

# WORK PLAN

AUGUST 1993

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*work performed  
on Aug 10 + 11*

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**PHASE III SOIL AND  
GROUNDWATER INVESTIGATION  
2662 FRUITVALE AVENUE  
Oakland, California**

*expect November 93  
mon. report.*

For:  
Environmental Affairs Division  
Office of Public Works  
City of Oakland

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BASELINE Environmental Consulting  
5900 Hollis Street, Suite D  
Emeryville, California 94608  
(510) 420-8686

# BASELINE

## ENVIRONMENTAL CONSULTING

### TRANSMITTAL

TO: Mr. Barney Chan

DATE: August 6, 1993

Alameda County Health Care Service

PROJECT NO.: 92404-A0.03

Department of Environmental Health

Via:

80 Swan Way, Room 200

Mail: X

Oakland, CA 94621

Fed Ex: \_\_\_\_\_

UPS: \_\_\_\_\_

SUBJECT: Work Plan for phase III Soil and Groundwater Investigation, 2662 Fruitvale Avenue, Oakland, California

#### ENCLOSED PLEASE FIND:

Copies	Description
1	Report

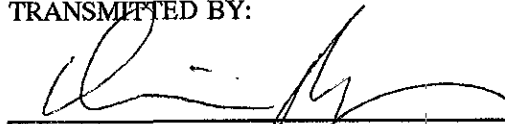
As requested  
 For your use  
 For your signature

For your review and comment  
 Returned after loan to us

#### COMMENTS:

AD1-6/89

TRANSMITTED BY:



Mr. Dominic Roques, Associate

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686 • FAX (510) 420-1707  
Emeryville Petaluma

# BASELINE

## ENVIRONMENTAL CONSULTING

5 August 1993  
92404-A0.03

Mr. Barney Chan  
Alameda County Health Care Services  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621

**Subject: Work Plan for Phase III Soil and Groundwater Investigation, 2662 Fruitvale Avenue, Oakland, California**

Dear Mr. Chan:

Enclosed please find one copy of the Work Plan for the proposed soil and groundwater investigation at 2662 Fruitvale Avenue in Oakland. The drilling activities are scheduled for 10 and 11 August 1993. Well development and groundwater sampling should occur during the following week. A summary report would be prepared within three weeks following receipt of all analytical results. Should you have any questions regarding this work plan, or need further information, please do not hesitate to contact us at your convenience.

Sincerely,




Yane Nordhav  
Principal  
R.G. No. 4009

YN/DR

Enclosure

cc: Mr. R. Hiett, San Francisco RWQCB  
Ms. Julie Carver, City of Oakland



Dominic Roques  
Associate

*no longer works  
there*

# **WORK PLAN**

**AUGUST 1993**

**PHASE III SOIL AND GROUNDWATER INVESTIGATION  
2662 FRUITVALE AVENUE  
Oakland, California**

**For:**

**Environmental Affairs Division  
Office of Public Works  
City of Oakland**

**BASELINE Environmental Consulting  
5900 Hollis Street, Suite D  
Emeryville, California 94608  
(510) 420-8686**

92404-A0.03

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**WORK PLAN FOR  
SOIL AND GROUNDWATER INVESTIGATION  
2662 Fruitvale Avenue  
Oakland, California**

**INTRODUCTION**

BASELINE Environmental Consulting has been retained to conduct a Phase III soil and groundwater investigation at 2662 Fruitvale Avenue in Oakland (Figure 1). The purpose of the Phase III investigation is to further define the extent of soil affected by petroleum hydrocarbons and volatile organic compounds (VOCs) and to assess the potential impact to groundwater quality.

**BACKGROUND**

Soil sampling was performed in January 1993 at the site during a Phase II investigation. The soil boring locations are shown on Figure 2. The analytical results of the soil samples identified the presence of total petroleum hydrocarbons (TPH) as gasoline, motor oil, oil and grease, and VOCs (Table 1). Water samples collected from the soil borings were also found to contain TPH as gasoline and VOCs (Table 2).

A magnetometer survey was conducted 18 July 1993 by BCA Geophysics to assess the location and depth of any underground storage tank(s) that may potentially still remain on-site. Two anomalies located in the northwest portion of the site in the vicinity of the former oil and gas facility (1946 Sanborn Map) may be caused by a buried metal object approximately ten feet long, weighing 2,000 pounds, and buried at an average depth of ten feet. A copy of the survey results is included in Appendix A.

**PROPOSED FIELD INVESTIGATION**

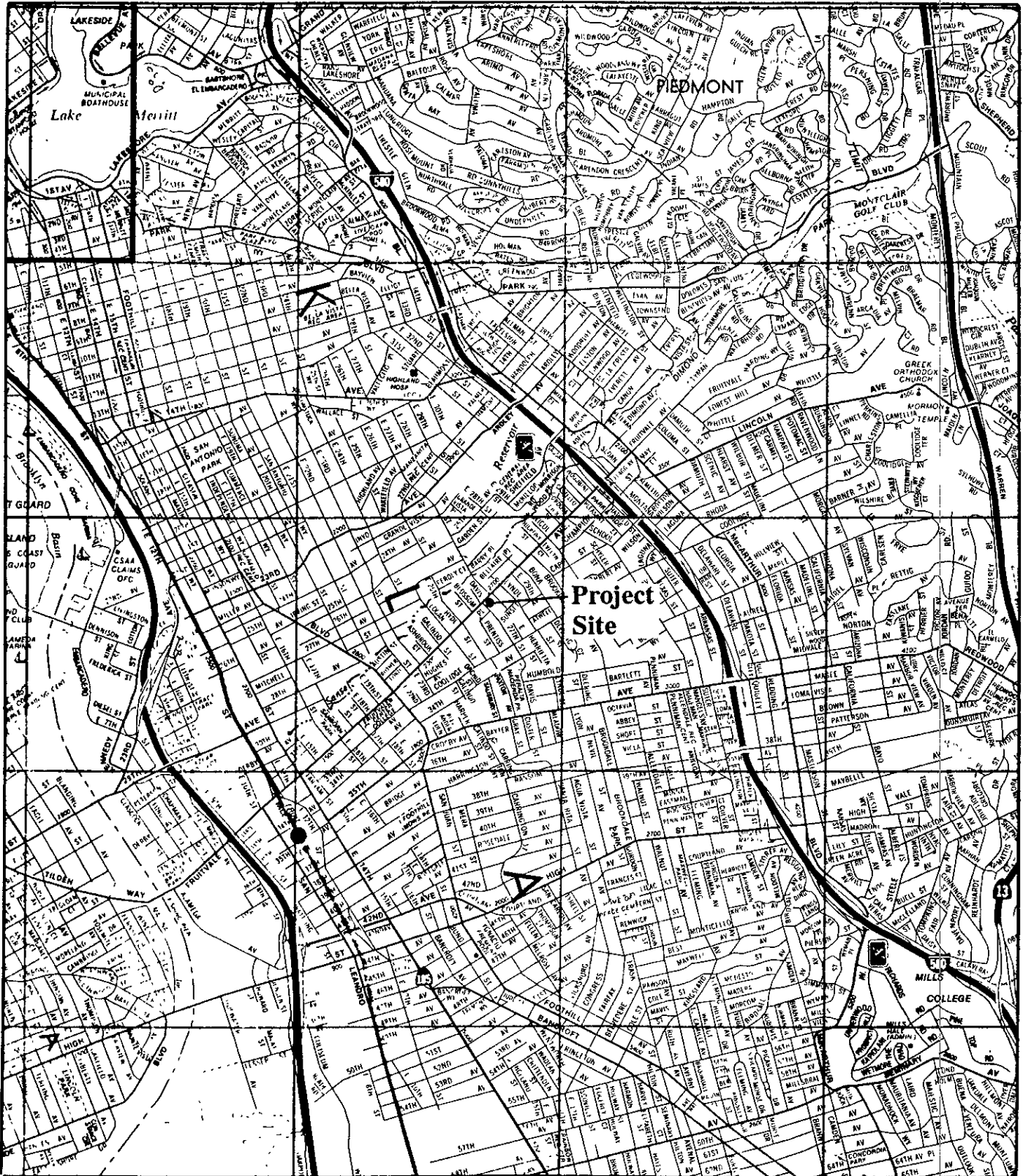
BASELINE proposes to install six soil borings, F9 through F14, and three groundwater monitoring wells, MW-F1 through MW-F3, at the locations shown on Figure 2. The soil boring and well locations were selected on the basis of the soil sample results from the Phase II investigation, groundwater data from the nearby Chevron site at 2681 Fruitvale Avenue, and the results of the geophysical survey. The soil and well borings would be advanced to the depth of the groundwater table using hollow-stem augers. The augers and soil sampling equipment would be steam-cleaned prior to drilling and between borings. A copy of the monitoring well permit and site safety plan for the field activities are included in Appendix B.

**Soil Sampling**

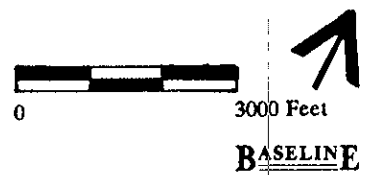
Soil samples would be collected at approximately five foot intervals for lithologic description. Soil samples for chemical analyses would be collected at depths of approximately three feet below the

# REGIONAL LOCATION

# Figure 1

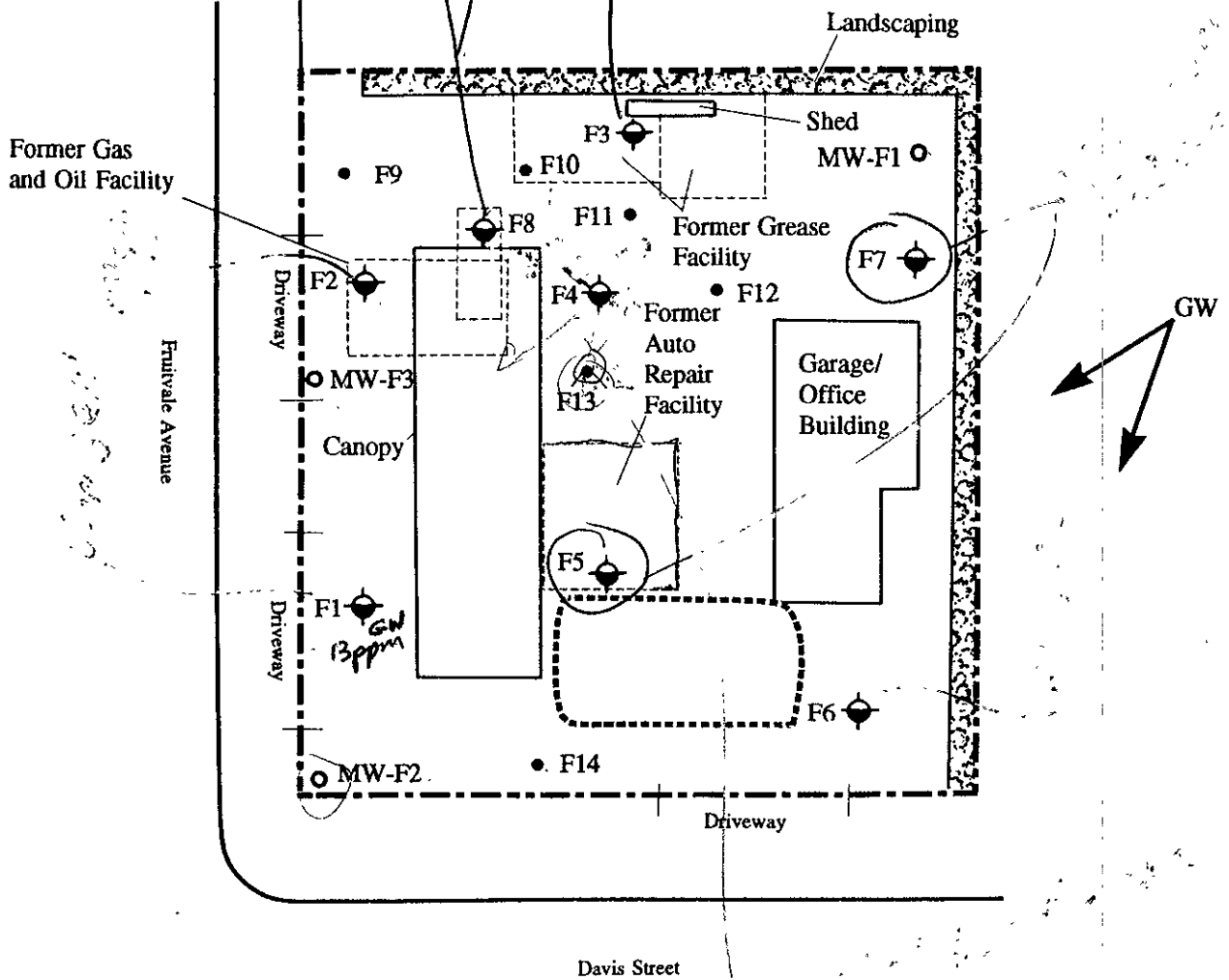


**2662 Fruitvale Avenue  
Oakland, California**



# SITE PLAN AND PROPOSED SAMPLING LOCATIONS

Figure 2



## Legend

- F2 Soil Boring Location (BASELINE, 1993)
- Outline of Former Service Station Facilities (1946 Sanborn Map)
- Approximate Location of Tanks Removed in 1978 (Trans Pacific, 1986)
- Project Site Boundary
- F9 • Proposed Soil Boring Location
- MW-F2 Proposed Monitoring Well Location
- Approximate Geophysical Anomaly (Possible Underground Tank) (BCA Geophysics, 1993)
- GW Inferred Direction of Groundwater Flow (Resna, 1991)

2662 Fruitvale Avenue  
Oakland, California



**BASELINE**



TABLE 1

**SUMMARY OF ANALYTICAL RESULTS, SOILS**  
 2662 Fruitvale Avenue, Oakland, California  
 January 1993

Sample Location	Depth (feet)	Total Petroleum Hydrocarbons (mg/kg) <sup>1</sup>			Volatile Organic Compounds (µg/kg) <sup>2</sup>						
		Gasoline	Motor Oil	Oil and Grease (mg/kg)	Benzene	Toluene	Ethylbenzene	Total Xylenes	1,2-dichloroethene (total)	1,2-dichlorobenzene	Acetone
F1	2.0-2.5	<1	<10	--	<5	<5	<5	<5	--	--	--
	9.5-10.0	6	<10	--	<5	<5	14	<5	--	--	--
	11.0-11.5	66	<10	--	<5	72	260	<5	--	--	--
F2	2.0-2.5	<1	11	--	<5	<5	<5	<5	--	--	--
	8.0-8.5	1.1	<10	--	<5	<5	<5	<5	--	--	--
F3	2.0-2.5	--	<10	<50	--	--	--	--	--	--	--
	8.0-8.5	--	14	300	--	--	--	--	--	--	--
F4	2.0-2.5	3.7	940	--	<5	<5	6.4	<5	--	--	--
	10.0-10.5	15	<10	--	<5	<5	320	<5	--	--	--
F5	2.0-2.5	<1	<10	--	<5	<5	<5	<5	<5	<5	<5
	8.0-8.5	<1	<10	--	<5	<5	<5	<5	<5	<5	<5
F6	2.0-2.5	--	<10	--	<5	<5	<5	<5	<5	<5	<5
	8.0-8.5	--	<10	--	<5	<5	<5	<5	<5	<5	<5
F7	2.0-2.5	--	13	--	<5	<5	<5	<5	<5	<5	<5
	8.5-9.0	--	<10	--	<5	<5	<5	<5	<5	<5	<5
F8	2.0-2.5	220	44	--	<5	<5	3,400	17,000	--	--	--
	8.5-9.0	810	<10	--	<5	<5	5,400	<5	--	--	--
Sump		16	110,000	110,000	<5	3,000	950	2,600	1,100	1,200	4,200

Notes: Sample locations are shown in Figure 2.  
 -- indicates that sample was not analyzed for this compound.

<sup>1</sup> Motor oil, kerosene, and diesel were measured; however, kerosene or diesel was not detected.

<sup>2</sup> Only those compounds that were present above detection limits are listed.

TABLE 2

**SUMMARY OF ANALYTICAL RESULTS, SOIL-WATER**  
**2662 Fruitvale Avenue, Oakland, California**  
**January 1993**

( $\mu\text{g/L}$ )

Sample Location	Total Petroleum Hydrocarbons	Volatile Organic Compounds				
	Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	Trans-1,3-dichloropropene
F1	13,000	610	18	830	46	<2.0
F4	6,800	11	<2.0	16	<2.0	7
F5	<50	--	--	--	--	--
F7	<50	--	--	--	--	--

Notes: Sample locations are shown in Figure 2.  
 -- indicates that sample was not analyzed for this compound.

ground surface and immediately above the groundwater. Groundwater is estimated to be encountered approximately nine feet below ground surface based on data obtained during the Phase II investigation. Sampling procedures are described in Appendix C. The soil samples would be submitted to a California-certified analytical laboratory for TPH as gasoline, TPH as motor oil, and VOC analyses. The two soil samples collected from Borings F10 and F11 would also be submitted for oil and grease analyses.

### **Monitoring Well Installation**

The monitoring wells would be constructed with 2-inch diameter PVC casing and machine-slotted well screen in a nominal 8-inch diameter boring. The PVC casing and end caps would be steam-cleaned prior to installation. A sand filter pack (#2/12) and approximately 2-foot bentonite pellet seal would be tremied through the hollow-stem augers into the annular space between the borehole and the well casing. The remainder of the annular space would be filled with a cement-bentonite grout. A locking well cap and a traffic-rated christie box would complete each well installation. A typical well construction diagram is shown on Figure 3. The location of the well screen interval would depend on field conditions, but would be installed to account for shallow groundwater fluctuations.

All work associated with drilling activities and well installation would be supervised by a California-registered geologist. Copies of the well logs would be submitted to the California Department of Water Resources (DWR) for their files. The laboratory analyses would be performed according to methods specified in the Tri-Regional Guidelines.

### **Well Development and Sampling**

72

The wells would be developed at least 24 hours after well installation by surging and pumping with a double diaphragm pump and disposable PVC hose until the wells were relatively clear of fine sediment. After 24 hours, the wells would be sampled according to procedures outlined in Appendix B. The groundwater samples would be submitted to a California-certified analytical laboratory for TPH as gasoline, TPH as motor oil, and VOCs analyses.

### **Survey**

The horizontal location and the elevation (with an accuracy of 0.01 foot with respect to mean sea level) of the monitoring wells would be surveyed by a licensed surveyor.

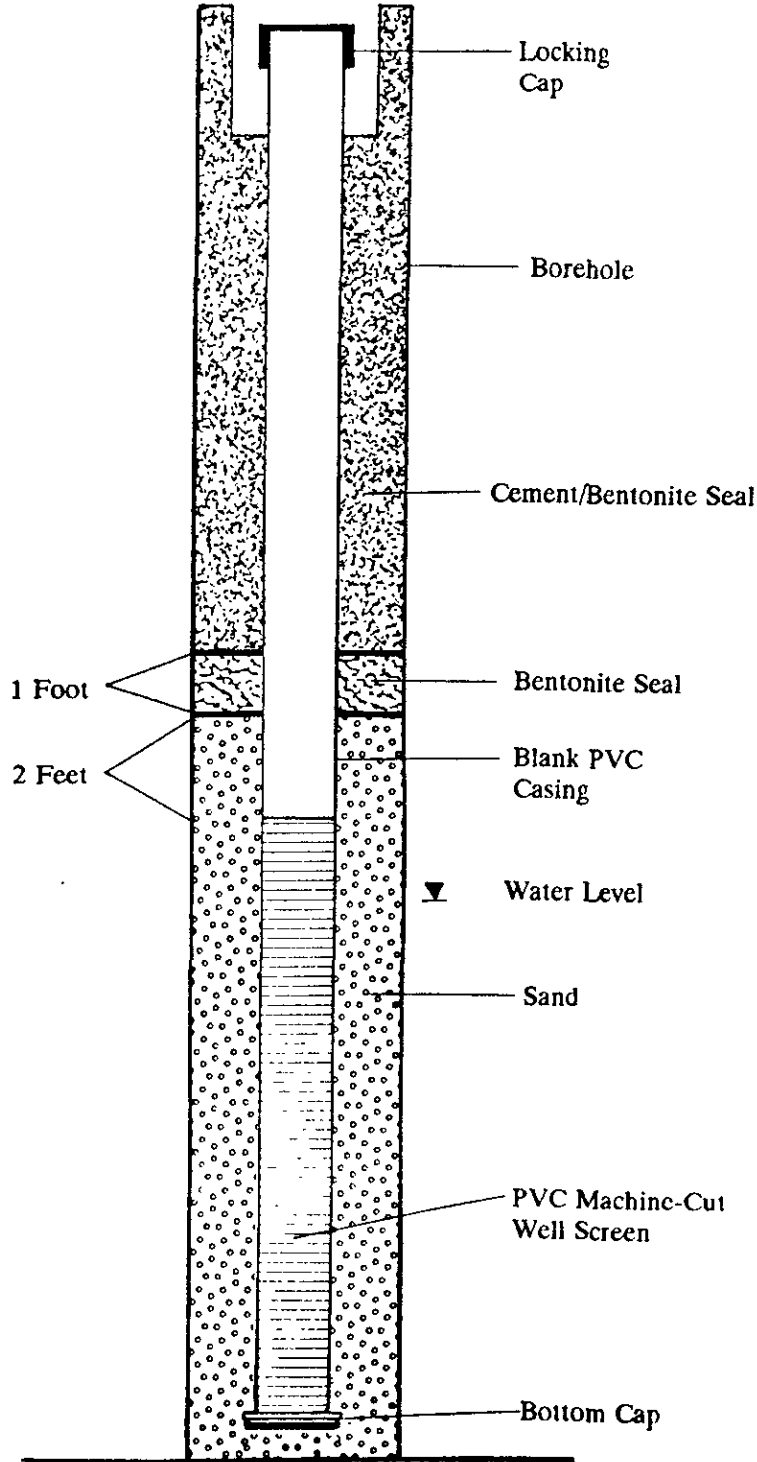
### **SUMMARY REPORT**

Following the receipt of the analytical results, a summary report would be prepared that documented field activities, presented results, and provided conclusions and recommendations for submittal to Alameda County Health Agency and San Francisco Regional Water Quality Control Board.

# MONITORING WELL CONSTRUCTION DETAILS

## Underground Tank Investigations

Figure 3



**APPENDIX A**  
**GEOPHYSICAL SURVEY RESULTS**

**BCA Geophysics, Inc.**

7 Palmer Avenue  
Tiburon, CA 94920  
Tel.: (415) 435-5858 Fax: (415) 454-8565

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August 4, 1993

Baseline Environmental Consulting  
5900 Hollis Street  
Suite D  
Emeryville, CA 94608

Attn.: Dominic Roques

**SUBJECT: Results of Magnetometer Survey At Fruitvale Avenue and Davis Street, Oakland, CA**

Gentlemen:

This revised letter report summarizes the results of our magnetometer survey at the Fruitvale Avenue and Davis Street site in Oakland, CA. The data presented in this report were collected by BCA Geophysics personnel, using an EG&G / Geometrics G-822 Cesium Vapor Magnetometer. This instrument is more sensitive and also more tolerant of extraneous noise when used for locating buried metallic objects, compared to the G-856 total field magnetometer, which, due to the local conditions could not be used at the site.

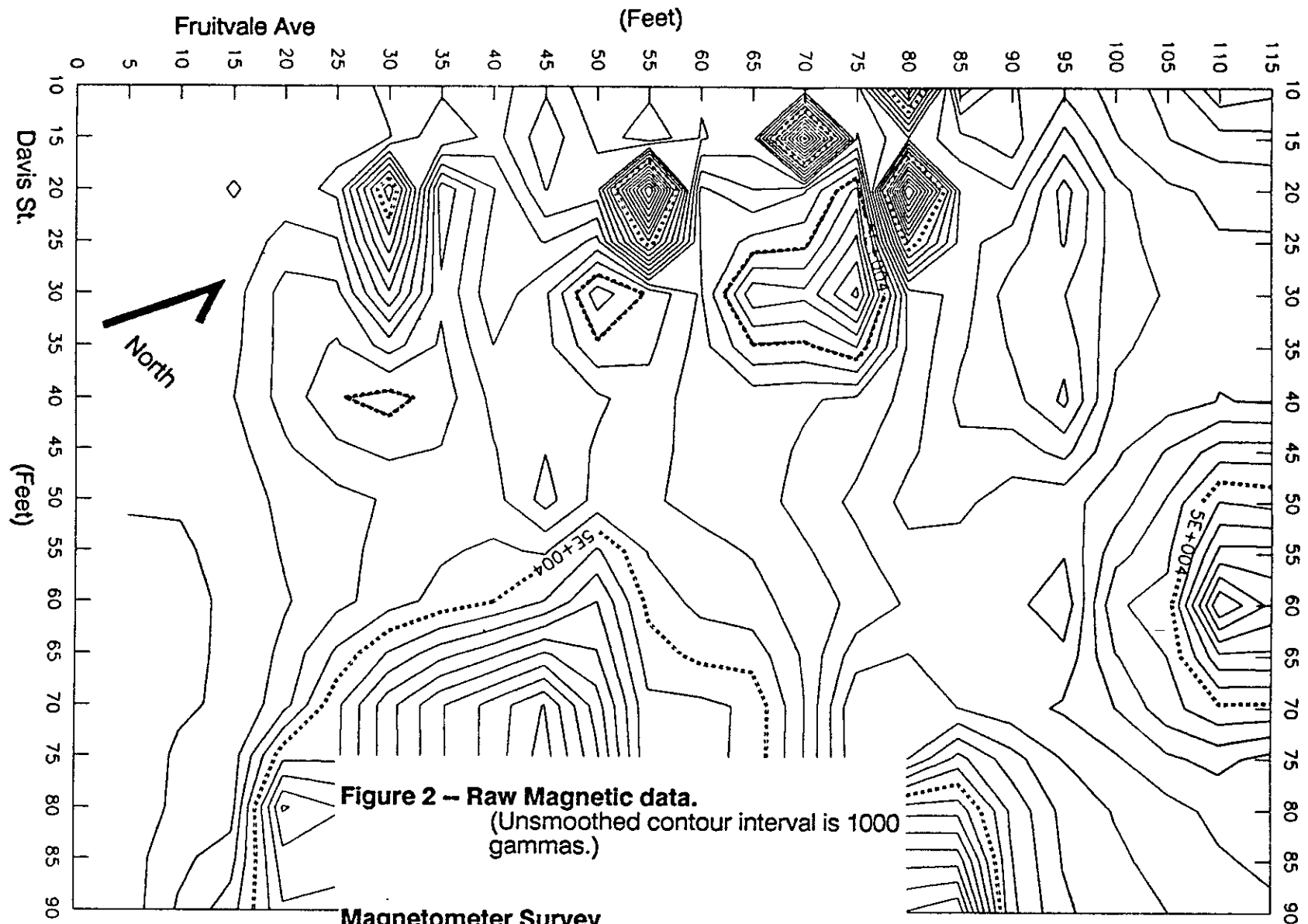
If you have any questions regarding the results of this survey, please contact either Malcolm Petty or myself at the address given on the letterhead.

Sincerely,



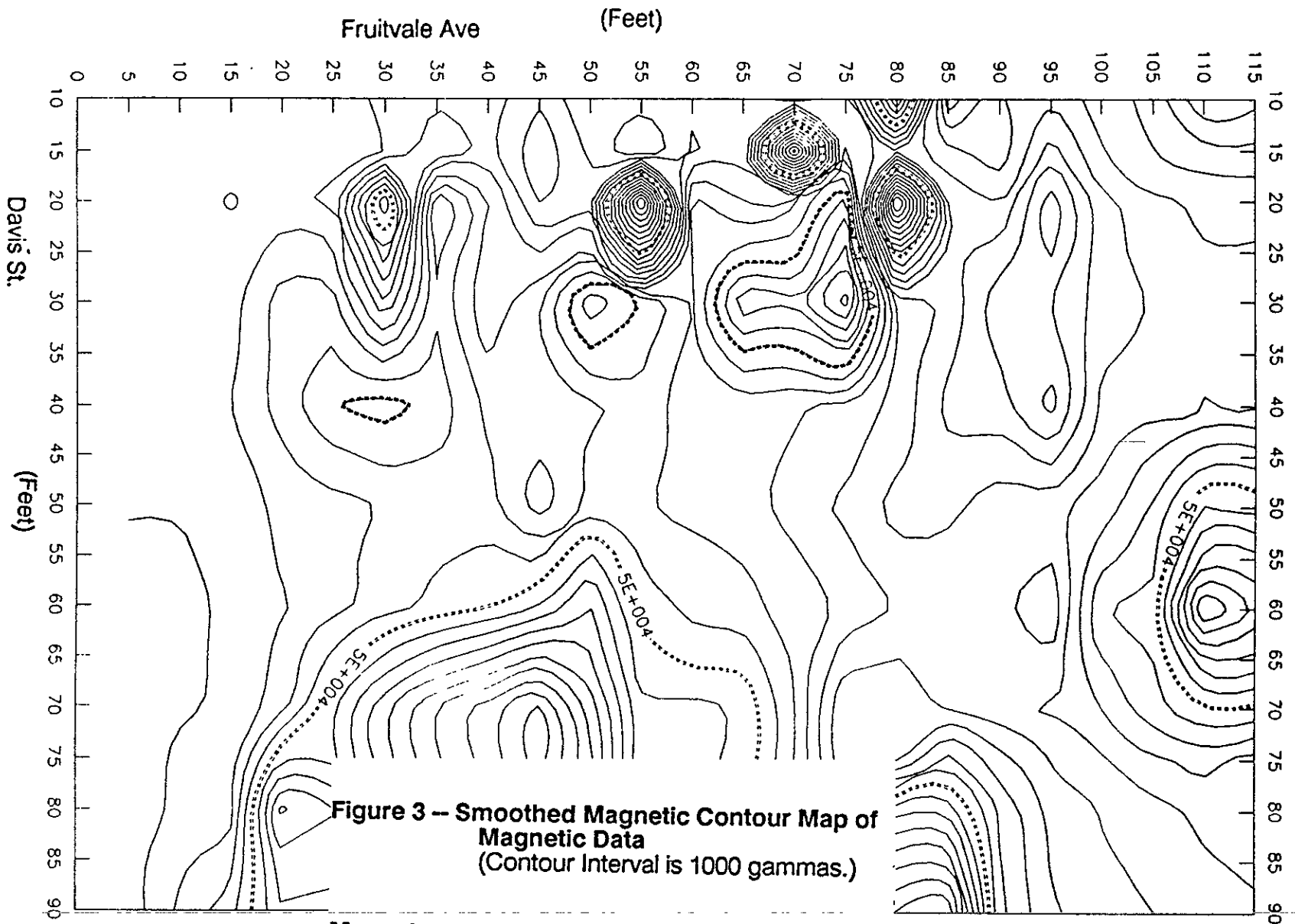
Bruce C. Auld, RGp 464 (CA)

Chief Geophysicist  
BCA Geophysics



**Figure 2 -- Raw Magnetic data.**  
 (Unsmoothed contour interval is 1000  
 gammas.)

**Magnetometer Survey**  
 Fruitvale Ave and Davis St. Site  
 Oakland, CA



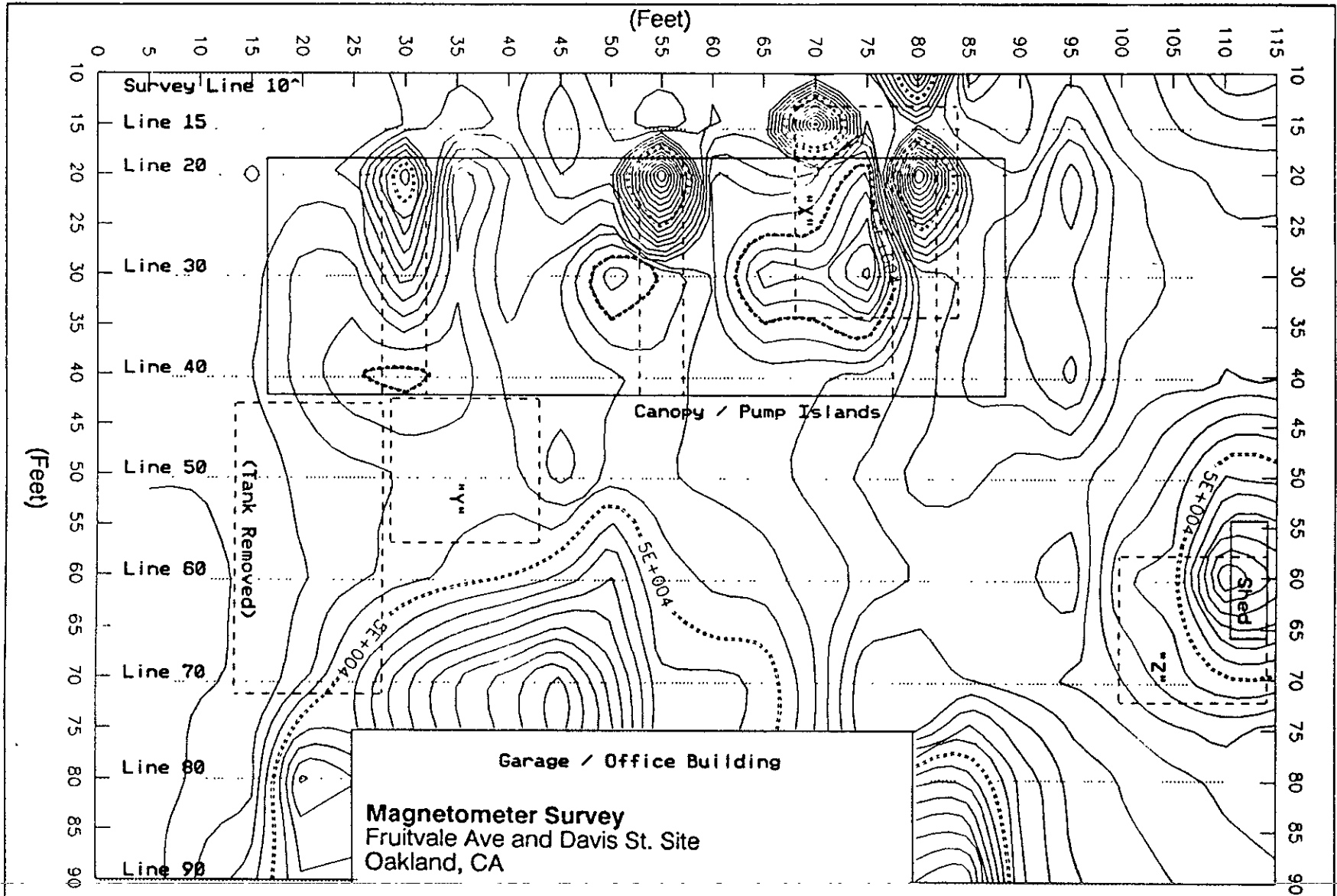
**Figure 3 -- Smoothed Magnetic Contour Map of Magnetic Data**  
 (Contour Interval is 1000 gammas.)

**Magnetometer Survey**  
 Fruitvale Ave and Davis St. Site  
 Oakland, CA



FRUITVALE AVENUE

(Feet)



Garage / Office Building

**Magnetometer Survey**  
 Fruitvale Ave and Davis St. Site  
 Oakland, CA

Figure 4 -- Composite of Figure 1 and Figure 3.

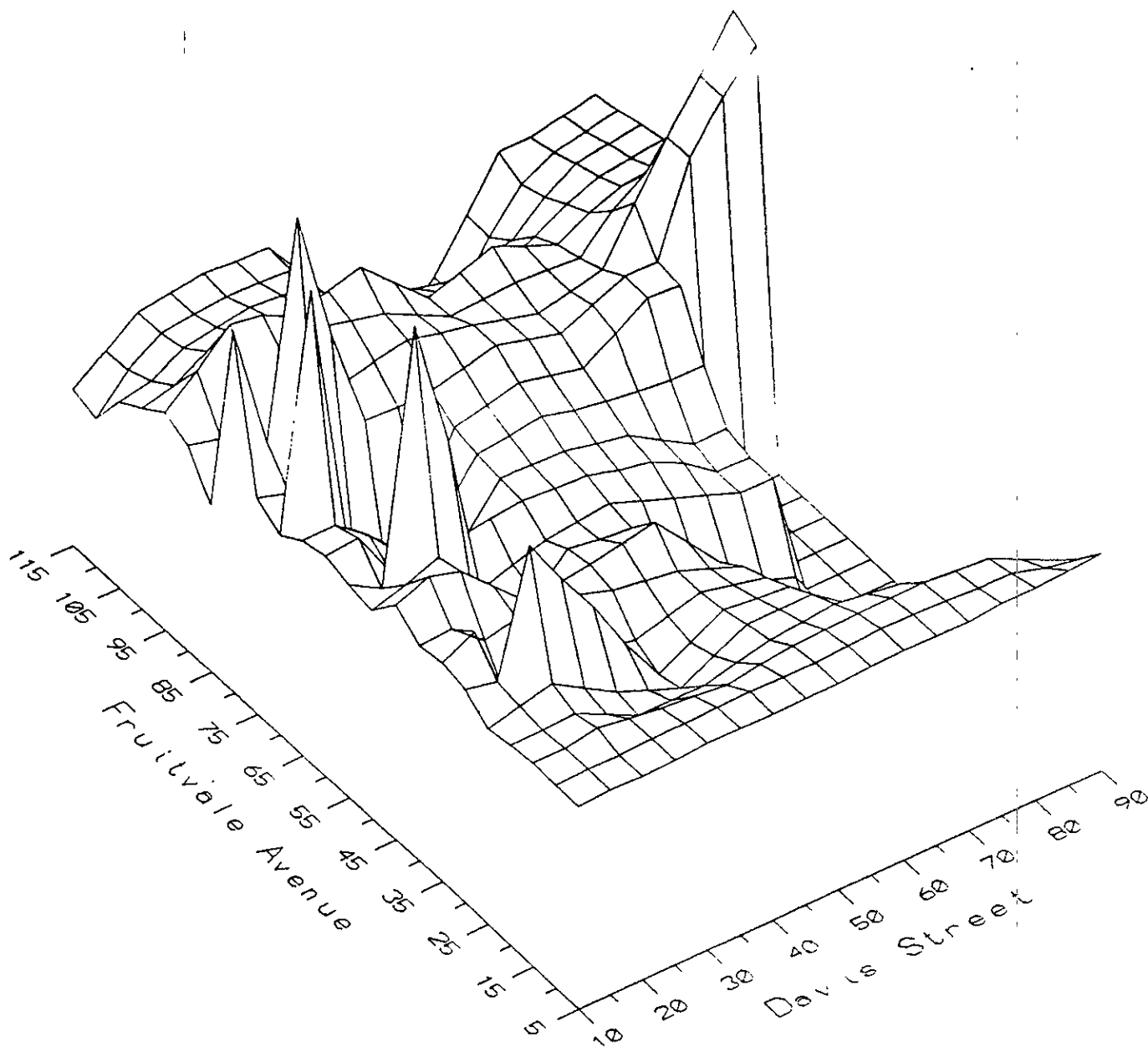
DAVIS STREET

Note: "X" is Former Gas & Oil Facility

"Y" is " Auto Repair "

"Z" is " Grease "

(positions approximate)



**Magnetometer Survey**  
Fruitvale Ave and Davis St. Site  
Oakland, CA

**Figure 5 -- Projection of Smoothed Magnetic Contours shown in Figure 2.**  
(Contour data from Figure 2 is rotated 225 degrees CCW and tilted 40 degrees.)

**APPENDIX B**

**MONITORING WELL PERMIT,  
SITE SAFETY PLAN**

BASELINE Environmental Consulting  
5900 Hollis, Suite D, Emeryville, CA 94608  
Phone: (510) 420-8686  
Fax: (510) 420-1707

## SITE SAFETY PLAN

**Project No.:** 92404-AO.03

**Field Activities Date:** 10-11 August 1993

**Client:** City of Oakland Real Estate Services

**Address:** 1330 Broadway, Suite 1001, Oakland, CA 94612

**Contact Person:** Ms. Julie Carver

**Telephone No.:** (510) 238-6361

**Job Location:** 2662 Fruitvale Avenue, Oakland

**Project Description:** Drilling of 10 soil borings by HEW Drilling of East Palo Alto; collection of soil samples by BASELINE. Samples will be analyzed for motor oil, oil and grease, and volatile organic compounds (VOCs)

**Project Manager:** Dominic Roques

**Site Health & Safety Manager:** Bill Scott

**Site History:** The project site is located at 2662 Fruitvale Avenue, at the northeast corner of Fruitvale Avenue and Davis Street, in the City of Oakland in Alameda County. The site is occupied by a vacant service station consisting of a building, islands with canopy, and a metal shed. Service station activities included fueling and auto repair. Prior to the service station operation, the site was occupied by a residence. The service station operated at the site from 1951 to 1978. Records indicate that the underground storage tanks were removed from the site in 1978. There are no available records regarding the condition of the tanks during removal or whether any release of petroleum hydrocarbons had occurred. Gasoline, VOCs, motor oil, and oil and grease were detected in soils on-site in previous subsurface investigations.

**Chemical Hazards:** All sampling and drilling personnel may be exposed to chemical hazards through inhalation of airborne dust/dirt, ingestion of foods where airborne dusts have settled, and, most important, skin contact. The chemicals listed in Table 1 may be present, based on previous investigations.

**Physical Hazards:** Fire and explosion, heavy equipment, heat stress, noise. Drill rig safety requirements are the responsibility of the operator. Drilling contractor shall be responsible for complying with all OSHA requirements and accepted industry practices for protection of employee health and safety. The drilling contractor shall ensure that all equipment is in good working order prior to starting work. The drilling contractor shall ensure that proper housekeeping is maintained around the work area at all times.

BASELINE employees shall observe the following precautions:

- 1) Watch for slippery ground;
- 2) Adequately cover all unattended boreholes;
- 3) Maximize distance from the rig and do not take readings at rig during auger clearing or drive sampling;
- 4) Wear safety hard hats and safety footwear; and
- 5) Prevent strain injuries by using small sample shipping containers and/or material handling aids. Use portable table for opening split spoon samplers.

**Personal Protective Equipment Required:** Hard hats, respirators equipped with high efficiency filters and/or organic vapor cartridges (use to be designated by Health and Safety Officer), nitrile gloves, safety goggles, rubber boots, water supply for washing, decontamination, and for drinking, disposable overalls (non-coated), first-aid kit, noise protection (ear plugs).

**Air Monitoring Strategy (including action levels):** Before field work begins, collect background readings using HNu and combustible gas indicator. Monitor soil borings using the combustible gas indicator. If >20% LEL, stop work to air out boring until <20% LEL. If necessary, eliminate ignition sources. May use HNu and/or methane detector tubes to characterize vapors.

**SITE SAFETY PLAN - continued**

Monitor workers' breathing zones in boring vicinity, using HNu. If HNu reads > background + 5 ppm, don respirator with organic vapor cartridge. May use Sensidyne detector tubes for characterizing emissions if HNu readings exceed background levels (e.g., for benzene).

**Site Control Measures:** Define and demarcate exclusion and clean zones for each boring location. No eating, drinking, or smoking permitted in exclusion zone. Avoid skin and eye contact with soil to maximum extent possible. If dusty conditions, don safety goggles and respirators equipped with filters. USA will provide utility clearance. Hand-digging may be performed where utilities are suspected (even though not identified through USA). Personal hygiene imperative to prevent prolonged skin contact with site soils and dusts. Place cuttings in drums, secure and label. Dispose of decontamination equipment and personal protective gear in BASELINE-provided containers. No contact lenses.

**Decontamination Procedures (personal and equipment):** Decontaminate boots and soil sampling equipment on-site. Remove and dispose of gloves and overalls in appropriate manner.

**Hospital/Clinic:** Highland Hospital **Phone:** (510) 534-8055

**Hospital Address:** 1411 E. 31st Street, Oakland (see attached Figure 1)

**Paramedic:** 911 **Fire/Police Dept.:** 911

**Emergency Procedures:** Notify Yane Nordhav at (510) 420-8686.

**Prepared by:** Yane Nordhav **Reviewed/Approved by:**

**Date:** 8/5/93 **Date:**

**Read by:** Geneva Randall **Date:**

**Read by:** Sandi Potter **Date:**

**Read by:** Bill Scott **Date:**

**Read by:** **Date:**

SITE SAFETY PLAN - continued

Table 1. CHEMICAL HAZARDS

Chemical	Source; Description	TLV	PEL	Routes of Exposure	Symptoms of Acute Exposure	Monitoring Instrument	Respirator Cartridge
Lead	Past land use; inorganic metal	50 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	Ingestion, inhalation	Insomnia, lassitude, palpitations, constipation, eye irritation	--	High efficiency filter (if dusty conditions)
Zinc	Past land use; zinc oxide dust, inorganic metal	10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	Ingestion, inhalation	Skin and eye irritant		
Copper	Past land use; inorganic metal	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	Ingestion, inhalation	Respiratory system and eye irritant		
Cadmium	Past land use; suspected carcinogen	0.05 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	Ingestion, inhalation	Pulmonary edema, coughing, tight chest, headache, chills		
Antimony	Past land use; antimony compounds	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	Ingestion, inhalation	Inflammation of skin or mucous membranes of nose and throat, metallic taste, gastrointestinal upset, fatigue, nausea		
Mercury	Past land use; inorganic metal	0.1 mg/m <sup>3</sup>	1 mg/10 m <sup>3</sup> (acceptable ceiling concentration)	Ingestion, inhalation, skin contact	Coughing, excessive salivation, pneumonia, irritability, loss of memory, insomnia		
Fluorides	Past land use; inorganic	2.5 mg/m <sup>3</sup>	2.5 mg/m <sup>3</sup>	Ingestion, inhalation	Irritation of eyes, skin, and mucous membranes, skin rash, irritation of respiratory system, nausea, excessive salivation		
Nickel	Past land use; metal carcinogen	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	Ingestion, inhalation	Dermatitis, ingestion of soluble salts may cause nausea, vomiting, diarrhea		
Solvents	Past land use; organics, may include carcinogens	Compound specific	Compound specific	Ingestion, inhalation, skin contact	Headache, dizziness, irritation of eyes, skin, or mucous membranes		
Fuel hydrocarbons	Past land use; examples: gasoline, diesel, benzene, toluene, xylenes, ethylbenzene	100 ppm. gasoline; 10 ppm. benzene	100 ppm. gasoline; 1 ppm. benzene	Inhalation, skin contact, ingestion	Headache, dizziness, skin or eye irritation	HNu and Sensidyne detector tube for benzene	Organic vapor



**APPENDIX C**  
**SAMPLING PROCEDURES**



## SAMPLING PROCEDURES

### SOILS

1. In-place soil samples are collected with a stainless steel corer, fitted with a six-inch brass liner. The corer is driven into the ground by a slide hammer. The brass liner is removed from the steel corer, capped with teflon film and a plastic cap, sealed with a silicone band, placed in a zip-lock bag. The samples are stored in a plastic cooler containing blue ice or ice and submitted to the analytical laboratory. Proper chain-of-custody and sample labeling procedures are followed.

All sampling equipment is decontaminated with tri-sodium phosphate (TSP) and deionized water prior to collection of each sample.

2. In-place soil samples may also be collected during drilling activities. The samples are collected with a California Modified sampler (2-inch diameter) fitted with six-inch brass or stainless steel sample tubes. The sampler is driven into the ground by a 140-lb. hammer falling 30 inches. The samples are handled similarly to the procedures described above and the equipment is decontaminated in the same fashion.

3. During tank removal activities, soil samples may be collected from a backhoe bucket having extracted material from a specific depth. The soil brought to the surface in a bucket is sampled after about six inches of the surface is discarded. The sample is collected with a stainless steel corer fitted with a brass tube. The sample is handled in the same manner as described above, and decontamination procedures are similar.

### GROUNDWATER

The well is checked for floating product with a dual interface probe. A water level measurement is made simultaneously with the probe, calibrated to the nearest 1/100th of a foot.

Approximately three to five well volumes of water are purged from the well prior to sampling. The evacuation is performed with either a PVC 1.7-inch hand pump or a double diaphragm pump with disposable tubing. The sample is collected with a disposable, bottom-valve, plastic bailer. The sample is transferred directly into sample bottles provided by the laboratory and stored in a cooled container until submitted to the laboratory. Proper chain-of-custody and sample labeling procedures are followed.

All sampling equipment is decontaminated with TSP and deionized water prior to collection of each sample.

(In the case of sampling from dewatering wells, manholes, or in tank excavations, no evacuation occurs, but the sample is collected immediately after a check has been made for floating product. The sample is immediately transferred from the plastic bailer to the sample vials, iced, and brought to the laboratory for analysis).