1653	Date: 5/20/02	Site Address: 2662 Fruitvale Ave. Oakland CA
General Tasks: H ₂ O ₂ Well Injection		

Time	Activity/Comments	Hours
4:10	Call from Mary. She and BGR gave order to stop H ₂ O ₂ introduction and observe reaction for at least one hour. Approximately 2 gal. introduced to MW-F4. Effervescing. Approximately 6 gal. in MW-13. Only light effervescence.	
4:40	Reaction diminishing in MW-F4.	
4:45	Introducing water to both wells to stabilize reaction.	
4:53	Fairly active reaction in MW-13 still. Adding more water (~2 gallons).	
5:20	Active effervescence in both wells. Craig has to depart temporarily to return unused buckets of H ₂ O ₂ to Margen Environmental. Will return shortly.	
5:25	Definite sheen visible in MW-13 Partial sheen visible in MW-F4	
5:30	Effervescence diminishing in MW-F4, still strong in MW-13. Adding another gallon of water to MW-13 (~3 gal total).	
5:45	Effervescence abating in both wells.	
6:15	Craig returned. Not able to drop buckets of H ₂ O ₂ at Margen Env. Will keep with him until Thursday. Taking final temp readings. - temp stable. Little or no sign of further reaction. Replacing well caps.	
6:45	Craig departs site in Ford pickup. Ending mileage: 141	

(left @ 12:30)
Arrived site at 13:00

Well on sidewalk has no lid.
Well plug looks good.
Obtained lid from Joseph Cotton from city of Oakland.

H₂O Depth to top of casing in well on sidewalk = ~~8.7~~ 8.4'

T° = 65.8°F = ___ C° 19.78°C

Dissolved O₂ = 4.0 mg/L
lowered ~ 3-4' below H₂O level in well.

13:30

moved to well on Davis to take readings

H₂O Depth to top of casing = ~~10.0~~ 10.4'

D.O. ~ 3-4' below water H₂O level = 6.7 mg/L

T° = 67.2°F = ___ C° 19.56°C

14:00

Began H₂O₂ introduction in well at Davis St.

moved to well on sidewalk

Began H₂O₂ intro. ~~at depth~~

water not going in fast, slow rate
waited

Took H_2O T° of well or street

$$T^\circ = \del{68.5}^\circ F$$
$$68.5^\circ F$$

16.20 In-talked to Boss - Instructed us
to stop & observe wells

MW-F4 (on sidewalk)

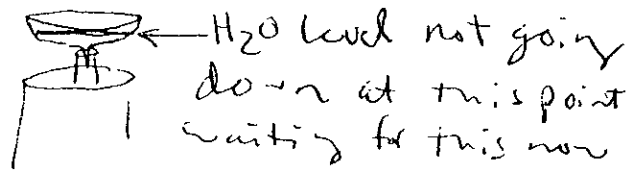
MW-13 (on street)

10 (CZ)

~~3~~ gallons H_2O_2 introduced, into MW-13

3 1/3 (CZ) ~~3~~ gallons H_2O_2 introduced, into MW-F4

Funnels containing water at same
level for long period of time now
i.e. very low rate



H₂O level in MW-13 now down
some effervescence observed - poured
water into well to try and stabilize reaction

partial skew now observed in MW-F4

For MW-F4

T° before cut/capping off = $66.2^{\circ} F$

T° // for MW-13 = $66.5^{\circ} F$

18:00 Left Site

18:30 Arrived at office

Note: Since Morgan Environmental closed @ 16:00, took H_2O_2 back to office & then to Morgan Env. the following day

09:00 left ~~(Preston) 6.5 gallon bucket of H₂O from Marysville~~

09:30 Arrived site

MWF4) depth to H₂O = ~~13.3'~~ ^{9.6'} (T.O.C.) 10.0 (BGS)
Dissolved O₂ = 17.1

MW13) depth to H₂O = 13.4' (T.O.C.) 13.8' BG
Dissolved O₂ = 15.9

D.O. taken ~ 3-4' below H₂O level in well

10:30 Left site

11:00 Arrived office

DAILY FIELD REPORT

Project Name: <i>Fruitvale</i>	Cambria Mgr: <i>Mary Holland-Ford</i>	Field Person: <i>Jan Young</i>
Project Number: <i>153-1653</i>	Date: <i>5/23/02</i>	Site Address: <i>2662 Fruitvale Ave. Oakland CA</i>
General Tasks: <i>H₂O₂ Introduction</i>		

Time	Activity/Comments	Hours
9:35	Depart for site. Beginning mileage = 184	
9:50	Arrive on site. GATA still. Craig Zeff on site. Measurements and readings already taken on MW-F4 Already pouring H ₂ O ₂ when I arrived. All safety clothing and PPE in place - rain suit, eye gear, fuscuplets, rubber boots, nitrile gloves. Traffic control in place. MW-F4 is again accepting fluid only very slowly - only a little more than 2 gal poured and top of casing has been reached.	
10:00	Testing new well caps for both wells and new well bore lid for MW-F4. Good fit on all.	
10:10	While Craig waits for fluid level to cascade on MW-F4, begins taking readings on MW-13. MW-13 DTW from TOC: 23.3'	
10:30	Fluid level still at TOC on MW-F4.	
10:40	MW-13 accepting H ₂ O ₂ well - 5 gal bucket	
10:55	TOC in MW-13 reached and holding steady - not dropping.	
11:00	Fluid levels in both wells remaining high. Review procedure for rest of day with Craig. Departing site. Ending mileage: 204	

08:30 Left (picked up 6 5-gallon buckets H_2O_2 from Morgan Environmental)

09:00 Arrived at site - Began taking readings at MW-F4
Depth to H_2O

at 0.4' T.O.C. = 9.1' Well Top = 9.5'
(~~at~~ difference between lid + Top of casing)

$D.O. = 13.6 \text{ mg/L}$ in well ~ 2.5' below H_2O level

(Difficult to get rdg. because

~~the~~ sensor gets covered in 2" diameter mud

Temp = 66.6°F 21.9°C

09:30 Poured ~ ~~2~~²/₃ 5 gallon bucket into
MW-F4

9:45 Ian Young stopped by to replace well
lids, plugs, etc.

10:00 Depth to H_2O from T.O.C. in
MW-13 = 10.2' from ground = 10.6'
MW-13: Dissolved $O_2 = 4.9 \text{ mg/L}$ ~ 3-4' below H_2O level
MW-13: $T^\circ = 21.4^\circ\text{C}$

Depth to Bottom of well = 23.3'
(T.O.C.)

10:30 Introduced H_2O_2 (full 5 gallon bucket)
into well MW-13

11:00 T° @ MW-F4 = 23.1°C T° @ MW-13 = 23.4°C

11:30 H₂O levels in both wells still above
funnel bottom



12:15 ~1 gallon has been added of H₂O₂
to MW-13 T° = 24.1°C

T° in MW-F4 = 22.4°C

12:30 Ended H₂O₂ addition & began H₂O
addition to stabilize the effervescence
in each well.

13:00 Wells still effervescing - water being
added

13:30 MW-F4 stopped effervescing (~2 gallons
H₂O added)
T° = 23.4°C

Depth to Bottom of well = 16.8' from T.O.C.

17.2' from Ground

MW-13 Very light effervescence (~2 gallons water
added)
T° = 23.9°C

14:00 left site after monitoring closed wells
for 1/2 hour



14:15 Dropped off extra hydrogen peroxide
pails at Morgan Environment

14:30 End Driving Time

6

09:15 Arrived office in Walnut Creek
 Loaded expensive equipment into
 car to take to truck at Bart station.
 Switched car with truck @ Bart station.

10:00 Arrived @ Morgan Environmental
 Loaded H_2O_2 and H_2O onto truck.

10:30 left Morgan Env.

10:45 Arrived site. Took readings at
 MW-F4. Depth to H_2O = 12.0' (T.O.C.)
 Temp = 20.5°C Dissolved O_2 = 19.1 mg/l \sim 3-4' below
 H_2O level

11:00 Began H_2O_2 injection at well MW-F4

11:20 1/2 of a 5 gallon bucket injected (25 gallons)
 at MW-F4 ~~liquid~~ at top of casing ann

11:30 Took readings @ MW-13
 Depth to H_2O from T.O.C. = 13.9'
 D.O. = 11.7 mg/l \sim 2.5-3' below H_2O
 Temp = 21.5°C

7

11:50 Began H_2O_2 injection at MW-13

12:00 1 5-gallon bucket of H_2O_2 has been injected into MW-13.

Efferescence apparent in each well
Temp now at $22.3^\circ C$ in MW-13

12:05 ~ 1.5 gallons added of H_2O_2 into MW-13 for a total of 6.5 so far today

T° in MW-F4 = $21.8^\circ C$

12:30 T° in MW-13 = $24.1^\circ C$

T° in MW-F4 = $21.4^\circ C$

13:00 T° in MW-13 = $22.6^\circ C$

T° in MW-F4 = $21.3^\circ C$

13:05 About 1 gallon of water added to each well to decrease the efferescence observed

13:30 T° in MWF4 = $22.8^\circ C$

T° in MW-13 = $23.7^\circ C$

13:40 1.5 gallons of water added to
MW-13. Still effervescing

MW-F4: effervescence notably went down

14:00 MW-13 $T^{\circ} = 23.3^{\circ}\text{C}$
MW-F4 $T^{\circ} = 22.1^{\circ}\text{C}$

Wells plugged and capped securely

14:40 Picked up all cones and left
site.

15:30 Arrived at Walnut Creek office
(Stopped at Bart to switch car with
trunk and rearrange equipment)

Note: MW-13: 6.5 gallons H_2O_2 added (2.5 gallons H_2O)

MW-F4: 2.5 gallons H_2O_2 added (1 gallon H_2O)

10:30 left office (waiting for equipment so left slightly later)

11:30 Arrived at Morgan Environmental.
Picked up H_2O_2 and filled 15-gallon bucket with water.

Note: Construction on Ygnacio valley caused traffic delay

12:00 Arrived site and took parameters.
- MW-13 depth to H_2O = 15.85' (from T.O.C.)
MW-13 T° = 21.7°C
MW-13 D.O. = 18.9 mg/L (~2-3' below H_2O level)

MW-F4 depth to H_2O = 12.2' (from T.O.C.)
MW-F4 T° = 23.1°C
MW-F4 D.O. = 19.8 mg/L

12:00 to

13:00 5 gallons injected of H_2O_2 into MW-13
3 gallons H_2O_2 injected into MW-F4
Both wells contain liquid overflowing above casing at this time.
Stopped to wait for liquid level to go lower.

Light effervescence in MW-F4
Strong effervescence in MW-13

13:10 Temp in MW-13 = 26.9°C
Temp in MW-F4 = 24.7°C

13:30 T° in MW-13 = 25.0°C still strong effervescence

T° in MW-F4 = 24.8°C light effervescence

13:40 About 0.5 gallons H₂O₂ injected into MW-13
Liquid over top of casing with strong effervescence
Stopped to wait for liquid level to go down

MW-F4 liquid level still above
casing with light effervescence

14:00 Medium effervescence in MW-13
T° = 25.5°C

Light effervescence in MW-F4
T° = 24.6°C

14:05 Injected 1.5 additional gallons of
Hydrogen Peroxide into MW-13.
Liquid level above top of casing
with strong effervescence once again

Still light effervescence in MW-F4
Liquid still above casing

14:30

MW-13 $T = 25.2^{\circ}\text{C}$

Still effervescing with liquid
at almost top of casing

MW-F4 $T = 24.5^{\circ}\text{C}$

Very light effervescing with H_2O
level still above casing

15:00

MW-13 Temp $= 25.1^{\circ}\text{C}$

= Medium effervescence with liquid level
about 2.5' below top of casing

MW-F4 Temp $= 24.5^{\circ}\text{C}$

Very light effervescence with water
level at top of casing

Began water addition to reduce the
effervescence/stabilize reaction

About 1/2 gallon added (water) to
MW-13

Very little H_2O added to MW-F4 (as much as
possible w/o with
overflowing)

15:30 MW-13 $T^{\circ} = 25.5^{\circ}\text{C}$ w/ medium effervescence

MW-F4 $T^{\circ} = 24.3^{\circ}\text{C}$ w/ medium to light
effervescence - partial sheen apparent
here

15:40 Another 1/2 gallon of water was
injected into well MW-13
Effervescence medium to light here now

16:00 Final Temperature Readings before
capping wells:
MW-13 $T^{\circ} = 27.1^{\circ}\text{C}$ with light effervescence
MW-F4 $T^{\circ} = 24.1^{\circ}\text{C}$ with very light effervescence

16:00 Wells plugged, capped and monitored
for next 1/2 hour.

16:30 left site after making sure nothing
left behind in well area

17:00 Arrived at office in Walnut Creek

7 gallons injected into MW-13 (~1 gallon H_2O added)
3 gallons injected into MW-F4 (very little H_2O added)

10:00 Arrived office + loaded Truck
 10:30 Left office (W.C.) to go to Oakland office
 11:00 Arrived Oakland office
~~Start~~ 13:00 Left to pick up H₂O₂ from Morgan Env.
 13:15 Picked up 10 gallons H₂O₂ and filled
 5 gallons of H₂O
 13:30 Arrived at Site + took measurements.
 Depth to H₂O at MW-13 = 14.7' (from T.O.C.)
 MW-13 Dissolved O₂ = 17.4 mg/L
 MW-13 Temp = 21.4°C

MW-F4 Depth to H₂O = 11.3' (from T.O.C.)
 MW-F4 Temp = 21.2°C
 MW-F4 D.O. = 15.2 mg/L

14:00 Filled/Injected about 3.5 gallons
 H₂O₂ into MW-13. Liquid level at
 top of casing

Injected ~ 2.5 gallons into MW-F4
 Liquid at T.O.C.

3.0 (C7) ~~3.0 (C7)~~ H₂O₂ (C7)
 15:00 ~~3.0~~ more gallons added to MW-13
 Well contains medium effervescence
~~3.0~~ T° = 22.3°C
 (C7)

15:00 MW-F4 Temp = 21.2°C
medium to light effervescence
Liquid still above casing

15:30 1.0 gallons more H_2O_2 added
to well MW-13 (7.5 total H_2O_2 today)
High effervescence at MW-13 now
 $T^{\circ} = 22.6^{\circ}C$ at MW-13

15:35 MW-F4 $T^{\circ} = 24.2^{\circ}C$
MW-F4 medium to light effervescence
(2.5 total H_2O_2 in MW-F4 today)

16:00 1/2 gallon of H_2O added to MW-13
to stabilize the reaction
 $T^{\circ} = 25.1^{\circ}C$ w/ high effervescence (MW-13)

MW-F4 $T^{\circ} = 24.4^{\circ}C$
MW-F4 still at medium effervescence
+ H_2O liquid level still above casing

16:30 MW-13 $T^{\circ} = 24.1^{\circ}C$ w/ medium efferves

MW-F4 $T^{\circ} = 24.4^{\circ}C$ w/ medium effervescence

16:45 ~2.0 more gallons of H_2O added to
MW-13 to try and decrease effervescence

17:00 MW-13 $T^{\circ} = 25.3^{\circ}\text{C}$ w/ medium effervescence

MW-F4 $T^{\circ} = 23.4^{\circ}\text{C}$ w/ medium effervescence

17:15 ~1 gallon H_2O added to MW-13
very small amount of H_2O added to MW-F4

17:30 MW-13 $T^{\circ} = 23.9^{\circ}\text{C}$ w/ medium to light effervescence

MW-F4 $T^{\circ} = 24.3^{\circ}\text{C}$ w/ med. to light effervescence

18:00 A small amount of H_2O added to each well now

MW-13 $T^{\circ} = 24.7^{\circ}\text{C}$ w/ med. to light effervescence

MW-F4 $T^{\circ} = 24.1^{\circ}\text{C}$ w/ light effervescence

Wells plugged and capped tightly (MW-F4 may need new plug)

18:00-18:30

Wells monitored/observed

18:30 left site

7.5 gallons H_2O_2 into MW-13

19:00 Arrived office

2.5 gallons H_2O_2 into MW-F4

09:00 Picked up 15 gallon Hydrogen Peroxide
+ 15 gallon H₂O bucket

lost hr. of time because of misplaced
socket wrench bits - Had to go to hardware store

10:30 Arrived at site

Took measurements

MW-13 depth to H₂O = 15.1' (T.O.C.)

MW-13 Dissolved O₂ = 18.2 mg/l T° = 23.9°C

MW-F4 depth to H₂O = 9.2' (T.O.C.)

MW-F4 Dissolved O₂ = 12.4 mg/l T° = 21.7°C

11:15 ~9 gallons H₂O₂ injected into MW-13
~2.5 gallons H₂O₂ injected into MW-F4
Liquid levels at T.O.C. for wells now

11:30 T° = 26.6°C @ MW-13
T° = 25.3°C @ MW-F4

High effervescence in both wells at this time

11:45 ~1 additional gallon H₂O₂ added to
MW-13

12:00 $T^{\circ} = 26.3^{\circ}\text{C}$ at MW-13 w/ high effervescence

$T^{\circ} = 24.4^{\circ}\text{C}$ at MW-F4 w/ med. effervescence

12:15 Additional gallon of H_2O_2 added to MW-13

12:30 MW-13 $T^{\circ} = 26.5^{\circ}\text{C}$ w/ high effervescence

~~MW-F4 $T^{\circ} = 23.7^{\circ}\text{C}$ w/ med to low effervescence~~

12:45 MW-13 - 1 additional gallon H_2O_2 injected

13:00 MW-13 $T^{\circ} = 27.3^{\circ}\text{C}$ w/ high effervescence

MW-F4 $T^{\circ} = 23.5^{\circ}\text{C}$ w/ med. to low efferv.

13:15 MW-13 - ~ 0.5 gallons H_2O_2 injected into MW-13

13:30 MW-13 - $T^{\circ} = 25.3^{\circ}\text{C}$ w/ high efferv.

MW-F4 $T^{\circ} = 23.6^{\circ}\text{C}$ w/ med. to light efferv.

13:50 ~ 0.5 gallons H_2O_2 added to MW-13

14:00 Stopped H_2O_2 injections
Began H_2O addition to decrease efferv.

- 11.5 gallons H_2O_2 injected into well MW-13 today
- 2.5 gallons into MW-F4 today

14:00-15:00 Small amount of H_2O added to MW-F4
2 gallons water added to MW-13

14:30 $T^{\circ} = 27.5^{\circ}C$ @ MW-13 w/ med effervesc.
 $T^{\circ} = 22.8^{\circ}C$ @ MW-F4 w/ light efferv.

15:00 Wells plugged and capped tightly
then monitored for 1/2 hour

15:30 Left site

15:45 Dropped off buckets at Morgan Environmental

16:00 Arrived at office

10:00 Arrived office + loaded truck
w/ missing equipment (equipment
needed if not in truck)

10:45 Arrived at Morgan Environmental
Picked up 3 5-gallon buckets of
 H_2O_2 and 1 5-gallon bucket of water

11:15 Arrived on-site.

11:30 Took measurements

MW-13 depth to H_2O = 10.8' (T.O.C.)

MW-13 Dissolved O_2 = 18.9 mg/L

MW-13 Temp° = 23.5°C

MW-F4 depth to H_2O = 10.1' bgs (T.O.C.)

MW-F4 D.O. = 15.4 mg/L

MW-F4 T° = 24.1°C

12:00 5 gallons Hydrogen peroxide injected into MW-13
3 gallons H_2O_2 injected into MW-F4

12:30 T° at MW-13 = 25.4°C w/ high effervescence
T° at MW-F4 = 24.8°C w/ med. to light effervescence

12:45 ~ 0.5 gallons H_2O_2 added to MW-13

13:00 T° at MW-13 = $27.2^\circ C$ w/ high effervescence
 T° at MW-F4 = $24.8^\circ C$ w/ med. to high effervescence

13:30 ~ 1 gallon H_2O_2 added to MW-13

13:30 T° at MW-13 = $27.7^\circ C$ w/ high effervescence
 T° at MW-F4 = $25.6^\circ C$ w/ med. effervescence

14:00 ~ 1 gallon H_2O_2 added to MW-13

14:00 T° at MW-13 = $28.2^\circ C$ w/ high effervescence
 T° at MW-F4 = $25.3^\circ C$ w/ med. effervescence

14:30 Stop H_2O_2 injections / Began Water addition

= 7.5 gallons H_2O_2 injected into MW-13 today
- 3.0 gallons H_2O_2 injected into MW-F4 today

15:00 T° at MW-13 = $30.5^\circ C$ w/ high effervescence
 T° at MW-F4 = $25.5^\circ C$ w/ med. effervescence

15:15 Small amt. H_2O added to MW-F4 Final T° = $25.7^\circ C$
~ 3 gallons H_2O added to MW-13 Final T° = $29.4^\circ C$

~~15:15 well stop (GZ)~~

15:15 Well lids plussed and capped tightly

15:45 left Site

16:00 Dropped off buckets at Morgan
Environmental & then went to
office

(0)

9:30 Left Office
10:00 Picked up 2 5-gallon buckets of H₂O₂
+ 1 5-gallon bucket of water from
Morgan Environmental

10:45 Arrived at site - well lids +
plugs removed + took samples.

MW-13 depth to H₂O = 15.95' (T.O.C.)
MW-13 dissolved oxygen = Max. (meter's upper limit = 19.9)
MW-13 Temperature = 20.9°C > 19.9 mg/L

(0)

MW-F4: Well plug off, but well lid
still on - (probably popped off from Rxn.)

MW-F4: depth to H₂O = 9.3' (T.O.C.)
MW-F4 - dissolved O₂ = > 19.9 mg/L (meter only goes to 19.9 mg/L)
MW-F4 - T° = 19.4°C

Note: Water more turbid (brown in coloration) in MW-13
while clear in MW-F4

11:30 5 gallons H₂O₂ injected into MW-13
3 gallons H₂O₂ injected into MW-F4

(0)

12:00 MW-13 $T^{\circ} = 21.2^{\circ}\text{C}$ w/ high effervescence
MW-F4 $T^{\circ} = 20.8^{\circ}\text{C}$ w/ medium to low effervescence
Liquid levels still at casing tops at each well

12:15 ~ 1 gallon H_2O_2 injected into MW-13.

12:30 MW-13 $T^{\circ} = 22.7^{\circ}\text{C}$ w/ high effusc.
MW-F4 $T^{\circ} = 22.9^{\circ}\text{C}$ w/ med. to low effusc.

12:45 ~ 0.5 gallons H_2O_2 added to MW-13

13:00 MW-13 $T^{\circ} = 22.9^{\circ}\text{C}$ w/ high effusc.
MW-F4 $T^{\circ} = 22.4^{\circ}\text{C}$ w/ med. to low effusc.

13:15 ~ 0.5 gallons H_2O_2 added to MW-13.

13:30 MW-13 $T^{\circ} = 22.8^{\circ}\text{C}$ w/ high effusc.
MW-F4 $T^{\circ} = 22.2^{\circ}\text{C}$ w/ med. to low effusc.
Stopped H_2O_2 injection and began
water addition

13:30-14:30 ~ 1.5 gallons water added to MW-13
Very small amt. H_2O added to MW-F4

14:30 MW-13 $T^{\circ} = 22.0^{\circ}\text{C}$ w/ high effusc.

MW-F4 $T^{\circ} = 22.2^{\circ}\text{C}$ w/ med. to low effusc.

(Wells plugged/capped tightly)

14:30-15:00 monitored wells for 1/2 hour

15:00 left site

15:30 Arrived office

Notes:

7 gallons H_2O_2 into MW-13 today

3 gallons H_2O_2 into MW-F4 today

Short Field Event

08:30

Left for site

09:20

MW-F4 Depth to water = 10.9' (T.O.C.)

MW-F4 Dissolved O₂ = Max. (19.9 mg/L is upper limit for meter)

Well plug + lid sealed/capped tightly

09:40

MW-13 Depth to H₂O = 14.6' (T.O.C.)

MW-13 D.O. = Max (meter only went up to 19.9 mg/L)

Well plug and lid sealed/capped tightly

10:20

Arrived at W.C. office

10:30

Unloaded equipment

Groundwater Monitoring Field Sheet

S.W.
S.W.

Well ID	Time	DTP	DTW	Product Thickness	Amount of Product Removed	Casing Diam.	Comment
MW-13	12 25	/	11 07	/	/	2"	DO = 10 50 mg/L
MW-F4	12.50		10.05	/	/	2"	DO = > 19 99 mg/L

Project Name: OKLAND - FRUITVALE

Project Number/Task: 153-1664-029

Measured By: M Meyers

Date: 6/24/02

DAILY FIELD REPORT

Project Name: OAKLAND-FRUITVALE	Cambria Mgr: MHF	Field Person: M Meyers
Project Number: 153-1664-029	Date: 10-27-02	Site Address:
General Tasks: MEASURE DO + DEPTH TO WATER		2662 Fruitvale Oakland

Time	Activity/Comments	Code	Hours
11:45	LEFT OFFICE		
12:00	ARRIVE ONSITE BEGIN W/ MW-13 SET-UP CONES & BARRICADES. REMOVE CAP + LID. WELL HAS POSITIVE PRESSURE TAKE READINGS. REPLACE CAP + LID. REMOVE CONES + BARRICADES		
12:40	FINISHED MW-13		
12:50	BEGIN MW-F4 WELL HAS LOW DO CAP, UNKNOWN WHY. NOT TYPICAL DOLPHIN LOCK. PULL OFF CAP. TAKE DEPTH TO H ₂ O PROBLEM W/ DO METER. GET EV 4 DISPLAY NO DO READINGS. CALL PAUL. THEN CALL SUPPLIER. WAIT TILL HE RETURNS FROM LUNCH. BEGIN WAIT 1:05		
1:30	SPOKE WITH MARY @ 1:30. SAID TO RETURN TO OFFICE. LEFT SITE @ 1:50. MANUEL CALLED SAID EV 4 MESSAGE		
1:50	MEANS >19.9 mg/L.		
2:10	ARRIVED OFFICE @ 2:10		
2:25	UNLOAD FINISHED		

APPENDIX C

Laboratory Analytical Data Sheets

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04		
Matrix:	Water	Sampled:	02/13/04
Units:	ug/L	Received:	02/13/04

Field ID:	MW-F4	Diln Fac:	2.000
Type:	SAMPLE	Batch#:	88453
Lab ID:	170577-001	Analyzed:	02/14/04

Analyte	Result	RL	Analysis
Gasoline C7-C12	6,100 H	100	EPA 8015B
Benzene	42 C	1.0	EPA 8021B
Toluene	2.6 C	1.0	EPA 8021B
Ethylbenzene	650	1.0	EPA 8021B
m,p-Xylenes	11 C	1.0	EPA 8021B
o-Xylene	1.4	1.0	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	143 *	74-142	EPA 8015B
Bromofluorobenzene (FID)	136	80-139	EPA 8015B
Trifluorotoluene (PID)	106	55-139	EPA 8021B
Bromofluorobenzene (PID)	124	62-134	EPA 8021B

Field ID:	MW-F4-D	Diln Fac:	2.000
Type:	SAMPLE	Batch#:	88453
Lab ID:	170577-002	Analyzed:	02/13/04

Analyte	Result	RL	Analysis
Gasoline C7-C12	6,300 H	100	EPA 8015B
Benzene	48 C	1.0	EPA 8021B
Toluene	5.6 C	1.0	EPA 8021B
Ethylbenzene	680	1.0	EPA 8021B
m,p-Xylenes	11 C	1.0	EPA 8021B
o-Xylene	1.2	1.0	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	103	74-142	EPA 8015B
Bromofluorobenzene (FID)	116	80-139	EPA 8015B
Trifluorotoluene (PID)	96	55-139	EPA 8021B
Bromofluorobenzene (PID)	110	62-134	EPA 8021B

*= Value outside of QC limits; see narrative
 C= Presence confirmed, but RPD between columns exceeds 40%
 H= Heavier hydrocarbons contributed to the quantitation
 ND= Not Detected
 RL= Reporting Limit
 Page 1 of 3

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04		
Matrix:	Water	Sampled:	02/13/04
Units:	ug/L	Received:	02/13/04

Field ID: MW-13 Diln Fac: 1.000
 Type: SAMPLE Batch#: 88453
 Lab ID: 170577-003 Analyzed: 02/14/04

Analyte	Result	RL	Analysis
Gasoline C7-C12	4,500 H	50	EPA 8015B
Benzene	42	0.50	EPA 8021B
Toluene	5.2 C	0.50	EPA 8021B
Ethylbenzene	38	0.50	EPA 8021B
m,p-Xylenes	5.9	0.50	EPA 8021B
o-Xylene	1.5 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	102	74-142	EPA 8015B
Bromofluorobenzene (FID)	150 *	80-139	EPA 8015B
Trifluorotoluene (PID)	112	55-139	EPA 8021B
Bromofluorobenzene (PID)	125	62-134	EPA 8021B

Field ID: FIELD BLANK Lab ID: 170577-004
 Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	ND	50	88453	02/13/04	EPA 8015B
Benzene	ND	0.50	88453	02/13/04	EPA 8021B
Toluene	0.62	0.50	88486	02/16/04	EPA 8021B
Ethylbenzene	ND	0.50	88453	02/13/04	EPA 8021B
m,p-Xylenes	ND	0.50	88453	02/13/04	EPA 8021B
o-Xylene	ND	0.50	88453	02/13/04	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	99	74-142	88453	02/13/04	EPA 8015B
Bromofluorobenzene (FID)	124	80-139	88453	02/13/04	EPA 8015B
Trifluorotoluene (PID)	97	55-139	88453	02/13/04	EPA 8021B
Bromofluorobenzene (PID)	121	62-134	88453	02/13/04	EPA 8021B

*= Value outside of QC limits; see narrative
 C= Presence confirmed, but RPD between columns exceeds 40%
 H= Heavier hydrocarbons contributed to the quantitation
 ND= Not Detected
 RL= Reporting Limit
 Page 2 of 3

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04		
Matrix:	Water	Sampled:	02/13/04
Units:	ug/L	Received:	02/13/04

Type:	BLANK	Batch#:	88453
Lab ID:	QC240871	Analyzed:	02/13/04
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	87	74-142	EPA 8015B
Bromofluorobenzene (FID)	103	80-139	EPA 8015B
Trifluorotoluene (PID)	86	55-139	EPA 8021B
Bromofluorobenzene (PID)	101	62-134	EPA 8021B

Type:	BLANK	Batch#:	88486
Lab ID:	QC241024	Analyzed:	02/16/04
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Toluene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	99	74-142	EPA 8015B
Bromofluorobenzene (FID)	102	80-139	EPA 8015B
Trifluorotoluene (PID)	93	55-139	EPA 8021B
Bromofluorobenzene (PID)	97	62-134	EPA 8021B

*= Value outside of QC limits; see narrative
 C= Presence confirmed, but RPD between columns exceeds 40%
 H= Heavier hydrocarbons contributed to the quantitation
 ND= Not Detected
 RL= Reporting Limit
 Page 3 of 3

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04	Analysis:	EPA 8021B
Type:	BS	Diln Fac:	1.000
Lab ID:	QC240872	Batch#:	88453
Matrix:	Water	Analyzed:	02/13/04
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12		NA		
Benzene	20.00	21.11	106	80-120
Toluene	20.00	20.26	101	80-120
Ethylbenzene	20.00	20.78	104	80-120
m,p-Xylenes	40.00	36.60	92	80-120
o-Xylene	20.00	20.38	102	80-120

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		89	55-139
Bromofluorobenzene (PID)		107	62-134

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	IFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC240873	Batch#:	88453
Matrix:	Water	Analyzed:	02/13/04
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,984	99	80-120
Benzene		NA		
Toluene		NA		
Ethylbenzene		NA		
m,p-Xylenes		NA		
o-Xylene		NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		104	74-142
Bromofluorobenzene (FID)		110	80-139
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	88453
MSS Lab ID:	170560-030	Sampled:	02/11/04
Matrix:	Water	Received:	02/12/04
Units:	ug/L	Analyzed:	02/14/04
Diln Fac:	1.000		

Type: MS Lab ID: QC240975

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	14.84	2,000	2,058	102	80-120
Benzene			NA		
Toluene			NA		
Ethylbenzene			NA		
m,p-Xylenes			NA		
o-Xylene			NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		109	74-142
Bromofluorobenzene (FID)		119	80-139
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Type: MSD Lab ID: QC240976

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,092	104	80-120	2	20
Benzene		NA				
Toluene		NA				
Ethylbenzene		NA				
m,p-Xylenes		NA				
o-Xylene		NA				

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		114	74-142
Bromofluorobenzene (FID)		125	80-139
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	JFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04	Analysis:	EPA 8021B
Type:	BSD	Diln Fac:	1.000
Lab ID:	QC240996	Batch#:	88453
Matrix:	Water	Analyzed:	02/14/04
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12		NA				
Benzene	20.00	20.93	105	80-120	1	20
Toluene	20.00	19.78	99	80-120	2	20
Ethylbenzene	20.00	19.87	99	80-120	4	20
m,p-Xylenes	40.00	36.51	91	80-120	0	20
o-Xylene	20.00	20.13	101	80-120	1	20

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		86	55-139
Bromofluorobenzene (PID)		105	62-134

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04	Analysis:	EPA 8021B
Type:	BS	Diln Fac:	1.000
Lab ID:	QC241025	Batch#:	88486
Matrix:	Water	Analyzed:	02/16/04
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Toluene	20.00	17.85	89	80-120

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		92	55-139
Bromofluorobenzene (PID)		93	62-134

Curtis & Tompkins Laboratories Analytical Report

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09225-04	Analysis:	EPA 8021B
Type:	BSD	Diln Fac:	1.000
Lab ID:	QC241062	Batch#:	88486
Matrix:	Water	Analyzed:	02/16/04
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Toluene	20.00	18.47	92	80-120	3	20

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		97	55-139
Bromofluorobenzene (PID)		101	62-134

NA= Not Analyzed
 RPD= Relative Percent Difference
 Page 1 of 1

Iron

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 3010
Project#:	001-09225-04	Analysis:	EPA 6010B
Analyte:	Iron	Sampled:	02/13/04
Matrix:	Filtrate	Received:	02/13/04
Units:	ug/L	Prepared:	02/16/04
Diln Fac:	1.000	Analyzed:	02/17/04
Batch#:	88506		

Field ID	Type	Lab ID	Result	RL
MW-F4	SAMPLE	170577-001	ND	100
MW-13	SAMPLE	170577-003	2,000	100
	BLANK	QC241081	ND	100

Iron

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 3010
Project#:	001-09225-04	Analysis:	EPA 6010B
Analyte:	Iron	Batch#:	88506
Matrix:	Filtrate	Prepared:	02/16/04
Units:	ug/L	Analyzed:	02/17/04
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC241082	1,000	942.5	94	80-120		
BSD	QC241083	1,000	889.5	89	80-120	6	20

Iron

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Prep:	EPA 3010
Project#:	001-09225-04	Analysis:	EPA 6010B
Analyte:	Iron	Batch#:	88506
Field ID:	ZZZZZZZZZZ	Sampled:	02/13/04
MSS Lab ID:	170586-005	Received:	02/13/04
Matrix:	Filtrate	Prepared:	02/16/04
Units:	ug/L	Analyzed:	02/17/04
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC241084	291.9	1,000	1,140	85	59-121		
MSD	QC241085		1,000	1,094	80	59-121	4	20

Nitrate Nitrogen

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	IFR Levine Fricke	Analysis:	EPA 300.0
Project#:	001-09225-04		
Analyte:	Nitrogen, Nitrate	Batch#:	88523
Matrix:	Water	Sampled:	02/13/04
Units:	mg/L	Received:	02/13/04
Diln Fac:	1.000	Analyzed:	02/13/04

Field ID	Type	Lab ID	Result	RL
MW-F4	SAMPLE	170577-001	ND	0.05
MW-13	SAMPLE	170577-003	ND	0.05
	BLANK	QC241153	ND	0.05

Nitrate Nitrogen

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Analysis:	EPA 300.0
Project#:	001-09225-04		
Analyte:	Nitrogen, Nitrate	Batch#:	88523
Field ID:	MW-F4	Sampled:	02/13/04
MSS Lab ID:	170577-001	Received:	02/13/04
Matrix:	Water	Analyzed:	02/13/04
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln	Fac
BS	QC241154		1.000	0.9595	96	80-120				1.000
BSD	QC241155		1.000	1.104	110	80-120	14	20		1.000
MS	QC241156	<0.04600	5.000	4.994	100	80-120				10.00
MSD	QC241157		5.000	5.012	100	80-120	0	20		10.00

Sulfate

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	IFR Levine Fricke	Analysis:	EPA 300.0
Project#:	001-09225-04		
Analyte:	Sulfate	Batch#:	88523
Matrix:	Water	Sampled:	02/13/04
Units:	mg/L	Received:	02/13/04
Diln Fac:	1.000	Analyzed:	02/13/04

Field ID	Type	Lab ID	Result	RL
MW-F4	SAMPLE	170577-001	ND	0.50
MW-13	SAMPLE	170577-003	0.76	0.50
	BLANK	QC241153	ND	0.50

Sulfate

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LFR Levine Fricke	Analysis:	EPA 300.0
Project#:	001-09225-04		
Analyte:	Sulfate	Batch#:	88523
Field ID:	MW-F4	Sampled:	02/13/04
MSS Lab ID:	170577-001	Received:	02/13/04
Matrix:	Water	Analyzed:	02/13/04
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln	Fac
BS	QC241154		10.00	9.850	99	80-120			1.000	
BSD	QC241155		10.00	10.79	108	80-120	9	20	1.000	
MS	QC241156	<0.1000	50.00	50.18	100	80-120			10.00	
MSD	QC241157		50.00	47.73	95	80-120	5	20	10.00	

Iron

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	IFR Levine Fricke	Prep:	EPA 3010
Project#:	001-09225-04	Analysis:	EPA 6010B
Analyte:	Iron	Sampled:	02/13/04
Units:	ug/L	Received:	02/13/04
Diln Fac:	1.000	Prepared:	02/16/04
Batch#:	88506	Analyzed:	02/17/04

Field ID	Type	Lab ID	Matrix	Result	RL
MW-F4	SAMPLE	170577-001	Water	5,600	100
MW-13	SAMPLE	170577-003	Water	5,900	100
	BLANK	QC241081	Filtrate	ND	100

Iron

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	IFR Levine Fricke	Prep:	EPA 3010
Project#:	001-09225-04	Analysis:	EPA 6010B
Analyte:	Iron	Batch#:	88506
Matrix:	Filtrate	Prepared:	02/16/04
Units:	ug/L	Analyzed:	02/17/04
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC241082	1,000	942.5	94	80-120		
BSD	QC241083	1,000	889.5	89	80-120	6	20

Iron

Lab #:	170577	Location:	City of Oakland/2622Fruit
Client:	LEF Levine Fricke	Prep:	EPA 3010
Project#:	001-09225-04	Analysis:	EPA 6010B
Analyte:	Iron	Batch#:	88506
Field ID:	ZZZZZZZZZZ	Sampled:	02/13/04
MSS Lab ID:	170586-005	Received:	02/13/04
Matrix:	Filtrate	Prepared:	02/16/04
Units:	ug/L	Analyzed:	02/17/04
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC241084	291.9	1,000	1,140	85	59-121		
MSD	QC241085		1,000	1,094	80	59-121	4	20