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**GROUNDWATER SAMPLING AND  
CLOSURE REPORT**

**National Guard  
Organizational Maintenance Shop No. 35  
16501 Ashland Avenue  
San Lorenzo, California**

**Prepared for**

**Division of State Architect  
1300 I Street  
Sacramento, California 95814**

**December 1996  
Project No. 2868**

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**Geomatrix Consultants**



16 December 1996  
Project 2868

Ms. Amy Leech  
Alameda County Environmental Protection Division  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Subject: Groundwater Sampling and Closure Report  
National Guard Organizational Maintenance Shop No. 35  
San Lorenzo, California

Dear Ms. Leech:


Enclosed is a Groundwater Sampling and Closure Report prepared by Geomatrix Consultants, Inc., for the National Guard Organizational Maintenance Shop at 16501 Ashland Avenue in San Lorenzo, California. This report was prepared on behalf of the California Department of the Military and the Division of State Architect. It summarizes all of the subsurface work that has been conducted at the site in relation to a former underground gasoline storage tank and presents the results of four sampling rounds conducted on the three on-site monitoring wells over a three year period. Based on the limited distribution of petroleum hydrocarbons in soil and groundwater in the vicinity of the former tank and the documented natural degradation processes occurring in groundwater, we believe this site qualifies as a Low Risk Groundwater Case as defined by the Regional Water Quality Control Board.

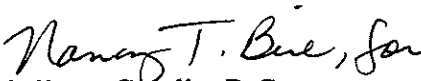
This report documents the limited impact to the environment from the former tank and the very low potential for impact to human health from the petroleum constituents in soil and groundwater. We recommend the site for closure with respect to environmental issues.

If you have any questions or require additional information, please contact either of the undersigned.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

  
Lisa D. Rowles, R.G.  
Senior Geologist

  
Sally E. Goodin, R.G.  
Principal Geologist

LDR/bab  
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cc. Homer Lin, Division of the State Architect  
Bernadet Shields, SFC - National Guard

Enclosure

**Geomatrix Consultants, Inc.**  
Engineers, Geologists, and Environmental Scientists



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**Geomatrix Consultants**

## TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 BACKGROUND AND PREVIOUS INVESTIGATIONS	1
3.0 RECENT GROUNDWATER SAMPLING ACTIVITIES	2
3.1 SAMPLING METHODOLOGY	2
3.2 RESULTS	4
4.0 DISTRIBUTION OF CHEMICALS IN SOIL AND GROUNDWATER	4
5.0 HYDROGEOLOGY	5
6.0 POTENTIAL EXPOSURE AND RISKS	6
6.1 BENEFICIAL USES	6
6.2 WELL SURVEY	6
6.3 POTENTIAL RISK TO HUMANS	7
6.4 POTENTIAL IMPACT TO THE ENVIRONMENT	8
7.0 SUMMARY AND CONCLUSIONS	8
8.0 REFERENCES	9

## LIST OF TABLES

Table 1	Soil Analytical Results
Table 2	Monitoring Well Analytical Results
Table 3	Grab-Groundwater Sample Analytical Results
Table 4	Historical Water Level Measurements
Table 5	Well Survey

## LIST OF FIGURES

Figure 1	Site Location Map
Figure 2	Subsurface Sampling Locations
Figure 3	Maximum Concentrations Detected in Soil
Figure 4	Previous Shallow Grab Groundwater Results - July 1993 and April 1995
Figure 5	Previous Deep Grab Groundwater Results - July 1993 and April 1995
Figure 6	Recent Groundwater Results
Figure 7	Potentiometric Surface Map - 9 August 1996
Figure 8	Well Survey

**TABLE OF CONTENTS**  
(Continued)

**LIST OF APPENDICES**

- Appendix A Drilling Permit for Grab-Groundwater Samples
- Appendix B Boring Logs
- Appendix C Laboratory Reports and Chain-of-Custody Records

## **GROUNDWATER MONITORING AND SITE CLOSURE REPORT**

National Guard Organizational Maintenance Shop No. 35  
San Lorenzo, California

### **1.0 INTRODUCTION**

This report was prepared by Geomatrix Consultants, Inc. (Geomatrix) on behalf of the California Department of the Military (CDM) and Division of State Architect to summarize previous work performed at the site, present recent groundwater sampling results, and describe current conditions at and in the vicinity of the National Guard Organizational Maintenance Shop No. 35 in San Lorenzo, California (the site; Figure 1). The purpose of the report is to provide the information requested by the Alameda County Department of Environmental Health (ACDEH) to obtain case closure. The report has been prepared in accordance with guidelines set forth in the Supplemental Instructions to the State Water Board December 8, 1995 Interim Guidance on Required Cleanup at Low Risk Fuel Sites (RWQCB, 5 January 1996).

The report is divided into eight sections: 1) Introduction, 2) Background and Previous Investigations, 3) Recent Groundwater Sampling Activities, 4) Distribution of Chemicals in Soil and Groundwater, 5) Hydrogeology, 6) Potential Exposure and Risks, 7) Summary and Conclusions, and 8) References.

### **2.0 BACKGROUND AND PREVIOUS INVESTIGATIONS**

The site is located at 16501 Ashland Avenue in San Lorenzo, California and covers approximately two acres. The site is relatively flat and is covered by buildings, asphalt, and landscaping. A 2000 gallon gasoline underground storage tank (UST) was removed from the site by AATR Enterprise in April 1993 and the pump and piping associated with the tank were removed by Trump Brothers in October 1995. Gasoline-containing soil and groundwater were reportedly observed in the excavation at the time of the tank removal and the excavations were backfilled with imported fill.

Seven phases of work have been conducted at the site since the UST was removed. In November 1994, Tetra Tech, Inc. drilled 10 soil borings, installed three groundwater monitoring wells, and collected and analyzed 30 soil and 12 groundwater samples for total recoverable petroleum hydrocarbons (TPRH), total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, and benzene, toluene, ethylbenzene, and xylenes (BTEX) (TetraTech, 1993). In April 1995, Geomatrix collected five additional grab-groundwater samples to further delineate the extent of the hydrocarbons previously detected in groundwater (Geomatrix, 1995a). Sampling locations are shown on Figure 2; analytical results are presented in Tables 1 through 3, and on Figures 3 through 5; and discussed in Section 4.0.

Four rounds of groundwater monitoring have been conducted on the wells (July 1993; May 1995; August 1995, and August 1996) and two additional grab groundwater samples were collected in November 1996. The methodology and results of the most recent sampling events are provided in the next section. The recent results are described in Section 3.0, included in Tables 2 and 3, and presented on Figure 6. All of the results from the site investigations are summarized in Section 4.0.

### **3.0 RECENT GROUNDWATER SAMPLING ACTIVITIES**

Recent groundwater sampling activities include both monitoring well sampling and grab-groundwater sampling. The field methods for each sampling event are described in Section 3.1; the results are presented in Section 3.2.

#### **3.1 SAMPLING METHODOLOGY**

Monitoring Well Samples: The three existing monitoring wells were sampled on 9 August 1996. To remove water from the well casing prior to collecting samples, four casing volumes were removed from the wells with a diaphragm pump and PVC tubing. New PVC tubing was used at each well. The temperature, pH, and specific conductance of the purged groundwater were measured periodically during purging. These parameters stabilized and the produced water was visually clear prior to sample collection.

Groundwater samples were collected from the wells with disposable polyethylene bailers rinsed with deionized water immediately before sampling. Samples were collected by lowering the bailer below the water surface to approximately mid-screen level. The water in the bailer was then carefully poured into EPA-approved containers, properly labeled, placed in an ice-chilled cooler, and delivered to a state-certified analytical laboratory under Geomatrix chain-of-custody procedures.

Grab-Groundwater Samples: Two grab-groundwater samples were collected on 21 November 1996 by Vironex, Inc. of Hayward, California using a 2-inch diameter direct push Geoprobe system. Prior to drilling, an underground utility clearance was conducted by downUnder technologies and a drilling permit was obtained from Alameda County Zone 7. A copy of the drilling permit is included in Appendix A.

The boreholes were drilled to 12 feet. During drilling, the Geomatrix field geologist described the soil core on boring logs according to the Unified Soil Classification System noting lithology, color, moisture content, and grain size. The boring logs are included in Appendix B. To collect samples of groundwater from the boreholes, 10 feet of 1-inch diameter PVC screen and 2 feet of blank PVC were placed in the boreholes. After water had accumulated in the casings, 0.75-inch disposable bailers were used to collect the samples. Water from the bailers were carefully poured into EPA-approved containers, properly labeled, placed in an ice-chilled cooler, and delivered to a state-certified analytical laboratory under Geomatrix chain-of-custody procedures.

Sample Analysis: Both the monitoring well samples and the grab-groundwater samples were analyzed by Chromolab, Inc. of Pleasanton, California, for TPHg, BTEX, and methyl tert butyl ether (MTBE) according to EPA Methods 8015 and 8020. Copies of the laboratory reports and chain-of-custody records are included in Appendix C.



### 3.2 RESULTS

TPHg and BTEX were detected in the sample collected from well MW-3 at concentrations of 600 micrograms per liter ( $\mu\text{g/l}$ ), 9.0  $\mu\text{g/l}$ , 1.3  $\mu\text{g/l}$ , 74  $\mu\text{g/l}$ , and 22  $\mu\text{g/l}$ , respectively; no MTBE was detected (Table 2, Figure 6). No hydrocarbons were detected in the grab-groundwater samples collected at the downgradient edge of the site (Table 3), nor in the samples collected from wells MW-1 or MW-2, located transgradient and upgradient of the former tank (Table 2, Figure 6).

### 4.0 DISTRIBUTION OF CHEMICALS IN SOIL AND GROUNDWATER

The extent of petroleum hydrocarbons in soil around the former underground gasoline tank is limited. Ten soil borings were drilled during July 1993 to assess the presence and distribution of petroleum hydrocarbons in shallow soil (Figure 3). These data indicated that only a minor volume of gasoline had spilled into the subsurface. TPHg and BTEX were detected in soil samples collected from only the two borings located to the north of the former tank (B-3 and MW-3; Table 1, Figure 3). Maximum concentrations were detected in the 10 foot sample from boring B-3 (located approximately 7 feet north of the excavation), at 17 milligrams per kilogram (mg/kg) TPHd, 450 mg/kg TPHg, 2.4 mg/kg benzene, 11 mg/kg toluene, 8 mg/kg ethylbenzene, and 8 mg/kg total xylenes. At MW-3, located approximately 25 feet to the north of B-3, the concentrations had decreased to 5.9, 0.19, 0.006, 0.04, and 0.31 mg/kg TPHg, benzene, toluene, ethylbenzene, and xylenes, respectively. No hydrocarbon constituents were detected in samples from B-7, B-9, or B-5 located to the east, west, and south of the excavation, respectively (Figure 3).

The extent of petroleum hydrocarbons in groundwater beneath the former tank area is also limited. Three monitoring wells were installed and 14 grab-groundwater samples were collected in the vicinity of the former tank to assess the presence and distribution of petroleum hydrocarbons in shallow groundwater (at 6 to 9 feet below ground surface [bgs]) and three grab-groundwater samples were collected at 23 feet bgs to assess groundwater quality in a deep sand layer (Figures 4 and 5 present previous results; Figure 6 presents recent results). The only

petroleum constituents detected in groundwater were detected in the shallow groundwater samples collected from borings or wells located just to the north and northwest of the excavation (B-2, B-3, and MW-3, Figure 4). MW-3 is the furthest sampling point from the excavation that showed hydrocarbons in groundwater and is only approximately 30 feet to the north of the excavation. No petroleum constituents were detected in the grab samples collected from B-15, GS-1 or GS-2, located approximately 100 feet to the north (Figure 2).

## 5.0 HYDROGEOLOGY

The stratigraphy at the site consists predominantly of lean clay from ground surface to approximately 4 feet and lean clay with thin interbeds of clayey sand and sand with silt between 4 feet and approximately 22 feet. A sandy layer was encountered between approximately 22 and 27 feet in the three deep borings drilled at the site.

A potentiometric surface map for water levels measured on 9 August 1996 (Table 4) is presented as Figure 7. Horizontal hydraulic gradient direction at this time was north-northeast at a magnitude of 0.007 foot per foot (ft/ft).

Depth to groundwater at the site has ranged from approximately 4.5 to 9 feet below ground surface (Table 4). The predominant flow direction in shallow groundwater has been toward the north but directions ranging from northeast to southwest have been recorded in shallow groundwater (Geomatrix 1995b). Hydraulic gradients have ranged from 0.006 foot per foot (ft/ft) to 0.016 ft/ft (Geomatrix 1995b).

The range in groundwater flow directions at the site may be related to changes in magnitude of recharge effects from San Lorenzo Creek located approximately 700 feet to the south of the site (Figure 1).

## 6.0 POTENTIAL EXPOSURE AND RISKS

A survey of the potential receptors at and in the vicinity of the site was conducted to assess the potential impact of the hydrocarbon constituents currently present in soil and groundwater. The beneficial uses of the surface and groundwaters in the site vicinity were investigated, a well survey was performed, and potential human exposure pathways were identified. The potential impact to the environment~~al~~ was also assessed. The results of this work ~~are~~ are presented below.

### 6.1 BENEFICIAL USES

The site is located in the South Bay Basin - Hydrologic Planning Area. Groundwater in the South Bay Basin is used for municipal and domestic water supply (RWQCB, 1995). Surface water is used for wildlife and fish habitat as well as recreation. The closest surface water body to the site is the San Lorenzo Creek which lies approximately 700 feet to the south in a generally upgradient direction from the site (Figure 1). This creek transfers water from Don Castro Lake in the hills 3.5 miles to the east of the site to San Francisco Bay (3 miles to the west). The creek is considered both a cold and warm freshwater habitat for fish migration and spawning, a habitat for wildlife, and accessible for water contact and non-water contact recreation (RWQCB, 1995). Water in the creek is used for fresh water replenishment and ground water recharge. Potential for impact to this creek by the constituents in groundwater beneath the site is highly unlikely based on the fact that the creek is located upgradient of the site.

The closest surface water body to the north (downgradient) of the site is Lake Chabot, which is located at higher elevations approximately 3 miles from the site. Potential for impact to this lake from the site is highly unlikely.

### 6.2 WELL SURVEY

A well survey was conducted to assess the potential for human contact with the hydrocarbons in groundwater detected beneath the site. Based on data provided by the Alameda County Department of Public Works, within a half mile radius of the site, there are 27 wells permitted

for irrigation, 4 wells permitted for domestic supply, 23 wells used for monitoring, 1 test well, and 1 cathodic protection well. A summary of the well information obtained from the county for the area within a quarter mile of the site is presented in Table 5; the identified wells are shown on Figure 8.

North and northeast of the site (the predominant downgradient direction), there are three permitted domestic supply wells, 6 wells permitted for irrigation, and 3 monitoring wells. The closest wells to the tank area at the site are irrigation wells located approximately 400 feet to the north and 300 feet to the southeast (Figure 8).

### **6.3 POTENTIAL RISK TO HUMANS**

The petroleum constituents in soil at the site are located directly beneath the excavation of the former gasoline tank and near the water table (at approximately 10 feet below ground surface) downgradient (to the north) of the former tank. The excavation has been backfilled and covered with a concrete slab. The area surrounding the former tank is paved with asphalt. Direct contact with petroleum-containing soil at the site is unlikely.

Direct contact with site groundwater is also unlikely. Groundwater is not used for drinking at or in the immediate vicinity of the site. Recent investigations have shown that the gasoline constituents in groundwater are degrading and have not migrated. Impact to downgradient domestic and/or irrigation supply wells is unlikely.

The only potential exposure pathway to chemicals at the site is through inhalation of volatile constituents emanating from groundwater through 10 feet of vadose zone soil and the overlying concrete slab or asphalt pavement. Because the concentrations of volatile constituents in groundwater at the site are very low (the maximum concentration of benzene detected in site groundwater last August 1996 was 9 µg/l, the potential impact to ambient air at the site from groundwater is extremely low and unlikely to pose an unacceptable risk to human health at the site.

#### 6.4 POTENTIAL IMPACT TO THE ENVIRONMENT

Based on the historical groundwater data for samples collected from well MW-3, which have shown steadily decreasing concentrations of gasoline constituents over time, and the lack of constituents in the grab-groundwater samples collected downgradient of MW-3 (collected in July 1993, April 1995, and November 1996), the petroleum hydrocarbons from the former tank appear to be degrading in place and not migrating significantly. The impact to the environment from the former tank is low.

#### 7.0 SUMMARY AND CONCLUSIONS

An underground gasoline storage tank was removed from the site in 1993. Soil and groundwater samples collected in the vicinity of the former tank have shown that hydrocarbons in the subsurface are limited in extent; TPHg and BTEX in groundwater have not extended beyond the property boundary (approximately 100 feet from the former tank) in at least the past 3.5 years and have shown steadily decreasing concentrations over time. Based on the ongoing degradation and low hydraulic gradient at the site, impact to downgradient surface water or groundwater wells from the former tank at the site is unlikely in the future.

For these reasons, we believe the site does not pose a threat to human health or the environment. We believe the site qualifies as a "Low Risk Groundwater Case" as described by the RWQCB (1996) and recommend the site be closed with respect to environmental issues.

## 8.0 REFERENCES

- Geomatrix Consultants, Inc., 1995a, Groundwater Investigation and Quarterly Monitoring Report, National Guard Organizational Maintenance Shop No. 35, 16501 Ashland Avenue, San Lorenzo, California, July.
- Geomatrix Consultants, Inc., 1995b, Quarterly Monitoring Report July - September 1995, National Guard Organizational Maintenance Shop No. 35, 16501 Ashland Avenue, San Lorenzo, California, October.
- RWQCB, 1995, The Water Quality Control Plan (Basin Plan) San Francisco Bay Basin Region (2).
- RWQCB, 1996, Regional Board Supplemental Instructions to State Water Board December 8, 1995, Interim Guidance on Required Cleanup at Low-Risk Fuel Sites, 5 January.
- TetraTech, Inc., 1993, Letter report to Homer Lin of the Office of the State Architect, presenting the cost of additional drilling, results of feasibility study, and options for the existing diesel tank at the Department of the Military's Organizational Contract UT 048R, Work Order MAR 112, Assignment I, 29 September.

TABLE 1

ANALYTICAL RESULTS<sup>1</sup> FOR PETROLEUM HYDROCARBONS AND LEAD IN SOIL SAMPLES<sup>2</sup>  
 COLLECTED FROM SOIL BORINGS DRILLED JULY 7, 8, AND 9, 1993

National Guard Organizational Maintenance Shop No. 35  
 San Lorenzo, California

Sample Number	Depth (feet)	TRPH <sup>3</sup> (418.1) (mg/kg)	TPHd <sup>4</sup> (8015mod) (mg/kg)	TPHg <sup>5</sup> (8015mod) (mg/kg)	Organic Pb <sup>6</sup> (22 CAC) (mg/kg)	Total Pb (7420) (mg/kg)	Benzene (8020) (mg/kg)	Toluene (8020) (mg/kg)	Ethylbenzene (8020) (mg/kg)	Xylene (8020) (mg/kg)	PID (ppm)
B1-5	5.0-5.5	ND <sup>7</sup>	ND	ND	NA <sup>8</sup>	NA	ND	ND	ND	ND	0.6
B1-9.5&10	9.5-10.5	ND	ND	ND	ND	17	ND	ND	ND	ND	0.3
B1-15	15.0-15.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0.4
B1-20	20.0-20.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0.4
B2-5	5.0-5.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0.3
B2-9.5&10	9.5-10.5	ND	ND	ND	ND	10	ND	ND	ND	ND	0.6
B2-15	15.0-15.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0.6
B3-5	5.0-5.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B3-9.5&10	9.5-10.5	82	17	450	ND	13	2.4	11	8	8	151
B3-15	15.0-15.5	19	ND	7	NA	NA	0.066	0.32	0.2	0.75	54
B3-20	20.0-20.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B5-5	5.0-5.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B5-10	10.0-10.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B5-15	15.0-15.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B7-5	5.0-5.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B7-10	10.0-10.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B7-15	15.0-15.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B9-5	5.0-5.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B9-10	10.0-10.5	ND	NA	ND	NA	NA	ND	ND	ND	ND	0
B13-9.5&10	9.5-10.5	ND	ND	5.9	ND	17	0.19	0.006	0.04	0.31	6.4
B13-15	15.0-15.5	ND	ND	ND	NA	NA	ND	ND	ND	0.008	2.8
B14-10	10.0-10.5	ND	NA	ND	NA	NA	ND	ND	ND	ND	0

TABLE 1

**ANALYTICAL RESULTS<sup>1</sup> FOR PETROLEUM HYDROCARBONS AND LEAD IN SOIL SAMPLES<sup>2</sup>  
COLLECTED FROM SOIL BORINGS DRILLED JULY 7, 8, AND 9, 1993**  
National Guard Organizational Maintenance Shop No. 35  
San Lorenzo, California

Sample Number	Depth (feet)	TRPH <sup>3</sup> (418.1) (mg/kg)	TPHd <sup>4</sup> (8015mod) (mg/kg)	TPHg <sup>5</sup> (8015mod) (mg/kg)	Organic Pb <sup>6</sup> (22 CAC) (mg/kg)	Total Pb (7420) (mg/kg)	Benzene (8020) (mg/kg)	Toluene (8020) (mg/kg)	Ethylbenzene (8020) (mg/kg)	Xylene (8020) (mg/kg)	PID (ppm)
B14-15	15.0-15.5	ND	NA	ND	NA	NA	ND	ND	ND	ND	0
B15-5	5.0-5.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
B15-10	10.0-10.5	ND	NA	ND	NA	NA	ND	ND	ND	ND	0
B15-15	15.0-15.5	ND	NA	ND	NA	NA	ND	ND	ND	ND	0
B16-5	5.0-5.5	ND	NA	ND	NA	NA	ND	ND	ND	ND	0
B16-10	10.0-10.5	ND	NA	ND	NA	NA	ND	ND	ND	ND	0
B16-15	15.0-15.5	ND	NA	ND	NA	NA	ND	ND	ND	ND	0
B17-25	25.0-25.5	ND	ND	ND	NA	NA	ND	ND	ND	ND	0
Detection Limit:		10	5	1	1	1	0.005	0.005	0.005	0.005	---
Average <sup>9</sup>		3.37	0.77	15.43	ND	14.25	0.09	0.38	0.27	0.30	7.20
Maximum		82	17	450	ND	17	2.4	11	8	8	151
Minimum		ND	ND	ND	ND	10	ND	ND	ND	ND	0

- 1 TetraTech, 1994.
- 2 Only soil samples which had detectable concentrations of TPHg were analyzed for lead.
- 3 TRPH = total recoverable petroleum hydrocarbons
- 4 TPHd = total petroleum hydrocarbons as diesel
- 5 TRPg = total petroleum hydrocarbons as gasoline.
- 6 Pb = lead
- 7 ND = not detected at or above detection limit
- 8 NA = not analyzed for this analyte
- 9 Averages are computed assuming that ND = 0 mg/kg



TABLE 2

**MONITORING WELL ANALYTICAL RESULTS<sup>1</sup>**

National Guard Organizational Maintenance Shop  
San Lorenzo, California

Concentrations in micrograms per liter (µg/l)

Sample No.	Date Collected	TPHd <sup>2</sup>	TPHg <sup>3</sup>	Benzene	Toluene	Xylenes	Ethyl-benzene	MTBE <sup>4</sup>
MW-1	7/14/93	ND <sup>5</sup>	ND	ND	ND	ND	ND	NA <sup>6</sup>
	5/3/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NA
	8/11/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NA
	8/9/96	NA	<50	<0.5	<0.5	<0.5	<0.5	<5
MW-2	7/14/93	ND	ND	ND	ND	ND	ND	NA
	5/3/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NA
	8/11/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NA
	8/9/96	NA	<50	<0.5	<0.5	<0.5	<0.5	<5
MW-3	7/14/93	<200	4100	ND	ND	640	ND	NA
	5/3/95	<50	600	18	4.2	27	110	NA
	8/11/95	<50	710	11	3.2	23	110	NA
	8/9/96	NA	600	9.0	1.3	22	74	<5

Notes:

- <sup>1</sup> Chemical analyses performed by Chromalab, Inc., of Pleasanton, California. Laboratory analytical reports detailing the analyses performed, method detection limits for each constituent, and analytical results are included in Appendix A.
- <sup>2</sup> TPHd = total petroleum hydrocarbons as diesel. Analysis by modified EPA Method 8015.
- <sup>3</sup> TPHg = total petroleum hydrocarbons as gasoline. Analysis by modified EPA Method 8015.
- <sup>4</sup> MTBE = methyl tert butyl ether
- <sup>5</sup> ND = not detected at or above detection limit; detection limit for these samples is unknown. Sampling conducted and performed by TetraTech, Inc.
- <sup>6</sup> NA = not analyzed.

TABLE 3

**GRAB GROUNDWATER SAMPLE ANALYTICAL RESULTS**  
 National Guard Organizational Maintenance Shop No. 35  
 San Lorenzo, California

Sample I.D.	Zone	Date	TPHg <sup>1</sup>	TPHd <sup>2</sup>	Benzene	Toluene	Ethyl-benzene	Xylenes	
B1	S	7/93	ND	ND	ND	ND	ND	ND	
B2	S	7/93	61	<50	0.6	2.1	62	0.8	
B3	S	7/93	110,000	<50	3400	7600	2600	10,000	
B5	S	7/93	ND	ND	ND	ND	ND	ND	
B7	S	7/93	ND	ND	ND	ND	ND	ND	
B9	S	7/93	ND	ND	ND	ND	ND	ND	
B13	S	7/93	free product						
B14	S	7/93	ND	ND	ND	ND	ND	ND	
B15	S	7/93	ND	ND	ND	ND	ND	ND	
B16	S	7/93	ND	ND	ND	ND	ND	ND	
B17	D	7/93	ND	ND	ND	ND	ND	ND	
GP1	S	4/95	ND	ND	ND	ND	ND	ND	
GP2	S	4/95	ND	ND	ND	ND	ND	ND	
GP3	S	4/95	ND	ND	ND	ND	ND	ND	
GP4	S	4/95	ND	ND	ND	ND	ND	ND	
GP5	D	4/95	ND	ND	ND	ND	ND	ND	
GS1	S	11/96	ND	ND	ND	ND	ND	ND	
GS2	S	11/96	ND	ND	ND	ND	ND	ND	

## Notes:

<sup>1</sup> TPHg = total petroleum hydrocarbons as gasoline.

<sup>2</sup> TPHd = total petroleum hydrocarbons as diesel.

TABLE 4

**HISTORICAL WATER LEVEL MEASUREMENTS**  
 National Guard Organizational Maintenance Shop  
 San Lorenzo, California

Well No.	Date	Depth Below TOC <sup>1</sup> (feet)	TOC Elevation (feet, msl <sup>2</sup> )	Groundwater Elevation (feet, msl)
MW-1	11/22/94	8.92	35.53	26.61
	1/6/95	8.31	35.53	27.22
	4/20/95	5.12	35.53	30.41
	5/3/95	5.34	35.53	30.19
	6/9/95	6.14	35.53	29.39
	7/18/95	6.55	35.53	28.98
	8/11/95	7.13	35.53	28.40
	9/8/95	7.61	35.53	27.92
	8/9/96	6.73	35.53	28.80
MW-2	11/22/94	9.41	36.32	26.91
	1/6/95	8.50	36.32	27.82
	4/20/95	6.16	36.32	30.16
	5/3/95	6.13	36.32	30.19
	6/9/95	6.92	36.32	29.40
	7/18/95	7.47	36.32	28.85
	8/11/95	7.90	36.32	28.42
	9/8/95	8.38	36.32	27.94
	8/9/96	7.51	36.32	28.81
MW-3	11/22/95	7.89	34.54	26.65
	1/6/95	7.03	34.54	27.51
	4/20/95	4.55	34.54	29.99
	5/3/95	4.70	34.54	29.84
	6/9/95	5.51	34.54	29.03
	7/18/95	9.00	34.54	25.54
	8/11/95	6.48	34.54	28.06
	9/8/95	6.90	34.54	27.64
	8/9/96	6.10	34.54	28.44

Notes:

- <sup>1</sup> TOC = Top of casing (measuring point).
- <sup>2</sup> msl = Above mean sea level.

**TABLE 5**

**WELL SURVEY**  
Vicinity of 16501 Ashland Avenue

Map I.D. #	Well I.D. # <sup>1</sup>	Well Owner & Address	Type, Number of Wells on Site	Depth <sup>2</sup>	Casing <sup>3</sup> Size	Year Installed	Approximate Distance and Direction from Site <sup>4</sup>
1	3S/2W - 7H01	Kawahara Nursery 16550 Ashland Avenue San Lorenzo	Irrigation, 2	72 65	6 8	1949 6/88	300 SE
2	3S/2W - 7H02	Junction Nursery 16467 Ashland Avenue San Lorenzo	Irrigation, 1	75	10	1929	400 N
3	3S/2W - 7A07	Mello 16464 Ashland Avenue San Lorenzo	Domestic, 1	60	6	?	600 N
4	3S/2W - 7A05	Repose 16435 Ashland Avenue San Lorenzo	Domestic, 1	50	6	1909	700N
5	3S/2W - 7A08	Smith 16414 Ashland Avenue San Lorenzo	Domestic, 1	68	6	1918	800 N
6	3S/2W - 7G11 3S/2W - 7G12	San Lorenzo Unified School District 50 E. Lewelling Boulevard San Lorenzo	Domestic, 1 Irrigation, 1	194 610	6 11	9/91 8/91	1000 SW
7	3S/2W - 7A02	Wolf 786 Elgin Street San Leandro	Irrigation, 1	40	?	1938	1100 NE
8	3S/2W - 7A06	Salvadore 863 Elgin Street San Leandro	Irrigation, 1	49	8	9/49	1300 NE

TABLE 5

WELL SURVEY  
Vicinity of 16501 Ashland Avenue

Map I.D. #	Well I.D. # <sup>1</sup>	Well Owner & Address	Type, Number of Wells on Site	Depth <sup>2</sup>	Casing <sup>3</sup> Size	Year Installed	Approximate Distance and Direction from Site <sup>4</sup>
9	3S/2W - 7G14	Ultramar Beacon #721, Econo Gas, Du Pont Biosystems, Conoco, Inc. 44 Lewelling Boulevard San Lorenzo	Monitoring, 12	30	2	10/91	1300 SW
	3S/2W - 7G15			30	2	10/91	
	3S/2W - 7G16			39	6	10/91	
	3S/2W - 8F01			36	2	1987	
	3S/2W - 8F02			37	2	1987	
	3S/2W - 8F03			37	2	1987	
	3S/2W - 7G04			30	2	12/88	
	3S/2W - 7G05			30	2	12/88	
	3S/2W - 7G06			30	2	12/88	
	3S/2W - 7G07			27	2	12/88	
	3S/2W - 7G08			22	2	9/89	
3S/2W - 7G09	24	2	9/89				
10	3S/2W - 7J03	Buti 16901 Meekland Avenue San Lorenzo	Irrigation, 1	110	8	1920	1500 SE
11	3S/2W - 7J08	Kurt Teschke 15939 Via Cordoba San Leandro	Irrigation, 1	37	6	11/77	1500 SW
12	3S/2W - 7A04	McClelland 878 Elgin Street San Lorenzo	Irrigation, 1	125	6	?	1600 NE
13	3S/2W - 8E01	Gonsalves 16638 Kent Avenue San Lorenzo	Irrigation, 1	90	8	1918	1600 E
14	3S/2W - 7J01	Bayside Nursery 16955 Meekland Avenue San Leandro	Irrigation, 1	130	8	1938	1800 SE

TABLE 5

WELL SURVEY

Vicinity of 16501 Ashland Avenue

Map I.D. #	Well I.D. # <sup>1</sup>	Well Owner & Address	Type, Number of Wells on Site	Depth <sup>2</sup>	Casing <sup>3</sup> Size	Year Installed	Approximate Distance and Direction from Site <sup>4</sup>
15	3S/2W - 7G22	Southland Corporation	Monitoring, 4	30	4	11/92	1800 SW
	3S/2W - 7G23	100 Lewelling Boulevard		30	4	11/92	
	3S/2W - 7G24	San Lorenzo		30	4	11/92	
	3S/2W - 7G25			30	4	11/92	
16	3S/2W - 7J05	H. Hylton 165 Lewelling Boulevard San Lorenzo	Irrigation, 1	80	8	1947	1800 SW
17	3S/2W - 7J04	Buehler 177 Lewelling Boulevard San Lorenzo	Irrigation, 1	65	8	1946	1800 SW
18	3S/2W - 7A03	Manual Cabral 16284 Ashland Avenue San Lorenzo	Irrigation, 1	42	8	?	1800 N
19	3S/2W - 8E03	George Reppond 467 E. Lewelling Boulevard San Leandro	Irrigation, 1	60	8	11/80	1800 SE
20	3S/2W - 8D02	Kuramoto Nursery, Plant Unlimited 16450 Kent Avenue Hayward	Irrigation, 1 Monitoring, 3	100	10	1952	1800 NE
	3S/2W - 8D04			18	2	11/92	
	3S/2W - 8D05			18	2	11/92	
	3S/2W - 8D06			19	2	11/92	
21	3S/2W - 7F02	Frank Maciel 15594 Sharon Street San Leandro	Irrigation, 1	27	4	1955	1900 SW
22	3S/2W - 8M01	Schragl 477 E. Lewelling Boulevard San Leandro	Irrigation, 1	70	10	1941	2000 SE

**TABLE 5**

**WELL SURVEY**  
Vicinity of 16501 Ashland Avenue

Map I.D. #	Well I.D. # <sup>1</sup>	Well Owner & Address	Type, Number of Wells on Site	Depth <sup>2</sup>	Casing <sup>3</sup> Size	Year Installed	Approximate Distance and Direction from Site <sup>4</sup>
23	3S/2W - 6R04	Okada Brothers Nursery 16100 Bertero Avenue San Lorenzo	Test Well, 1	17	4	10/90	2100 NW
24	3S/2W - 8M02	Shimamura 16980 Harvard Avenue San Leandro	Irrigation, 1	58	8	?	2100 SE
25	3S/2W - 8F04	Dublin/San Ramon Sanitary E. Lewelling Boulevard & Wickman Court Hayward	Cathodic Protection, 1	100	?	3/89	2200 SE
26	3S/2W - 6J03	Ken Krentz 1115 Santa Ana Street San Leandro	Irrigation, 1	26	4	7/77	2200 NE
27	3S/2W - 6R01	J. Fidelgo 16239 Ashland Avenue San Leandro	Irrigation, 1	70	4	1940	2200 N
28	3S/2W - 6P04	Alan Massey 533 Rutgers Street San Lorenzo	Irrigation, 1	25	?	3/77	2300 NW
29	3S/2W - 7C01	Stenezel Sycamore Street San Lorenzo	Irrigation, 1	270	10	1935	2400 W
30	3S/2W - 7F01	Charles Gonsavles 15559 Usher Street San Lorenzo	Irrigation, 1	25	?	?	2500 W
31	3S/2W - 7F03	Unocal Station 376 Lewelling Boulevard San Lorenzo	Monitoring, 1	30	3	2/88	2500 SW

**TABLE 5**

**WELL SURVEY**

Vicinity of 16501 Ashland Avenue

Map I.D. #	Well I.D. # <sup>1</sup>	Well Owner & Address	Type, Number of Wells on Site	Depth <sup>2</sup>	Casing <sup>3</sup> Size	Year Installed	Approximate Distance and Direction from Site <sup>4</sup>
32	3S/2W - 6P03	Arthur Maxwell 538 Rutgers Street San Leandro	Irrigation, 1	21	4	1977	2600 W
33	3S/2W - 6Q01	Ernest Carbal 717 Videll Street San Lorenzo	Irrigation, 1	13	4	1956	2600 NW
34	3S/2W - 6J04 3S/2W - 6J05 3S/2W - 6R02 3S/2W - 6J06	Okada Property Citation Builders 16109 Ashland Avenue San Lorenzo	Monitoring, 3 Irrigation, 1	13 13 440 16	2 2 12 2	3/89 3/89 10/47 8/89	2600 N

<sup>1</sup> Well I.D. numbers are generated according to their location in the rectangular system of the Public Land Survey.

<sup>2</sup> Depths of wells are in feet.

<sup>3</sup> Casing size of wells is in inches.

<sup>4</sup> Distance from site is in feet.





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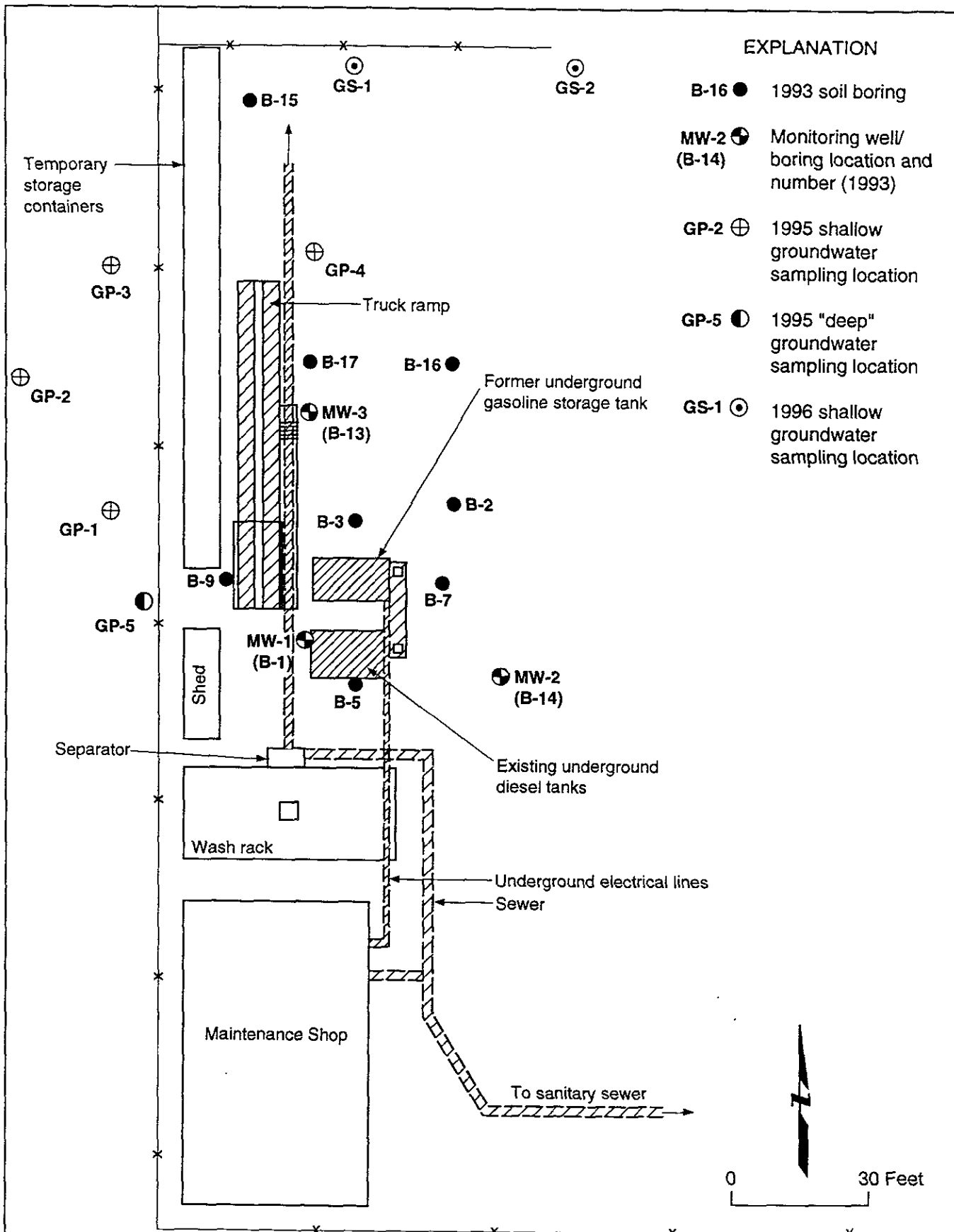


0 1/2 Mile



**SITE LOCATION MAP**  
 National Guard Organization Maintenance Shop No. 35  
 16501 Ashland Avenue  
 San Lorenzo, California

Figure  
 1  
 Project No.  
 2868



Reference: Tetra Tech, Inc., 1993

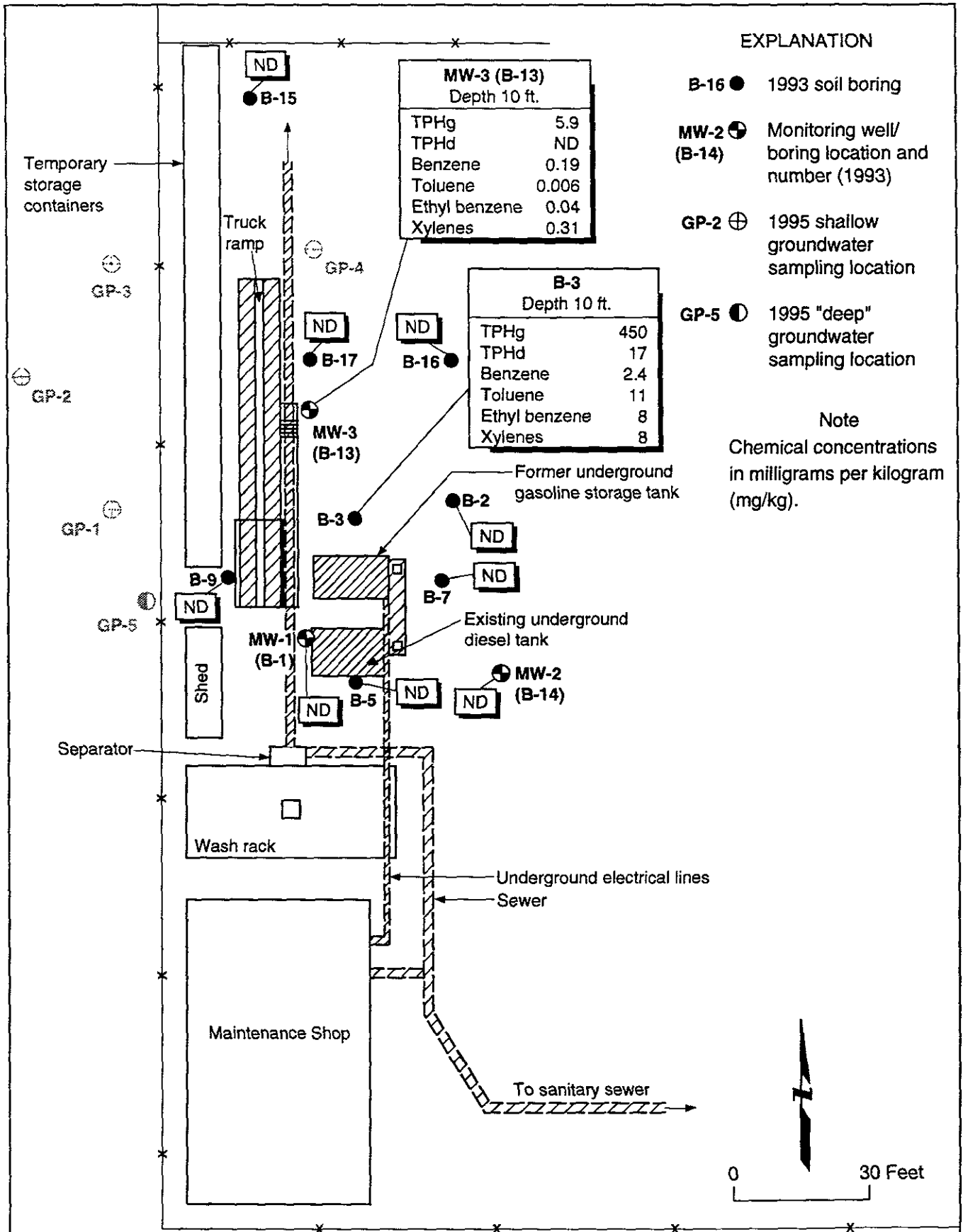
2868 03.002



**SUBSURFACE SAMPLING LOCATIONS**  
 National Guard Organizational Maintenance Shop #35  
 16501 Ashland Avenue  
 San Lorenzo, California

Figure  
 2

Project No.  
 2868.03



Reference: Tetra Tech, Inc., 1993

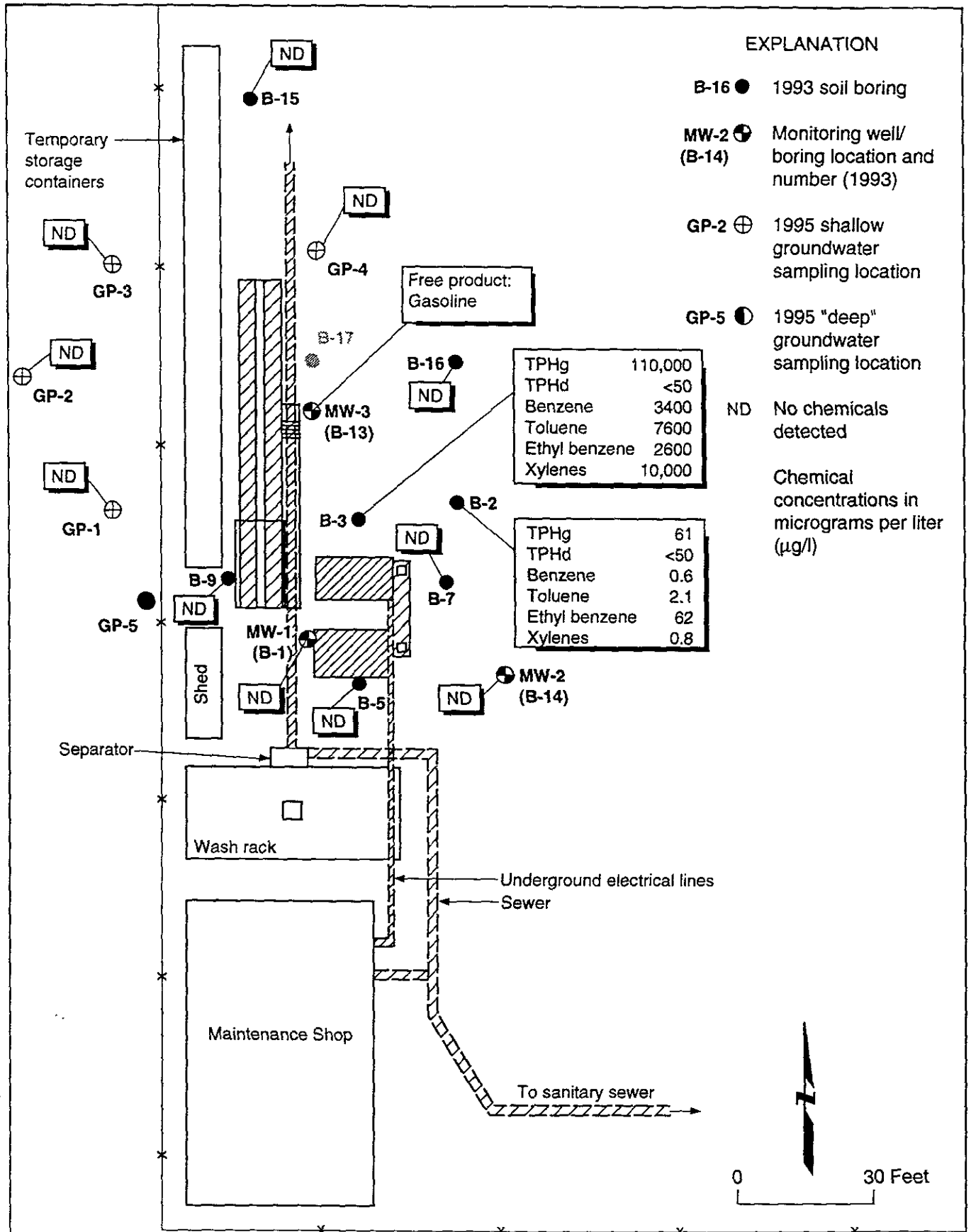


MAXIMUM CONCENTRATIONS DETECTED IN SOIL  
National Guard Organizational Maintenance Shop #35  
16501 Ashland Avenue  
San Lorenzo, California

Figure  
3

Project No.  
2868.03

2868.03.003



Reference: Tetra Tech, Inc., 1993

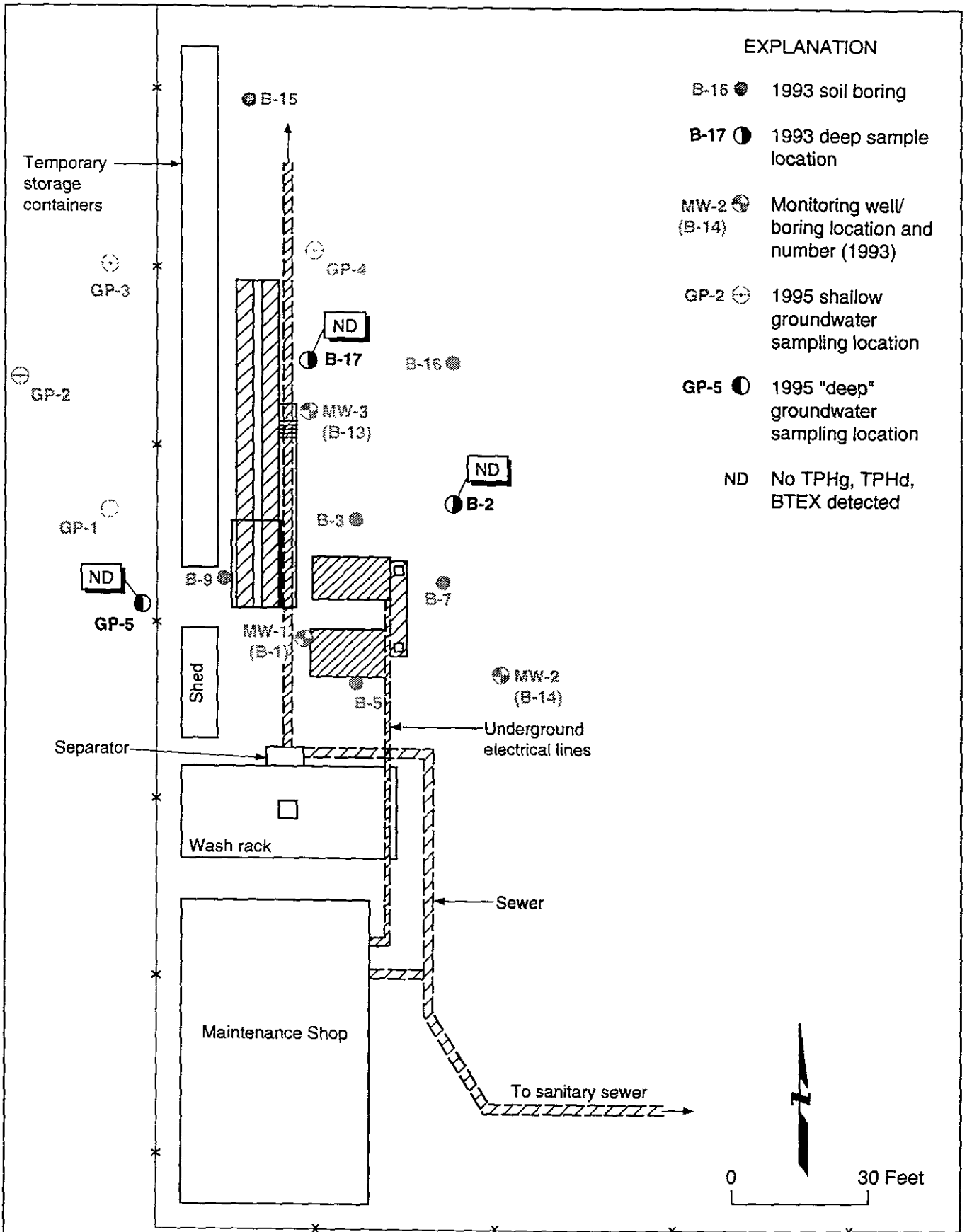
2868.01.004



PREVIOUS SHALLOW GRAB GROUNDWATER RESULTS  
 JULY 1993 AND APRIL 1995  
 National Guard Organizational Maintenance Shop #35  
 San Lorenzo, California

Figure  
4

Project No.  
2868.03



Reference: Tetra Tech, Inc., 1993

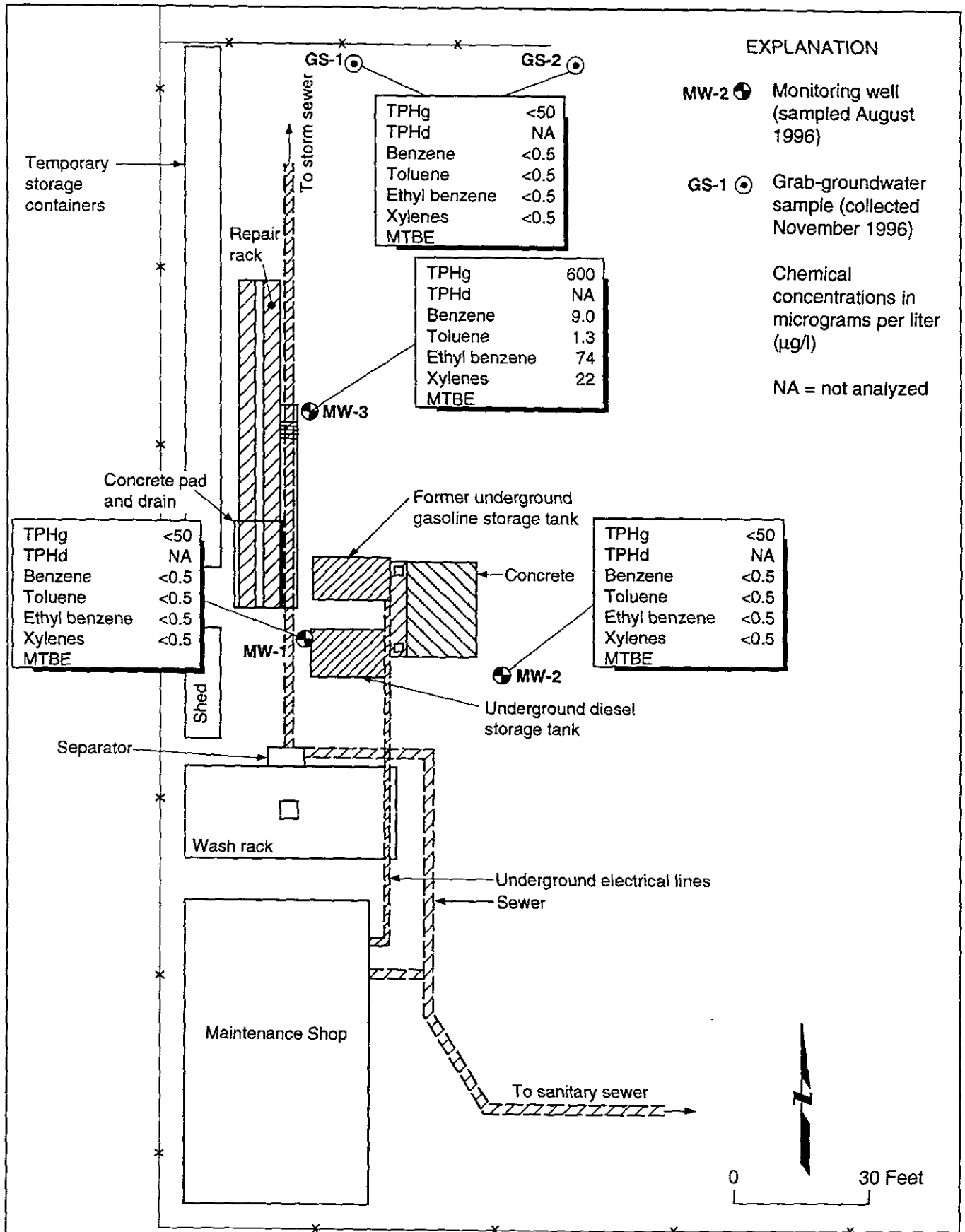
2868.03 005



PREVIOUS "DEEP" GRAB GROUNDWATER RESULTS  
 JULY 1993 AND APRIL 1995  
 National Guard Organizational Maintenance Shop #35  
 San Lorenzo, California

Figure  
 5

Project No.  
 2868.03



Reference: Tetra Tech, Inc., 1993

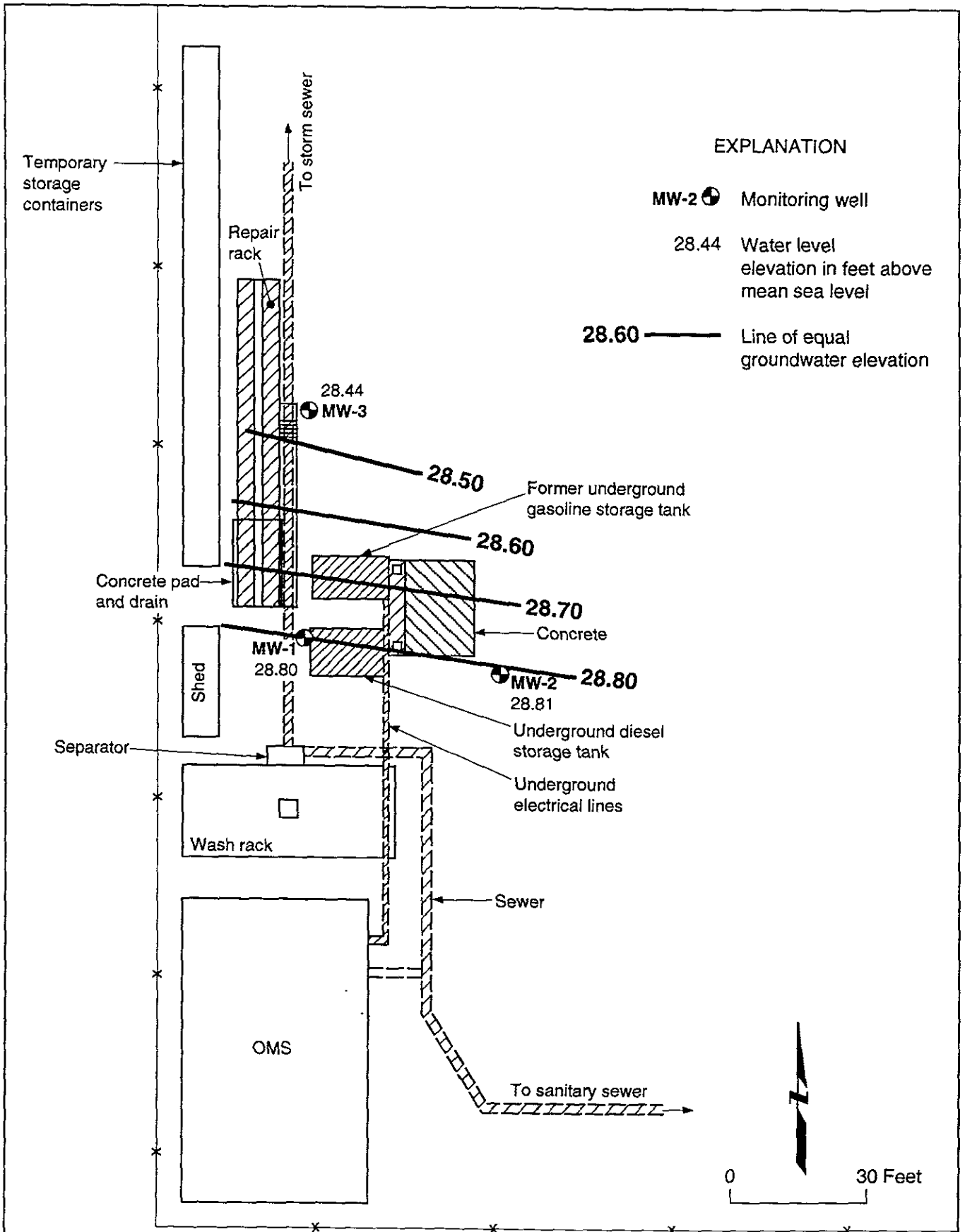
2868.03.006



**RECENT GROUNDWATER RESULTS**  
 National Guard Organizational Maintenance Shop No. 35  
 San Lorenzo, California

Figure  
 6

Project No.  
 2868.03



Reference: Tetra Tech, Inc., 1993

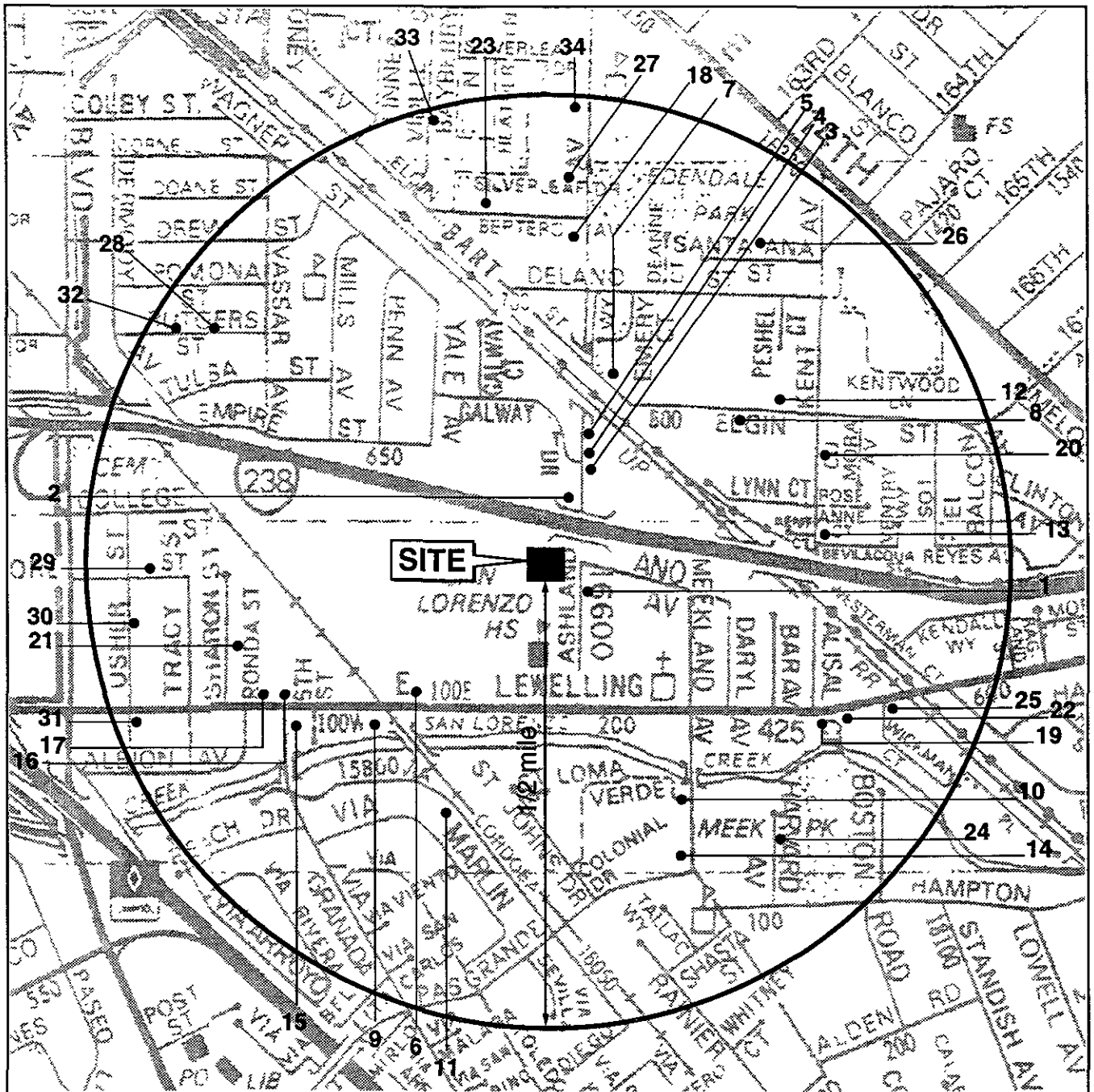
2868.03.007



POTENTIOMETRIC SURFACE MAP - 9 AUGUST 1996  
 National Guard Organizational Maintenance Shop No. 35  
 16501 Ashland Avenue  
 San Lorenzo, California

Figure  
7

Project No.  
2868.03



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**EXPLANATION**

21 ● Approximate location of well. See Table 5 for detailed information.



**WELL SURVEY**  
 National Guard Organization Maintenance Shop No. 35  
 16501 Ashland Avenue  
 San Lorenzo, California

Figure  
 8  
 Project No.  
 2868



**APPENDIX A**

**Drilling Permit for Grab-Groundwater Samples**



# ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588

VOICE (510) 484-2600  
FAX (510) 462-3914

## DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT National Guard  
16501 Ashland Ave  
San Lorenzo CA

PERMIT NUMBER 96823  
LOCATION NUMBER \_\_\_\_\_

CLIENT  
Name Division of the State Architect  
Address 1360 I Street Suisun Phone (916) 445 6939  
City Sacramento CA Zip 95814

### PERMIT CONDITIONS

Circled Permit Requirements Apply

APPLICANT  
Name Geomatrix Consultants  
Address 100 Pine St 10th floor Phone 415 434-9400  
City San Francisco Zip CA

### A. GENERAL

1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

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

### B. WATER WELLS, INCLUDING PIEZOMETERS

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. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

PROPOSED WATER SUPPLY WELL USE  
Domestic \_\_\_\_\_ Industrial \_\_\_\_\_ Other \_\_\_\_\_  
Municipal \_\_\_\_\_ Irrigation \_\_\_\_\_

3. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

DRILLING METHOD:  
Cable \_\_\_\_\_  
Auger \_\_\_\_\_  
Other Geoprobe Direct push

- D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.
- E. WELL DESTRUCTION. See attached.

DRAWER'S LICENSE NO. \_\_\_\_\_

WELL PROJECTS  
Drill Hole Diameter \_\_\_\_\_ in. Maximum \_\_\_\_\_  
Casing Diameter \_\_\_\_\_ in. Depth \_\_\_\_\_ ft.  
Surface Seal Depth \_\_\_\_\_ ft. Number \_\_\_\_\_

GEOTECHNICAL PROJECTS  
Number of Borings 2 Maximum \_\_\_\_\_  
Hole Diameter 2 in. Depth 20 ft.

ESTIMATED STARTING DATE 11-21-96  
ESTIMATED COMPLETION DATE 11-22-96

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

Approved Wyman Hong Date 20 Nov 96  
Wyman Hong

APPLICANT'S SIGNATURE W.D. Rowne Date 11-17-96

## **APPENDIX B**

### Boring Logs

PROJECT: NATIONAL GUARD - SAN LORENZO San Lorenzo, California		<b>Log of Boring No. GP-20/GS1</b>	
BORING LOCATION: North of MW-3, 4 feet from fence		ELEVATION AND DATUM: Ground surface	
DRILLING CONTRACTOR: Vironex		DATE STARTED: 11/21/96	DATE FINISHED: 11/21/96
DRILLING METHOD: Direct push		TOTAL DEPTH: 12 feet	MEASURING POINT: ---
DRILLING EQUIPMENT: Geoprobe		DEPTH TO WATER: FIRST	COMPL
SAMPLING METHOD: 4-foot core barrel		LOGGED BY: N. Taylor	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: Lisa Rowles	REG. NO. RG 4559

DEPTH (feet)	SAMPLES			OWN Reading (ppm)	DESCRIPTION NAME (USCS Symbol) color, moist, % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
Surface Elevation: --						
1					POORLY-GRADED SAND WITH GRAVEL (SP-SM) 60% sand, 30% gravel, 10% fines [FILL]	
2					LEAN CLAY (CL) Very dark grayish brown (10YR 3/2), moist, 90% medium plasticity fines, 10% fine sand, soft, medium dry strength	
3						
4						
5						
6					Color change to grayish brown (2.5Y 5/2), very soft	
7					Increase in moisture	
8					Color change to very dark gray (2.5Y 3/1)	
9					SILTY SAND (SM) Dark grayish brown (2.5Y 4/2), wet, 85% fine to medium sand, 15% fines	Water sampling interval 7 to 12 feet
10					CLAYEY SAND transition zone	
11					LEAN CLAY (CL) Very dark gray (10YR 3/1), wet, 95% medium plasticity fines, 5% fine sand, stiff	
12					Bottom of boring at 12 feet	
13						
14						
15						

PROJECT: NATIONAL GUARD - SAN LORENZO San Lorenzo, California		<b>Log of Boring No. GP-21/GS2</b>	
BORING LOCATION: 50 feet east of B-20		ELEVATION AND DATUM: Ground surface	
DRILLING CONTRACTOR: Vironex		DATE STARTED: 11/21/96	DATE FINISHED: 11/21/96
DRILLING METHOD: Direct push		TOTAL DEPTH: 12 feet	MEASURING POINT: ---
DRILLING EQUIPMENT: Geoprobe		DEPTH TO WATER:	FIRST 9.0 feet COMPL. ---
SAMPLING METHOD: 4-foot core barrel		LOGGED BY: N. Taylor	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: Lisa Rowles	REG. NO. RG 4559

DEPTH (feet)	SAMPLES			OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast, consistency, structure, cementation, react. w/HCl, geo inter	REMARKS
	Sample No.	Sample	Blows/Foot			
Surface Elevation: ---						
1					POORLY-GRADED SAND with GRAVEL (SP-SM) Dark brown (10YR 3/2), moist, 60% fine to coarse sand, 30% gravel, 10% fines [FILL]	
2					LEAN CLAY (CL) Very dark grayish brown (10YR 3/2), moist, 90% medium plasticity fines, 10% fine sand, soft, medium dry strength	
3						
4						
5					Zone of 20% sand	
6						
7					Increase in moisture content	
8					Color change to black (10YR 2/1)	
9					SILTY SAND (SM) Dark grayish brown (2.5Y 4/2), wet, 85% fine to medium sand, 15% fines	Water sampling interval 7 to 12 feet
10					CLAYEY SAND transition zone	
11					LEAN CLAY (CL) Very dark gray (10YR 3/1), wet, 95% medium plasticity fines, 5% fine sand, stiff	
12					Bottom of boring at 12 feet	
13						
14						
15						

## APPENDIX C

Laboratory Reports and Chain-of-Custody Records

# CHROMALAB, INC.

Environmental Services (SDB)

December 3, 1996

Submission #: 9611278

GEOMATRIX CONSULTANTS  
100 Pine St., Suite 1000  
San Francisco, CA 94111

Attn: Lisa Rowles

RE: Analysis for project 2868.

## REPORTING INFORMATION


Samples were received cold and in good condition on November 21, 1996. They were refrigerated upon receipt and analyzed as described in the attached report. ChromaLab followed EPA or equivalent methods for all testing reported.

No discrepancies were observed or difficulties encountered with the testing.

<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date collected</u>	<u>Sample #</u>
EB-1	WTR	November 21, 1996	108304
GP-20 = 651 LDR	WTR	November 21, 1996	108302
GP-21 = 652 LDR	WTR	November 21, 1996	108303



Jill Thomas  
Quality Assurance Manager



Eric Tam  
Laboratory Director

# CHROMALAB, INC.

Environmental Services (SDB)

December 2, 1996

Submission #: 9611278

GEOMATRIX CONSULTANTS

Atten: Lisa Rowles

Project: Not provided

Project#: 2868

Received: November 21, 1996

re: One sample for Gasoline, BTEX & MTBE analysis.  
Method: EPA 5030/8015M/8020A

Client Sample ID: GP-20 G5-1 *WPC*

Spl#: 108302


Matrix: WATER

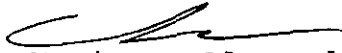
Sampled: November 21, 1996

Run#: 4225

Analyzed: November 26, 1996

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	75.8	1
BENZENE	N.D.	0.50	N.D.	88.0	1
TOLUENE	N.D.	0.50	N.D.	84.8	1
ETHYL BENZENE	N.D.	0.50	N.D.	85.1	1
XYLENES	N.D.	0.50	N.D.	86.0	1
MTBE	N.D.	5.0	N.D.	81.2	1

  
Kayvan Kimyai  
Chemist

  
Marianne Alexander  
Gas/BTEX Supervisor



# CHROMALAB, INC.

Environmental Services (SDB)

December 2, 1996

Submission #: 9611278

GEOMATRIX CONSULTANTS

Atten: Lisa Rowles

Project: Not provided  
Received: November 21, 1996

Project#: 2868

re: One sample for Gasoline, BTEX & MTBE analysis.  
Method: EPA 5030/8015M/8020A

Client Sample ID: GP-21 652 *ldr*

Spl#: 108303


Matrix: WATER


Sampled: November 21, 1996

Run#: 4225

Analyzed: November 26, 1996

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	75.8	1
BENZENE	N.D.	0.50	N.D.	88.0	1
TOLUENE	N.D.	0.50	N.D.	84.8	1
ETHYL BENZENE	N.D.	0.50	N.D.	85.1	1
XYLENES	N.D.	0.50	N.D.	86.0	1
MTBE	N.D.	5.0	N.D.	81.2	1

  
Kayvan Kimyai  
Chemist

  
Marianne Alexander  
Gas/BTEX Supervisor

# CHROMALAB, INC.

Environmental Services (SDB)

December 2, 1996

Submission #: 9611278

GEOMATRIX CONSULTANTS

Atten: Lisa Rowles

Project: 2868

Received: November 21, 1996

re: **Matrix spike** report for Gasoline, BTEX & MTBE analysis.

Method: EPA 8015M SW846 8020A Nov 1990

Matrix: WATER

Lab Run#: 4225

Instrument: 3400-5

Analyzed: November 26, 1996

Analyte	Spiked		Amt Found		Spike Recov		Control Limits	% RPD	Lim
	Sample Amount (ug/L)	Spike Amt MS MSD (ug/L)	MS MSD (ug/L)	MS MSD (%)	MS MSD (%)				
BENZENE	ND	20.0 20.0	19.4 18.8	96.8 93.8	65-135	3.15	20		
TOLUENE	ND	20.0 20.0	18.6 18.1	93.2 90.7	65-135	2.72	20		
ETHYL BENZENE	ND	20.0 20.0	18.9 18.5	94.4 92.5	65-135	2.03	20		
XYLENES	ND	60.0 60.0	56.4 54.9	94.0 91.5	65-135	2.70	20		
MTBE	ND	20.0 20.0	16.7 16.7	83.5 83.5	65-135	0	20		

Sample Spiked: 108183

Submission #: 9611262

Client Sample ID: MW-17

# CHROMALAB, INC.

Environmental Services (SDB)

December 2, 1996

Submission #: 9611278

GEOMATRIX CONSULTANTS

Atten: Lisa Rowles

Project: 2868

Received: November 21, 1996

re: **Surrogate** report for 2 samples for Gasoline, BTEX & MTBE

Method: EPA 8015M SW846 8020A Nov 1990

Lab Run#: 4225

Matrix: WATER

<u>Sample#</u>	<u>Client Sample ID</u>	<u>Surrogate</u>	<u>% Recovered</u>	<u>Recovery Limits</u>
108302-1	GP-20	TRIFLUOROTOLUENE	97.0	65-135
108302-2	GP-20	TRIFLUOROTOLUENE	93.3	65-135
108303-1	GP-21	TRIFLUOROTOLUENE	98.4	65-135
108303-2	GP-21	TRIFLUOROTOLUENE	94.7	65-135

<u>Sample#</u>	<u>QC Sample Type</u>	<u>Surrogate</u>	<u>% Recovered</u>	<u>Recovery Limits</u>
108802-1	Reagent blank (MDB)	TRIFLUOROTOLUENE	77.7	65-135
108803-1	Spiked blank (BSP)	TRIFLUOROTOLUENE	80.1	65-135
108805-1	Matrix spike (MS)	TRIFLUOROTOLUENE	102	65-135
108806-1	Matrix spike duplicate (MSD)	TRIFLUOROTOLUENE	100	65-135

V125  
QCSURR1229 KAYVAN 02-Dec-96 17

**CHROMALAB, INC.**  
**SAMPLE RECEIPT CHECKLIST**

Client Name Geonmatrx Date/Time Received 11/21/96  
 Project 2868 Received by B. Morrow Date \_\_\_\_\_ Time \_\_\_\_\_  
 Reference/Subm # 30872/9611278 Carrier name \_\_\_\_\_  
 Checklist completed by: S. Antonio 12/3/96 Logged in by MP 11/21/96  
 Signature \_\_\_\_\_ Date \_\_\_\_\_ Initials / Date  
 Matrix W DUPLICATE

Shipping container in good condition? NA  Yes \_\_\_\_\_ No \_\_\_\_\_  
 Custody seals present on shipping container? Intact \_\_\_\_\_ Broken \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_  
 Custody seals on sample bottles? Intact \_\_\_\_\_ Broken \_\_\_\_\_ Yes \_\_\_\_\_ No   
 Chain of custody present? Yes  No \_\_\_\_\_  
 Chain of custody signed when relinquished and received? Yes  No \_\_\_\_\_  
 Chain of custody agrees with sample labels? Yes  No \_\_\_\_\_  
 Samples in proper container/bottle? Yes  No \_\_\_\_\_  
 Samples intact? Yes  No \_\_\_\_\_  
 Sufficient sample volume for indicated test? Yes  No \_\_\_\_\_  
 VOA vials have zero headspace? NA \_\_\_\_\_ Yes  No \_\_\_\_\_  
 Trip Blank received? RCD Equip Blank NA \_\_\_\_\_ Yes \_\_\_\_\_ No   
 All samples received within holding time? Yes  No \_\_\_\_\_  
 Container temperature? 4.5°C  
 pH upon receipt \_\_\_\_\_ pH adjusted \_\_\_\_\_ Check performed by: \_\_\_\_\_ NA

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted? \_\_\_\_\_ Date contacted? \_\_\_\_\_

Person contacted? \_\_\_\_\_ Contacted by? \_\_\_\_\_


Regarding? \* ph will be checked by Chemist

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Corrective Action: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

278/108302-108304

30872

Chain-of-Custody Record			No 7028										Date 11/21/96			Page 1 of 1					
Project No 2868			ANALYSES										REMARKS								
Samplers (Signatures): Nathaniel A. Taylor			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	MTBE	HOLD				Cooled	Soil (S) or water (W)	Acidified	Number of containers	Additional comments		
Date	Time	Sample Number																			
11/21	1115	GP-20					X	X	X					X	W	Y		3	① HOLD EB-1 ② Gas, BTEX, MTBE by EPA method 8020. ③ Fax results to: Lisa Rowles C 415-434-1365		
11/21	1000	GP-21				X	X	X					Y	W	Y		3				
11/21	1100	EB-1								X			X	W	Y		3				
SUBN #: 0611278 REP: PMLEV2																					
CLIENT: GEOMATRIX																					
DUE: 12/02/96																					
REF #: 30872																					
			Turnaround time: Standard				Results to: Lisa Rowles				Total No of containers: 9										
Relinquished by: Nathaniel A. Taylor		Date: 11/21/96	Relinquished by: <i>[Signature]</i>				Date: 11/21/96	Relinquished by: <i>[Signature]</i>				Date: 11/21/96	Method of shipment: Pickup								
Signature: NATHANIEL A. TAYLOR			Signature					Signature				Laboratory comments and Log No									
Printed name: GEOMATRIX			Printed name					Printed name													
Company: GEOMATRIX			Company:					Company: Chromalab													
Received by: <i>[Signature]</i>		Time: 1925	Received by: <i>[Signature]</i>				Time: 1925	Received by: <i>[Signature]</i>													
Signature: <i>[Signature]</i>			Signature					Signature: Mimie Pak													
Printed name: <i>[Signature]</i>			Printed name					Printed name: Mimie Pak													
Company: <i>[Signature]</i>			Company:					Company: Chromalab													
 <b>Geomatrix Consultants</b> 100 Pine St 10th Floor San Francisco, CA 94111 (415) 434 9400																					

{0:JOBCHECK}

# ORDER ENTRY CHECK FORM

ENTERED BY: MIMIE

9611278

SUBMIS #: 9611278 CLIENT ID: GEOMATRIX  
CLIENT: GEOMATRIX CONSULTANTS  
PROJ MGR: Lisa Rowles  
PROJECT:

REPORT TYPE: LEV2  
PROJECT#: 2868  
DATE RECEIVED: 11/21/96  
PURCHASE #:

SALES REP: PM  
REFERENCE #: 30872  
QUOTATION #:  
CONF TO REC: Y  
REC'D COLD: Y

0 11/22/96 14:11

CLIENT SPL ID: GP-20  
DATE SAMPLED: 11/21/96  
COMMENT:

DUE DATE: 12/02/96 MATRIX: WATER  
RUSH: 0 CONTAINERS: 3  
SUB NOTE:

SPL#: 108302

8015/8020 GAS/BTEX/MTBE- PURGEABLE AROMATICS WATER

TEST NUMBER: V125

LOGGED: 11/21/9

CLIENT SPL ID: GP-21  
DATE SAMPLED: 11/21/96  
COMMENT:

DUE DATE: 12/02/96 MATRIX: WATER  
RUSH: 0 CONTAINERS: 3  
SUB NOTE:

SPL#: 108303

8015/8020 GAS/BTEX/MTBE- PURGEABLE AROMATICS WATER

TEST NUMBER: V125

LOGGED: 11/21/9

CLIENT SPL ID: EB-1  
DATE SAMPLED: 11/21/96  
COMMENT:

DUE DATE: 12/02/96 MATRIX: WATER  
RUSH: 0 CONTAINERS: 3  
SUB NOTE:

SPL#: 108304

HOLD

TEST NUMBER: 1207

LOGGED: 11/21/9

*✓ GL*

*\_\_\_\_\_*