

ENVIRONMENTAL PROTECTION

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March 30, 1995 SCI 838,002

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Ms. Eva Chu Alameda County Health Care Services Agency 1131 Harbor Bay Parkway Alameda, California 94501

Supplemental Soil and Groundwter Investigation Report Transmittal 2801 MacArthur Boulevard Oakland, California

Dear Ms. Chu:

On behalf of A.P.A. Fund, Subsurface Consultants, Inc. (SCI) is transmitting a copy of the Supplemental Soil and Groundwater Investigation report for your review. The next groundwater monitoring event will be performed within the next two weeks, weather permitting. If you have any questions, please call.

Yours very truly

Subsurface Consultants, Inc.

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CC:

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Subsurface Consultants, Inc.



SUPPLEMENTAL SOIL AND
GROUNDWATER INVESTIGATION
MONITORING WELLS M-5 AND M-6
2801 MacARTHUR BOULEVARD
OAKLAND, CALIFORNIA
SCI 838.002

Prepared for:

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I INTRODUCTION

This report presents the results of a supplemental soil and groundwater investigation conducted by Subsurface Consultants, Inc. (SCI) at 2801 MacArthur Boulevard in Oakland, California. The investigation was required by the Alameda County Health Care Services Agency (ACHCSA) to delineate the downgradient extent of groundwater contamination due to hydrocarbon releases at the referenced site. The scope of SCI's services, as outlined in a Work Plan, Work Plan Amendment, and Project Schedule letters dated April 27, 1994, May 31, 1994, and July 21, 1994 included 1) the installation of two monitoring wells (M-5 and M-6), 2) performing a groundwater monitoring event, and 3) performing additional research regarding previous site improvements. The site and well locations are shown on the Site Plan, Plate 1.

II FIELD INVESTIGATION

Subsurface conditions were investigated by SCI on July 26 and 28, 1994 by drilling and sampling two test borings (M-5 and M-6) and completing the borings as groundwater monitoring wells. Boring/well locations are shown on Plate 1. For completeness, the location of test borings and wells installed previously by SCI and others are also shown on Plate 1. A discussion of procedures followed during drilling, soil sampling, monitoring well installation, well development and sampling is provided below.

A. <u>Test Borings</u>

Prior to drilling the test borings, SCI obtained encroachment and excavation permits from the City of Oakland Public Works Department. SCI also obtained a groundwater protection ordinance permit from the Alameda County Flood Control and Water Conservation District, Zone 7. Copies of the permits are included in Appendix A. Underground Service Alert was contacted to notify their members to clear drilling locations.

The test borings were drilled using a truck-mounted drill rig equipped with 8-inch-diameter hollow stem augers. An SCI field geologist observed drilling operations, prepared detailed logs of the test borings and obtained undisturbed samples of the materials encountered. Test boring logs are presented on Plates 2 and 3. Soils are classified in accordance with the Unified Soil Classification System described on Plate 4.

A California Drive Sampler (outside diameter: 2.5 inches, inside diameter: 2.0 inches), was used to obtain soil samples. The number of blows required to drive the sampler the final 12 inches of each 18-inch penetration were recorded and are presented on the boring logs. The drilling and sampling equipment was thoroughly cleaned prior to each use to reduce the likelihood of cross-contamination between samples and/or borings.

Soil samples were retained in brass liners. Samples obtained for analytical testing had Teflon sheeting placed over the ends of the liners prior to capping and sealing. The sealed liners were placed in ice-filled coolers and remained iced until delivery to the analytical laboratory. Chain-of-Custody records accompanied the samples to the laboratory.

The shoe sample from each drive was retained in a sealable plastic bag and screened in SCI's office laboratory at the end of the day for volatile organics using an Organic Vapor Meter (OVM). The bag samples were at room temperature when they were screened with the OVM. OVM measurements are recorded on the test boring logs.

The test borings were completed as groundwater monitoring wells as detailed in the following section. Soil cuttings generated during drilling were placed in sealed, 55-gallon steel drums and left on-site for later disposal.

B. Groundwater Monitoring Wells and Sampling

At the completion of drilling, monitoring wells were installed in the borings. Well schematics are shown on the test boring logs. In general, the wells consist of 2-inch diameter, Schedule 40 PVC pipe having flush-threaded joints. The pipe was steam-cleaned prior to being placed in the boreholes. The lower 20 feet of the wells consist of machine-slotted well screen having 0.02-inch slots. The remaining portion of the wells consist of blank pipe. The wells were provided with bottom caps and locking top caps. The well screen is encased in a filter composed of Lonestar No. 3 washed sand. The filter sand was placed by carefully pouring it through the annulus between the hollow stem of the auger and the well casing. Periodically, the augers were raised to allow the sand to fill the annulus between the casing and borehole. The filter extends from just below the bottom of the well to one foot above the top of the screened section. A one-foot thick bentonite pellet seal was placed above the sand filter. The annulus above the bentonite seal was backfilled with cement grout. The monitoring wells were completed below grade and are protected by traffic-rated valve boxes.

Initially, several attempts were made to develop and sample the new wells at the same time. However, 4 weeks after installation, the water level in M-6 was still rising. As a result, well M-5 was developed and sampled on August 23, 1994 along with the sampling event for existing wells M-2, M-3, M-4 and P-2. Well M-5 was developed by removing water with a bailer until the well went dry. Approximately 5 well volumes of water were removed. Wells M-2, M-3, M-4 and P-2 were purged of about 3 to 4 well casing volumes of water using a bailer. The wells were sampled after recovering to approximately 80 percent of their original water level. The water level in M-6 was measured on a weekly basis until it appeared to reach its maximum height. On October 11, 1994, M-6 was sampled. Well development and purge water was placed in 55 gallon drums and stored on-site. Well development and sampling forms are presented in Appendix B.

Groundwater samples were retained in pre-cleaned containers supplied by the laboratory. Water samples were placed in ice-filled coolers and remained iced until delivery to the analytical laboratory. Chain-of-Custody records accompanied the samples to the laboratory.

C. <u>Level Survey</u>

A level survey was performed to determine the elevation of the top of the well casings. The elevations were referenced to the west corner of the northernmost dispenser island. This point was previously assigned an elevation of 1000.00 feet by previous investigators. The top of casing elevations are presented in Table 1.

III ANALYTICAL TESTING

Selected soil and groundwater samples were analyzed by Curtis & Tompkins, Ltd., a laboratory certified by the California Department of Health Services (DHS) for hazardous waste and water testing. The samples were analyzed for the following:

- 1. Total volatile hydrocarbons, as gasoline (TVH¹, EPA 5030/8015 modified), and
- 2. Benzene, toluene, ethylbenzene, and xylene (BTEX, EPA 5030/8020).

The results of the soil analyses are presented in Table 2 and on Plate 5. Results of groundwater analyses are presented in Table 3 and on Plate 6. For completeness, analytical results from previous investigations are also presented. Analytical test reports and Chain-of-Custody documents are presented in Appendix C.

IV SITE CONDITIONS

A. Regional Setting

The site is located within an upland area near the western flank of the Oakland Hills. The topography of the area is characterized by rolling terraces incised by narrow drainage channels. Locally, the site is situated on a southwest trending terrace comprised of varying gradations of sand and gravel in a clay matrix.

¹ Previous laboratory reports refer to this test as Total Petroleum Hydrocarbons, as gasoline (TPH).

B. Surface Conditions

The project site occupies the western portion of a parcel bounded by MacArthur Boulevard to the north, Coolidge Avenue to the west, Georgia Street to the south and residential properties to the east. Remnants of a former gasoline service station, including the station building, canopy and former pump islands occupy the western portion of the parcel. Currently, the station building is being used by an auto repair business. The eastern portion of the parcel is occupied by a strip mall shopping center. The remainder of the property is covered by asphalt concrete parking areas.

C. <u>Soil Conditions</u>

The test borings drilled during SCI's investigations revealed that the site is underlain by alluvial soils consisting of interlayered stiff to very stiff sandy clays and dense clayey sands and gravels. Interpretation of soil conditions by SCI varies from other site investigators. However, noted field observations and comments on the boring logs are consistent in that the soils are predominately fine grained. Generalized cross-sections showing available data are presented on Plates 7 and 8.

D. Groundwater Conditions

The first water bearing zone appears to exist 25 to 32 feet below the groundsurface. Based on the groundwater elevation data, it appears that groundwater flows toward the southwest at a gradient of about 10 percent and has fluctuated up to 5 feet seasonally. Groundwater surface contours for November 1994 are presented on Plate 6. A summary of groundwater elevation data is presented in Table 1.

As discussed previously, well M-6 was extremely slow to recharge. Groundwater levels appear to have stabilized approximately 8 weeks after the well was installed. Recharge data for well M-6 are graphically presented on Plate 9.

E. Previous Site Improvements

SCI reviewed a Sanborn Fire Insurance Company map dated 1928, which indicated that the site and adjacent parcels were residentially developed. Updates to the map showed that by 1932 MacArthur Boulevard, then referred to as Hopkins, was a completed thoroughfare extending to Coolidge Avenue. The 1932 updated map also showed that the site and the parcel now bounded by Hopkins Place, Coolidge Avenue and MacArthur Boulevard were occupied by service stations. The 1932 service station configuration on the 2801 MacArthur Boulevard site is different than the current configuration.

A copy of a site survey map dated 1953 obtained from the City of Oakland building department showed that the 2801 MacArthur Boulevard site was occupied by a service station with a similar configuration to the station improvements shown on the updated 1928 Sanborn map. No data exists regarding the removal of the former improvements. The circa 1932 thru 1953 improvements are shown on Plate 1.

These data are newly discovered. Hence, they have not been evaluated in past data interpretations.

V CONCLUSIONS AND RECOMMENDATIONS

A. Soil and Groundwater Contamination

Studies to date indicate that soil and groundwater beneath the site have been impacted by previous petroleum releases. Shallow soil contamination is present near the circa 1932 thru 1953 station improvements and was also encountered beneath tanks which were removed in 1989. As a

result, it appears that releases from various site improvements are a source of vadoze zone contamination. Vadose zone contamination has been detected down to the groundwater surface in the area of Boring B-9 near the circa 1932 thru 1953 station improvements. Groundwater contains elevated levels of TVH and BTEX and concentrations are highest near the circa 1932 thru 1953 station improvements. Impacts to groundwater from off-site sources have not been evaluated to date.

In areas away from the current and previous station improvements, soils within the zone of groundwater fluctuation (25 to 35 feet below site grades) are impacted where they are coincident with the contaminated groundwater plume. The generalized cross-sections on Plates 7 and 8 show soil concentrations and the zone of groundwater fluctuation.

Data suggests that the groundwater plume has migrated downgradient (to the south) beyond the location of well M-6, although chemical concentrations decrease by an order of magnitude at well M-6 when compared to the next upgradient well, M-4, situated 50 feet to the north. Well recharge rates at well M-6 have been observed to be very slow, and as a result, indicate that the rate of groundwater movement and chemical migration is likely slow.

Separate phase hydrocarbons were not observed during this groundwater monitoring event. Although, groundwater levels are currently situated at or above the top of the screened interval, which inhibits observation of free product, free product was not observed during previous sampling events when groundwater levels were within the screened intervals. Hence, we conclude that a free product plume does not exist.

B. Recommendations

Data generated to date has adequately defined the impacted soil conditions on-site in terms of source areas associated with the current station improvements. Given the limited transmissivity of the

underlying aquifer materials, the most appropriate remedial response may include implementing soil vapor extraction (SVE), sparging, and/or in-situ bioremediation technologies. SCI recommends that the remaining work plan items be implemented to further evaluate the feasibility of these remedial options. Specifically the following tasks are recommended:

- Task 1 Conduct slug tests in three wells
- Task 2 Perform a pilot SVE and sparging test
- Task 3 Investigate soil conditions in other potential source areas. The recently discovered circa 1932 thru 1953 improvements indicate that the additional potential sources may exist which have not been investigated to date.
- Task 4 Conduct microbiological and physical property tests
- Task 5 Evaluate the feasibility of remedial alternatives
- Task 6 Evaluate impacts from potential upgradient sources

In addition, groundwater monitoring should be performed on a quarterly basis.

VI LIMITATIONS

This study was intended to preliminarily evaluate the extent of soil and groundwater contamination, based on limited subsurface investigation and analytical testing. If areas of contamination exist on other portions of the property, away from the areas investigated, it is possible that they would not have been detected during this study.

The conclusions drawn from this study are an expression of our professional opinion, and do not constitute a warranty or guaranty, either expressed or implied. Additional investigative work, if undertaken, may modify the conclusions presented herein, as additional information is generated.

SCI has performed this study in accordance with generally accepted standards of care which currently exist in Northern California. It should be recognized that the definition and evaluation of environmental conditions is difficult and inexact. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of subsurface and/or historic conditions applicable to the site. In addition, the conclusions recorded herein reflect site conditions at the time of the investigation.

The conclusions and opinions expressed herein may be affected by future changes in the practice of environmental engineering and laws governing hazardous wastes.

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Table 2 - Hydrocarbon Concentrations in Soil

Table 3 - Hydrocarbon Concentrations in Groundwater

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Plates 2 and 3 Log of Test Borings M-5 and M-6

Plate 4 Unified Soil Classification System

Plate 5 Summary of Petroleum Hydrocarbons Concentrations in Soil

Plate 6 Summary of TVH and BTEX Concentrations in Groundwater

Plate 7 Cross Section A-A'

Plate 8 Cross Section B-B'

Plate 9 Well M-6 Recharge Rate

Appendices:

A Permits

B Well Development Forms/Well Sampling Forms

C Analytical Test Reports/Chain-Of-Custody Documents

Distribution:

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Table 1 Groundwater Elevation Data

	TOC¹	D. (Groundwater Depth	Groundwater Elevation
Well	Elevation	<u>Date</u>	(feet)	(feet)
M1	1000.00	10/24/90	36.1	963.9
		10/25/90	36.1	963.9
		$11/02/90^2$	36.4	963.6
		11/06/90	36.8	963,2
		11/16/90	36.8	963.2
		11/23/90	36.9	963.1
		11/28/90	37.0	963.0
		12/05/90	37.2	963.0
		03/18/91	35.8	964.2
		03/29/91	32,4	967.6
		04/03/91	31.9	968.1
		04/09/91	31.6	968.4
		04/16/91	31.2	968.8
		01/23/92	35.5	964.5
		03/09/93	29.1	970.9
		06/01/93	27.5	972.9
		12/13/93	33.9	966.1
		03/07/94	32.3	967.7
		08/23/94	32.3	967.7
		10/11/94	34.1	965.9
M2	999.6	04/30/91	31.13	968.5 ³
		05/07/91	31.3^{3}	968.3 ³
		01/16/92	35.1 ³	964.5 ³
		03/09/93	33.6^{3}	966.0
		05/17/93	27.2^{3}	972.4
		06/01/93	27.6^{3}	972.0
		08/17/93	30.4 ³	969.2
		12/13/93	34.0^3	965.6
		03/07/94	30.1 ³	969.5
		08/23/94	32.3	967.3
		10/11/94	34.2	965.4
М3	992.8	05/17/93	22.2	970.6
		06/01/93	23.3	969.5
		08/17/93	25.0	967.8
		12/13/93	25.8	967.0
		03/07/94	23.1	969.7
		08/23/94	25.8	967.0
		10/11/94	27.4	965.4

Table 1. Groundwater Elevation Data (Cont.) Groundwater

	TOC¹		Groundwater Depth	Groundwater Elevation
Well	Elevation	<u>Date</u>	(feet)	(feet)
M4	999.6	05/17/93	33.8 ³	965.8
***	333.0	06/01/93	32.5^{3}	965.7
		12/13/93	36.8 ³	962.8
		03/07/94	33.0^{3}	966.6
		08/23/94	35.4	964.2
		10/11/94	37.1	962.5
M5	992.9	08/23/94	31.8	961.1
		10/11/94	33.6	959.3
M6	997.7	08/23/94	41.2	956.6
		10/11/94	38.2	959.5
PI	999.6	10/24/90	37.9	961.7
		10/25/90	38.0	961.6
		11/02/90 ²	38.4	961.2
		11/06/90	38.7	960.9
		11/16/90	38.3	961.3
		11/23/90	38.1	961.5
		11/28/90	38.3	961.3
		12/05/90	38.2	961.4
		03/18/91	37.8	961.8
		03/29/91	36.9	962.7
		04/03/91	36.8	962.8
		04/09/91	36.9	962.7
		04/16/91	36.7	962.9
		04/18/91	36.8	962.8
		04/30/91	36.3	963.3
		05/07/91	36.2	963.4 963.0 ³
		01/16/92	36.6 ³	966.8
		03/09/93	32.8 30.0 ³	969.6
		06/01/93	33.7 ³	965.9
		12/13/93		963.9 967.0
		03/07/94	32.6	966.9
		08/23/94 10/11/94	32.7 33.5	966.1
DO	997.8	10/24/90	41.1	956.7
P2	997.0	10/25/90	40.6	957.2
		10/23/90 11/02/90 ²	38.4	957.2 959.4
		11/02/90	37.0	960.8
		11/16/90	37.4	960.4
			37.4 35.9	961.9
		11/23/90	35.4 ³	962.4 ³
		11/28/90	33. 4	3 02.4

Table 1.
Groundwater Elevation Data (Cont.)

	TOC1		Groundwater Depth	Groundwater Elevation
<u>Well</u>	Elevation	<u>Date</u>	(feet)	(feet)
		02/05/90	35.0 ³	962.8 ³
		03/18/91	31.4 ³	966.4 ³
		03/29/91	28.2^{3}	969.6^{3}
		04/03/91	26.8^{3}	971.0^{3}
		04/09/91	26.5^{3}	971.3 ³
		04/16/91	26.5^3	971.3 ³
		04/18/91	26.5^3	971.3 ³
		04/30/91	26.7^3	971.1 ³
		05/07/91	27.0^{3}	970.8 ³
		01/16/92	33.7^{3}	964.1 ³
		03/09/93	23.6^{3}	974.2
		05/17/93	23.7^{3}	974.1
		06/01/93	24.4^{3}	973.4
		08/17/93	28.3 ³	969.5
		12/13/93	31.0^{3}	966.8
		03/07/94	25.4^{3}	972.4
		08/23/94	30.3	967.5
		10/11/94	32.3	965.5
Р3	999.1	03/29/91	24.7	974.4
		04/03/91	25.1	974.0
		04/09/91	25.9	973.2
		04/16/91	26.2	972.9
		04/18/91	26.2	972.9
		04/30/91	26.8	972.3
		05/07/91	27.4	971.7
		01/23/92	32.5	966.6
		03/09/93	24.8	974.3
	•	06/04/93	23.9	975.2
		08/17/93	28.5^{3}	970.6
		12/13/93	29.3 ³	969.8
		03/07/94	25.0^3	974.1
		08/23/94	30.1	969.0
		10/11/94	32.0	967.1

Elevations relative to site-specific datum. Temporary Bench Mark No. 1, top of concrete at west corner of northernmost pump island. Assumed elevation = 1,000.00 feet.

An interface probe was used to discern whether free product was present - free product was not detected with the probe.

A petroleum odor and/or coating was observed on the water level probe.

Table 2
Hydrocarbon Concentrations in Soil

				TVH-			Ethyl-	•	Oil &
Sample	Depth	Sample	•		Benzene	Toluene	Benzene	Xylenes	Grease
Location	(feet)	Date	<u>Sampler</u>	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
									
B1	20.0	06/12/89	Riedel ³	<1.0 ⁶	< 0.05	< 0.1	<0.1	<0.1	
B1	25.0	06/12/89	Riedel	<1.0	< 0.05	<0.1	<0.1	<0.1	
B 1	30.0	06/12/89	Riedel	<1.0	< 0.05	<0.1	<0.1	<0.1	
B2	5.0	07/13/89		<1.0	<0.05	< 0.1	<0.1	<0.1	
B2	10.0	07/13/89		<1.0	< 0.05	< 0.1	<0.1	<0.1	
B2	15.0	07/13/89		<1.0	<0.05	< 0.1	<0.1	<0.1	
B2	20.0	07/14/89		<1.0	<0.05	< 0.1	< 0.1	<0.1	
B2	25.0	07/14/89	Riedel	<1.0	<0.05	<0.1	<0.1	<0.1	
B2	30.0	07/14/89	Riedel	<1.0	< 0.05	<0.1	<0.1	<0.1	
B2	35.0	07/14/89	Riedel	<1.0	<0.05	<0.1	<0.1	<0.1	
B3	5.0	07/13/89		<1.0	< 0.05	< 0.1	<0.1	<0.1	
B 3	10.0	07/13/89		<1.0	<0.05	< 0.1	<0.1	<0.1	
B 3	15.0	07/13/89		<1.0	<0.05	< 0.1	<0.1	< 0.1	
B 3	20.0	07/14/89		<1.0	<0.05	<0.1	<0.1	<0.1	
B3	25.0	07/14/89		<1.0	<0.05	<0.1	<0.1	<0.1	
B 3	30.0	07/14/89	Riedel	<1.0	<0.05	<0.1	<0.1	< 0.1	
B3	35.0	07/14/89	Riedel	72	<0.05	<0.1	<0.1	<0.1	
B 3	38.0	07/14/89	Riedel	<1.0	< 0.05	<0.1	<0.1	<0.1	
B 3	39.5	07/13/89	Riedel	<1.0	< 0.05	<0.1	< 0.1	<0.1	
B 3	41.0	07/13/89	Riedel	<1.0	< 0.05	<0.1	< 0.1	< 0.1	
B 3	42.0	07/13/89	Riedel	<1.0	< 0.05	< 0.1	< 0.1	< 0.1	
								•	
B4	5.0	07/14/89		<1.0	<0.05	<0.1	<0.1	< 0.1	
B4	10.0	07/14/89		<1.0	<0.05	< 0.1	<0.1	<0.1	
B4	15.0	07/14/89	Riedel	<1.0	<0.05	<0.1	<0.1	<0.1	
B4	20.0	07/14/89	Riedel	<1.0	<0.05	<0.1	<0.1	<0.1	
B4	25.0	07/14/89	Riedel	<1.0	<0.05	<0.1	<0.1	<0.1	
B4	30.0	07/14/89	Riedel	150	< 0.25	<0.5	< 0.5	<0.5	
B4	35.0	07/14/89	Riedel	5300	<5.0	<10.0	<10.0	<10.0	
B4	36.5	07/14/89	Riedel	7.9	< 0.05	< 0.1	< 0.1	< 0.1	
B4	38.0	07/14/89	Riedel	<1.0	< 0.05	< 0.1	< 0.1	< 0.1	
B4	39.0	07/14/89		71	< 0.25	< 0.5	< 0.5	< 0.5	
B4	40.5	07/14/89		15	< 0.05	<0.1	< 0.1	< 0.1	
	• -								

Table 2
Hydrocarbon Concentrations in Soil (Cont.)

				TVH-			Ethyl-		Oil &
Sample	Depth	Sample		Gasolin	e Benzene	Toluene	Benzene	Xylenes	Grease
Location	(feet)	<u>Date</u>	<u>Sampler</u>	(mg/kg	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
									
B5	20.0	08/24/89	Riedel	<10	<0.025	< 0.025		< 0.075	
B 5	25.0	08/24/89	Riedel	<10	<0.025	<0.025	· ·	<0.075	
B5	30.0	08/24/89	Riedel	<10	<0.025	<0.025		< 0.075	
B 5	35.0	08/24/89	Riedel	<10	<0.025	<0.025		<0.075	
B5	40.0	08/24/89	Riedel	<10	<0.025	<0.025		<0.075	
B5	45.0	08/24/89	Riedel	<10	<0.025	< 0.025	<0.075	<0.075	
B 6	20.0	08/24/89		<10	<0.025	< 0.025	<0.075	< 0.075	
B6	25.0	08/24/89		<10	<0.025	<0.025	<0.075	<0.075	
B 6	30.0	08/24/89		<10	<0.025	< 0.025	<0.075	<0.075	
В6	35.0	08/24/89	Riedel	<10	<0.025	<0.025	< 0.075	< 0.075	
В6	40.0	08/24/89	Riedel	<10	<0.025	<0.025	<0.075	<0.075	
В7	15.0	08/24/89	Riedel		<0.025	< 0.025	<0.075	<0.075	
B7	20.0	08/25/89	Riedel		< 0.025	< 0.025	<0.075	<0.075	
B 7	25.0	08/25/89	Riedel		<0.025	< 0.025	<0.075	<0.075	
В7	30.0	08/25/89	Riedel	<10	0.130	<0.025	<0.075	< 0.075	
В7	33.0	08/25/89	Riedel		<0.025	3.00	1.00	3.50	
В7	36.0	08/25/89	Riedel		<0.025	0.120	0.190	0.440	
В7	41.0	08/25/89	Riedel		<0.025	< 0.025	<0.075	<0.075	
В7	45.5	08/25/89	Riedel		<0.025	< 0.025	< 0.075	<0.075	
B7	51.0	08/28/89	Riedel	<10	<0.025	<0.025	< 0.075	<0.075	
B8	15.0	08/28/89	Riedel		< 0.025	0.097	<0.075	<0.075	
В8	20.0	08/28/89	Riedel		< 0.025	0.190	0.360	0.630	
B8	25.0	08/28/89	Riedel		< 0.025	0.050	<0.075	<0.075	
В8	30.0	08/30/89	Riedel		< 0.025	<0.025	<0.075	<0.075	
В8	35.5	08/30/89	Riedel	<10	< 0.025	0.130	0.150	0.260	
B8	40.5	08/30/89	Riedel	<10	<0.025	0.056	<0.075	<0.075	
В8	45.0	08/30/89	Riedel	<10	<0.025	< 0.025	< 0.075	<0.075	
B8	50.0	08/30/89	Riedel	<10	< 0.025	0.2220	<0.075	<0.075	

Table 2
Hydrocarbon Concentrations in Soil (Cont.)

Sample <u>Location</u>	Sample Depth ² (feet)			e Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- Benzene (mg/kg)	Xylenes (mg/kg)	Oil & Grease (mg/kg)
В9	6.5	08/30/89 Riedel	20	0.026	0.046	< 0.075	0.200	
B 9	9.5	08/30/89 Riedel	<10	< 0.025	< 0.025	< 0.075	< 0.075	
В9	16.5	08/30/89 Riedel	490	0.700	0.610	2.000	15.000	
В9	21.0	08/30/89 Riedel	1500	4.1	3.4	14.0	62.0	
В9	26.5	08/30/89 Riedel	1100	3.0	28.0	13.0	68.0	
В9	31.5	08/30/89 Riedel	79	0.350	0.800	0.610	2.0	
B 9	35.0	08/30/89 Riedel	<10	0.390	0.130	< 0.075	0.200	***
B9	40.5	08/30/89 Riedel	<10	< 0.025	0.043	< 0.075	< 0.075	
B9 .	45.5	08/30/89 Riedel	<10	<0.025	0.066	< 0.075	< 0.075	
B 9	51.0	08/30/89 Riedel	<10	0.310	0.046	< 0.075	< 0.075	
B 10	15.5	10/18/90 Stream ⁴		<0.005	<0.005	<0.005	<0.075	<10
B10	21	10/18/90 Stream	<2.5	<0.005	< 0.005	<0.005	<0.005	<10
B10	30.5	10/18/90 Stream	<2.5	<0.005	<0.005	<0.005	<0.005	<10
B11	21	10/18/90 Stream	<2.5	<0.005	<0.005	<0.005	< 0.005	<10
B11	31	10/18/90 Stream	230	0.15	0.47	0.88	1.60	<10
B11	36	10/18/90 Stream	<2.5	<0.005	<0.005	<0.005	<0.005	<10
B11	46	10/18/90 Stream	<2.5	<0.005	<0.005	<0.005	< 0.005	<10
B12	28	04/28/93 SCI ⁵	<1	<0.005	< 0.005	<0.005	< 0.005	
B12	30	04/28/93 SCI	<1	<0.005	<0.005	<0.005	< 0.005	
B12	34.5	04/28/93 SCI	<1	<0.005	<0.005	<0.005	< 0.005	
					.0	.a. a.a.	-0.00=	
P1	25.5	10/19/90 Stream	<2.5	<0.005	<0.005	< 0.005	<0.005	
P1	35	10/19/90 Stream	7.4	0.011	<0.005	< 0.005	< 0.005	
P 1	40.5	10/19/90 Stream	<2.5	<0.005	<0.005	<0.005	< 0.005	
Pl	49.7	10/19/90 Stream	<2.5	<0.005	<0.005	<0.005	< 0.005	

Table 2
Hydrocarbon Concentrations in Soil (Cont.)

	Samp	le		TVH-			Ethyl-		Oil &
Sample	Depth				e Benzene	Toluene	Benzene	Xylenes	Grease
Location	(feet)	<u>Date</u>	<u>Sampler</u>	(mg/kg)	1 (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
P2	20.5	10/19/90	Straam	<2.5	<0.005	<0.005	<0.005	<0.005	<10
P2	30	10/19/90		20	0.003	<0.005	<0.005	0.003	<10
P2	35.5	10/19/90		95	0.21	0.20	14	0.013	<10
P2	55.5	10/19/90		<2.5	< 0.005	< 0.005	<0.005	< 0.005	<10
1 24	33.3	10/12/20	Diream	12.5	10.005	٠٥.٥٥٥	10,005	٠٥.٥٥٥	10
P3	35.5	03/18/91	Stream	990	5.8	24	11	20	
Р3	40.5	03/18/91	Stream	<1	< 0.005	< 0.005	< 0.005	<0.005	
Ml	20.5	10/20/90	Stream	<2.5	<0.005	<0.005	< 0.005	< 0.005	<10
M 1	25.5	10/20/90	Stream	<2.5	< 0.005	< 0.005	< 0.005	< 0.005	<10
M1	35.5	10/20/90	Stream	82	<0.005	0.019	. 0.028	0.026	<10
M1	45.5	10/20/90	Stream	<2.5	<0.005	<0.005	< 0.005	< 0.005	<10
M2	26	04/18/91		1.3	0.32	<0.005	0.04	0.036	
M2	31	04/18/91		490	<0.005	0.41	3.4	7.5	- -
M2	36	04/18/91		33	<0.005	0.072	0.099	0.094	
M2	41	04/18/91	Stream	<1	<0.005	<0.005	<0.005	< 0.005	
3.60		0.4/0.0/0.0	~~*		10.005	10.005	40.000	40.00 <i>5</i>	
M3	22	04/28/93	SCI	<1	< 0.005	<0.005	<0.005	<0.005	
M3	27	04/28/93	SCI	<1	<0.005	<0.005	<0.005	<0.005	
M 3	30.5	04/28/93	SCI	<1	<0.005	<0.005	<0.005	<0.005	
M4	31	04/27/93	SCI	<1	<0.005	<0.005	< 0.005	<0.005	
M4	33	04/27/93	SCI	130	0.43	0.49	2.0	4.5	
M4	36	04/27/93	SCI	120	0.43	0.49	1.1	4.4	
M4	39	04/27/93	SCI	<1	< 0.005	<0.005	< 0.005	< 0.005	
1714	39	04/2//93	301	~1	~0.003	~0.003	~0.003	~0.003	
M5	29	07/26/94	SCI	<1	<0.005	<0.005	<0.005	< 0.005	
1.10	/	J., 2017	201					2.002	
M6	36.5	07/28/94	SCI	330	< 0.070	1.1	2.7	3.0	
M6	39.5		SCI	300	0.660	0.780	4.0	5.8	
		2.,20,71							

mg/kg = milligrams per kilogram

Top of sample depth

Riedel = Riedel Environmental Services, Inc.

Stream = Streamborn

SCI = Subsurface Consultants, Inc.

^{6 &}lt;1.0 = Analyte not present at a concentration above the stated detection limits</p>

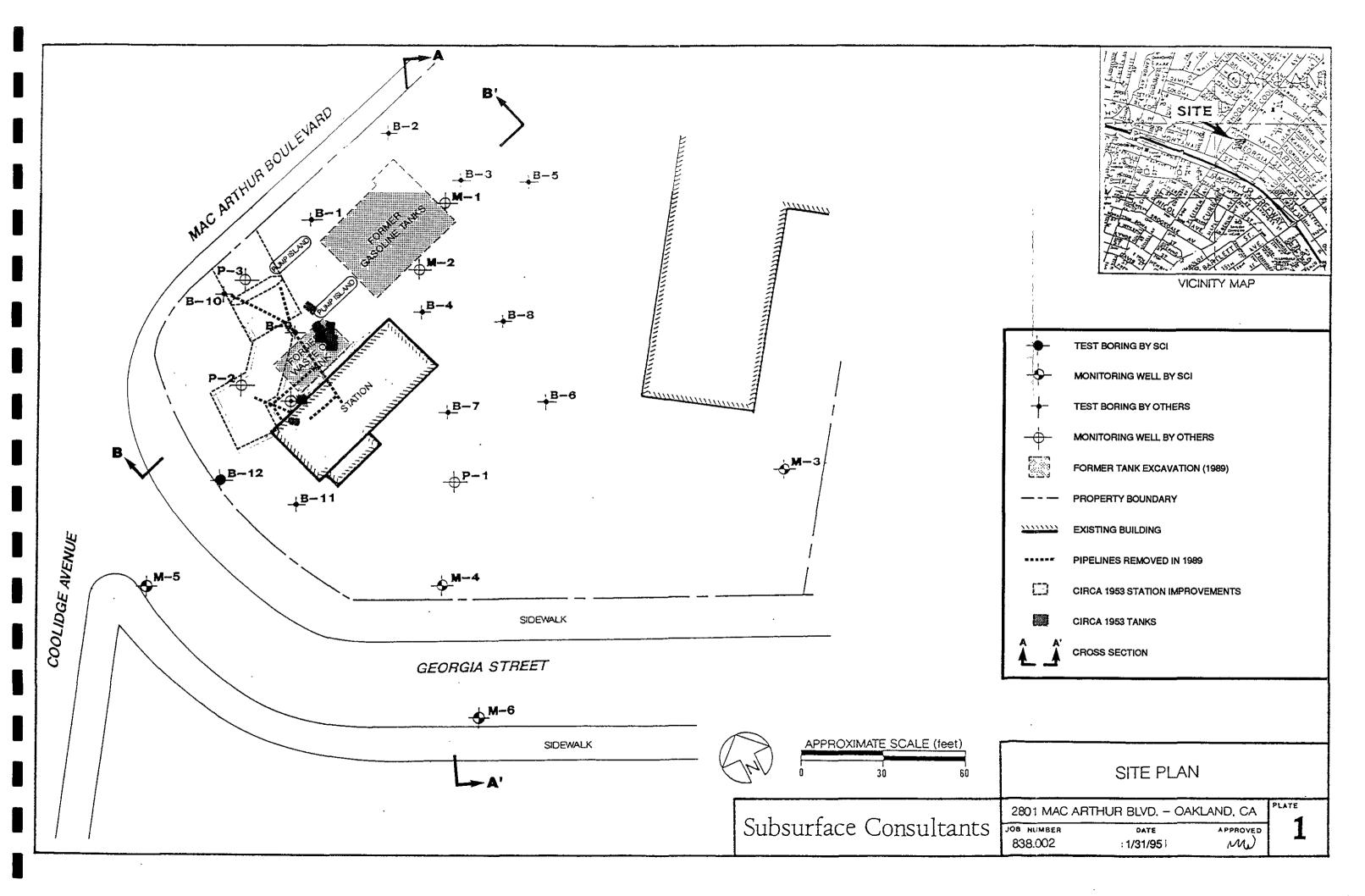
Table 3
Hydrocarbon Concentrations in Groundwater

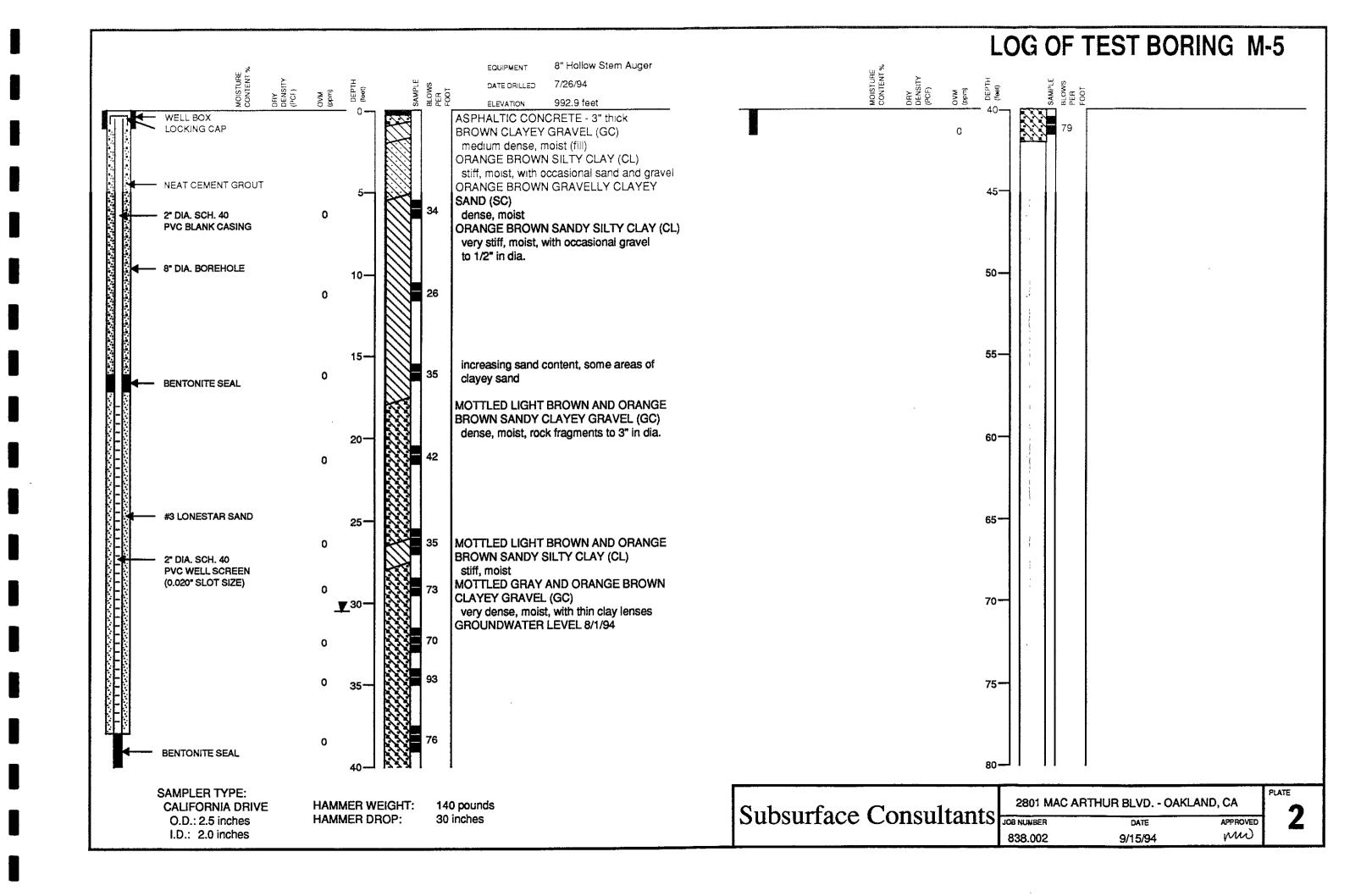
					Ethyl-	
Sample	Sample	TVH	Benzene	Toluene	benzene	Xylenes
Location	<u>Date</u>	<u>(ug/l)</u>	<u>(ug/l)</u>	<u>(ug/l)</u>	<u>(ug/l)</u>	(ug/l)
D 1	01/1/00	6 700	500	4.4	80	40
P-1	01/16/92	6,700		29	63	120
	03/09/93	5,600	1,100	29	03	120
P-2	11/06/90	33,000	4,700	2,100	380	630
	01/16/92	99,000	6,500	12,000	2,000	16,000
	03/09/93	70,000	5,900	11,000	2,100	12,000
	05/17/93	87,000	6,600	13,000	2,200	13,000
	08/17/93	80,000	5,800	12,000	2,000	12,000
	12/13/93	100,000	5,600	12,000	2,200	14,000
	03/07/94	77,000	5,100	11,000	2,000	12,000
	08/23/94	70,000	3,800	8,700	1,500	9,900
P-3	08/17/93	900	180	65	10	93
M-2	05/07/91	16,000	1,300	950	170	890
	01/16/92	22,000	960	570	370	1,800
	03/09/93	27,000	1,100	970	490	1,400
	05/17/93	17,000	1,200	770	480	1,300
	08/17/93	20,000	1,700	910	540	1,400
	12/13/93	51,000	2,200	1,400	700	2,600
	03/07/94	28,000	1,400	900	640	1,800
	08/23/94	21,000	1,600	34.0	520	1,100
M-3	05/17/93	<50	<0.5	<0.5	<0.5	<0.5
****	08/17/93	<50	<0.5	<0.5	<0.5	< 0.5
	12/13/93	<50	<0.5	<0.5	<0.5	<0.5
	03/07/94	<50	<0.5	<0.5	< 0.5	< 0.5
	08/23/94	<50	<0.5	< 0.5	<0.5	< 0.5
N/ 4	05/17/93	7,500	1,200	230	11	350
M-4		13,000	3,000	330	130	700
	08/17/93	•	2,700	190	90	360
	12/13/93	11,000			49	140
	03/07/94	3,800	980	33		
	08/23/94	19,000	5,800	200	460	630
M-5	08/23/94	<50	<0.5	<0.5	<0.5	<0.5
M-6	10/11/94	3,600	340	27	65	240

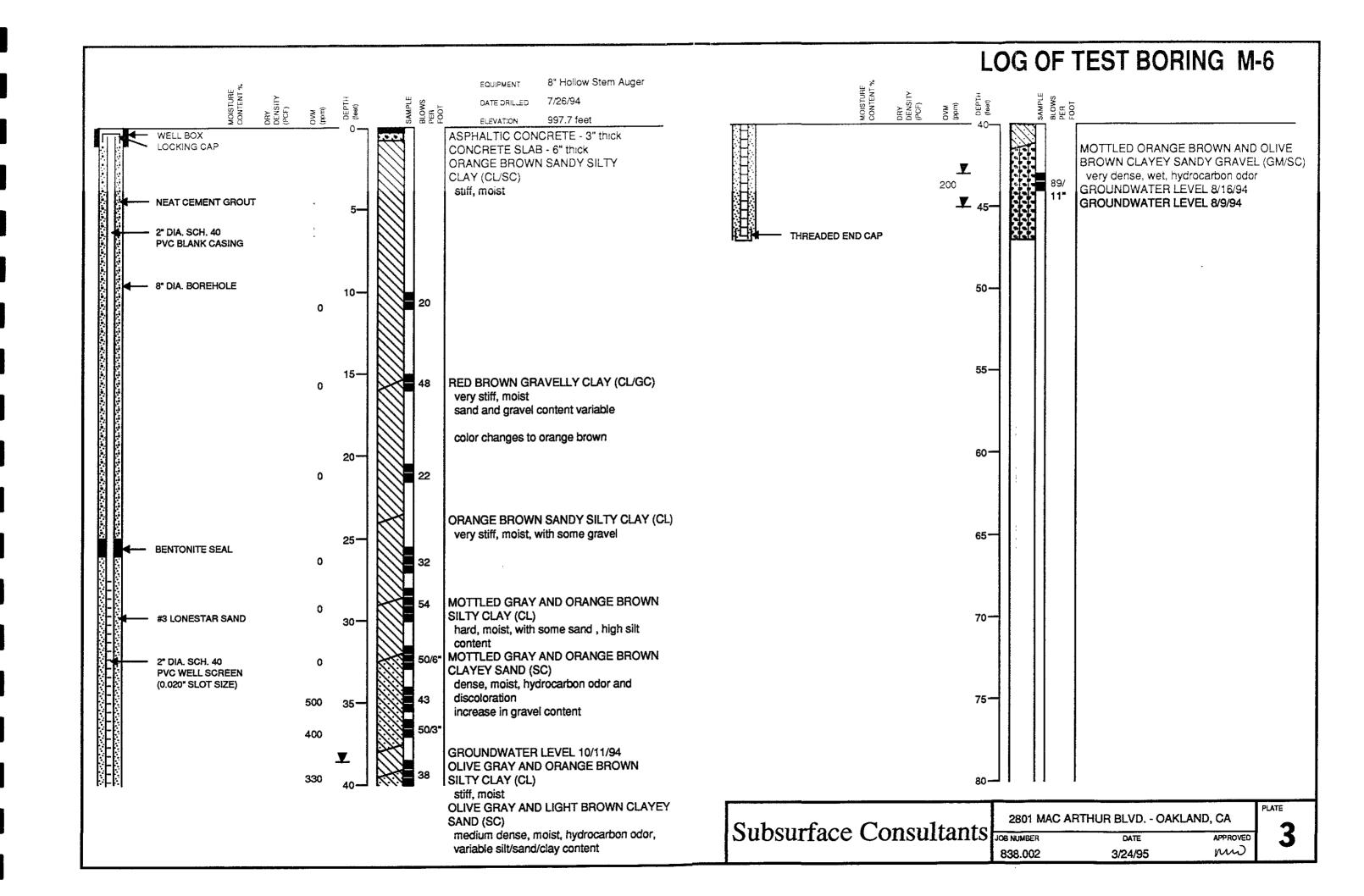
TVH = Total volatile hydrocarbons, as gasoline

ug/l = Micrograms per liter = parts per billion

<50 = Analyte not present at a concentration above the stated detection limit.

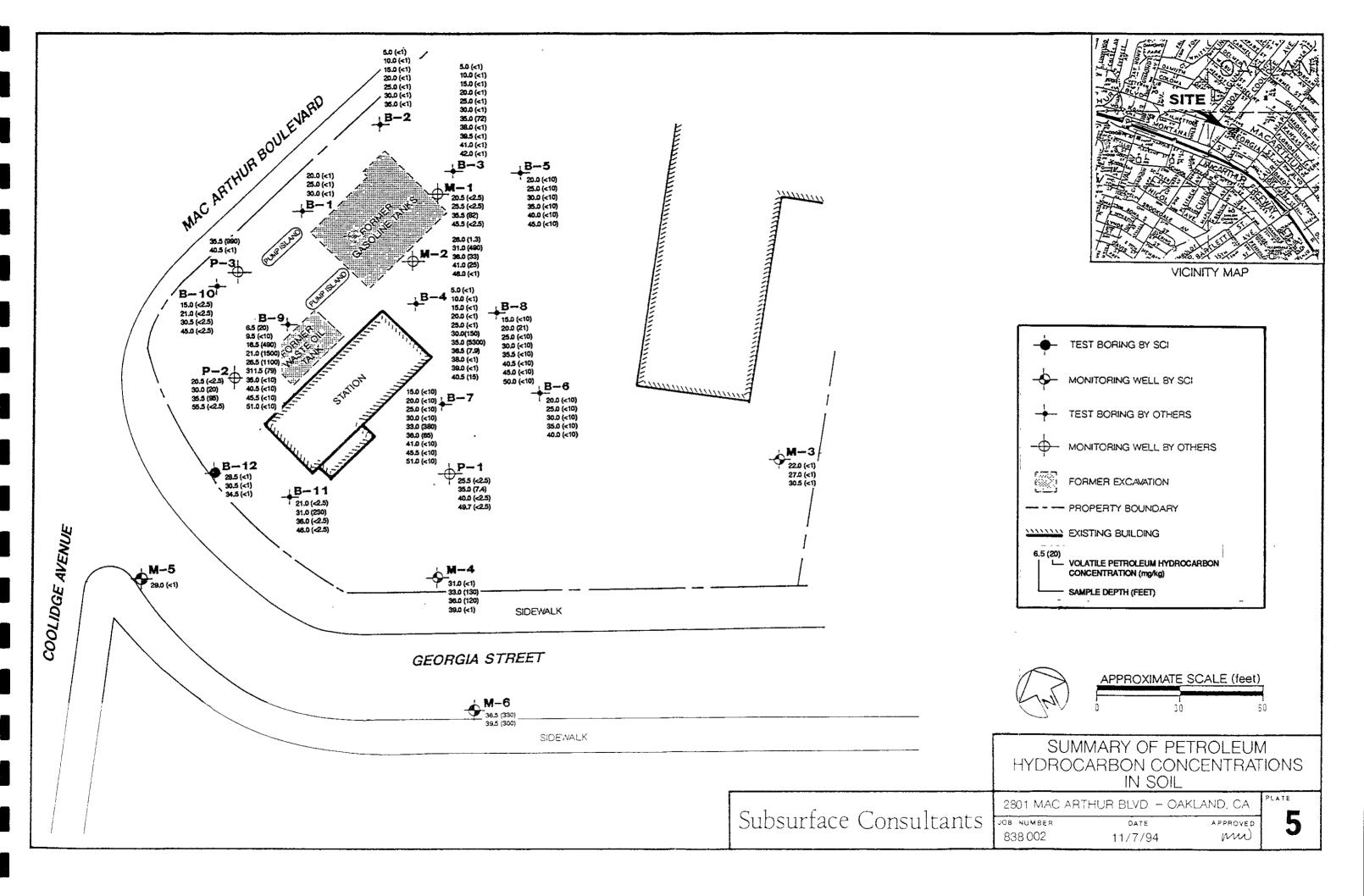


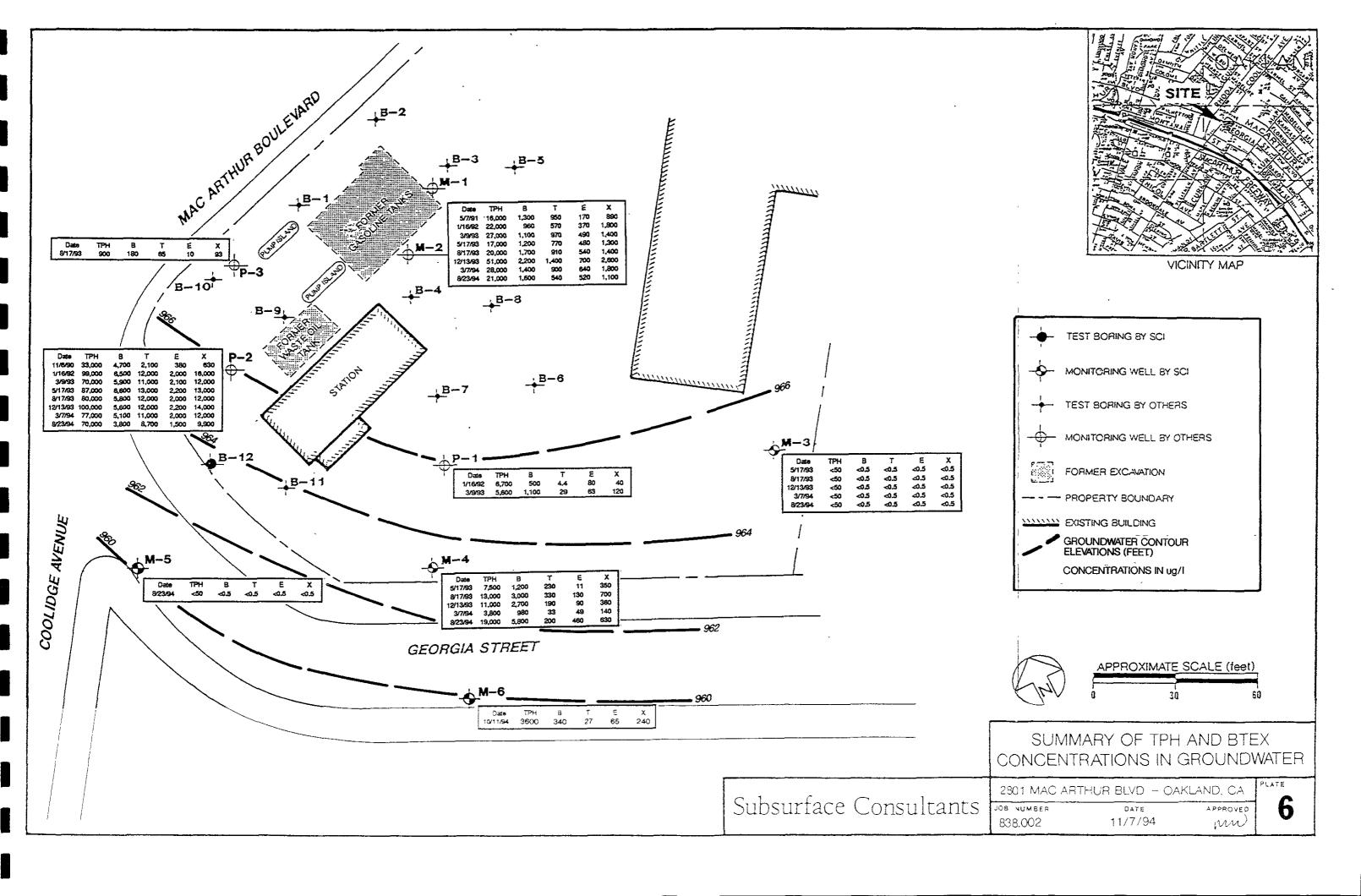


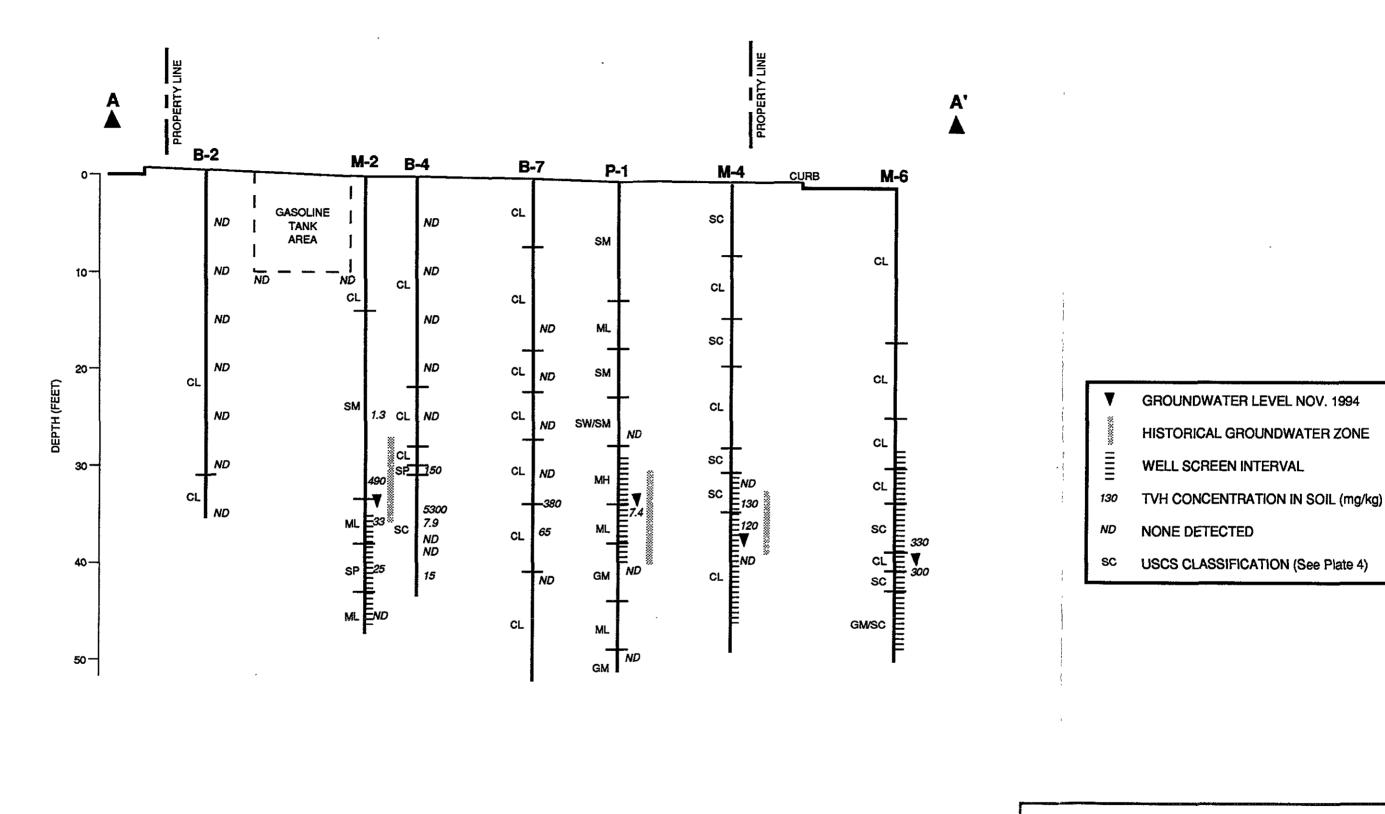


G	SENERAL SOIL (CATEGORIES	SYM	BOLS	TYPICAL SOIL TYPES
	i	Clean Gravel with	GW		Well Graded Gravel, Gravel-Sand Mixtures
seive	GRAVEL More than half	little or no fines	GP		Poorly Graded Gravel, Gravel-Sand Mixtures
SOILS No. 2004	coarse fraction is larger than No. 4 seive size	Gravel with more than 12% fines	GM		Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
GRAINED larger than			GC		Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
		Clean Sand with	sw		Well Graded Sand, Gravelly Sand
COARSE re than half la	SAND More than half	little or no fines	SP		Poorly Graded Sand, Gravelly Sand
Ko	coarse fraction is smaller than No. 4 seive size	natior than 1 selve size Sand with more	SM		Silty Sand, Poorty Graded Sand-Silt Mixtures
		than 12% fines	sc		Clayey Sand, Poorly Graded Sand-Clay Mixtures
ыive			ML		Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity
SOILS an No. 2004		AND CLAY t Less than 50%	CL		Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay
IED SC er than I			OL		Organic Clay and Organic Silty Clay of Low Plasticity
FINE GRAINED SOILS More than half is smaller than No. 200 selve	!		MH		Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt
FINE than half	4.	AND CLAY Greater than 50%	СН		Inorganic Clay of High Plasticity, Fat Clay
More	More t		ОН		Organic Clay of Medium to High Plasticity, Organic Silt
	HIGHLY ORGA	NIC SOILS	рт		Peat and Other Highly Organic Soils

	UNIFIED S	SOIL CLASSIFIC	CATION SY	/STEM
Carlaganta a Canaviltanta	2801 MacAF	THUR BLVD OAKL	AND, CA	PLATE
Subsurface Consultants	JOB NUMBER 838.002	DATE 11/7/94	APPROVED (4







APPROXIMATE HORIZONTAL SCALE: 1" = 30'
APPROXIMATE VERTICAL SCALE: 1" = 10'

CROSS SECTION A - A'

Subsurface Consultants JOB NUMBER

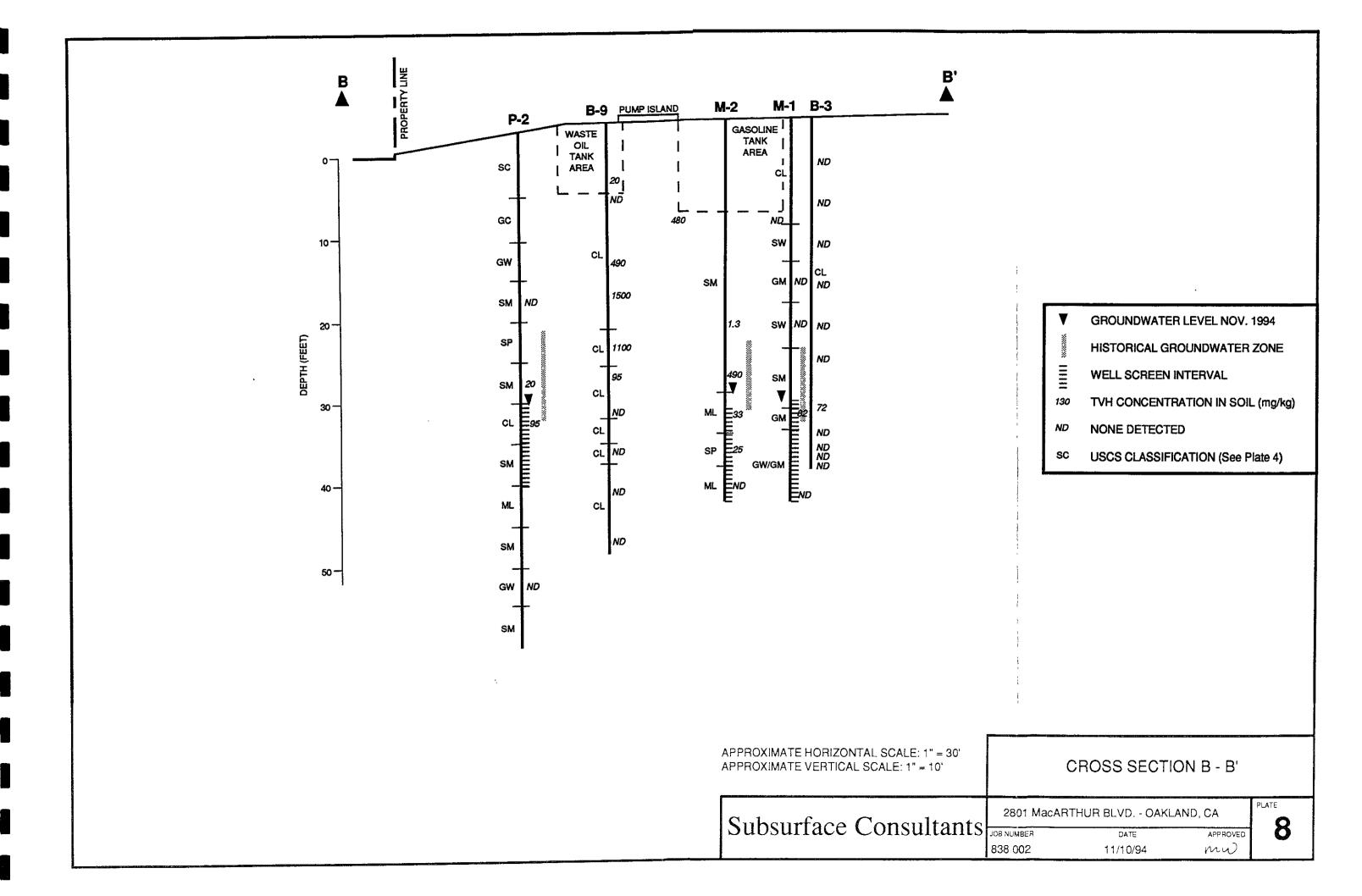
2801 MacARTHUR BLVD. - OAKLAND, CA

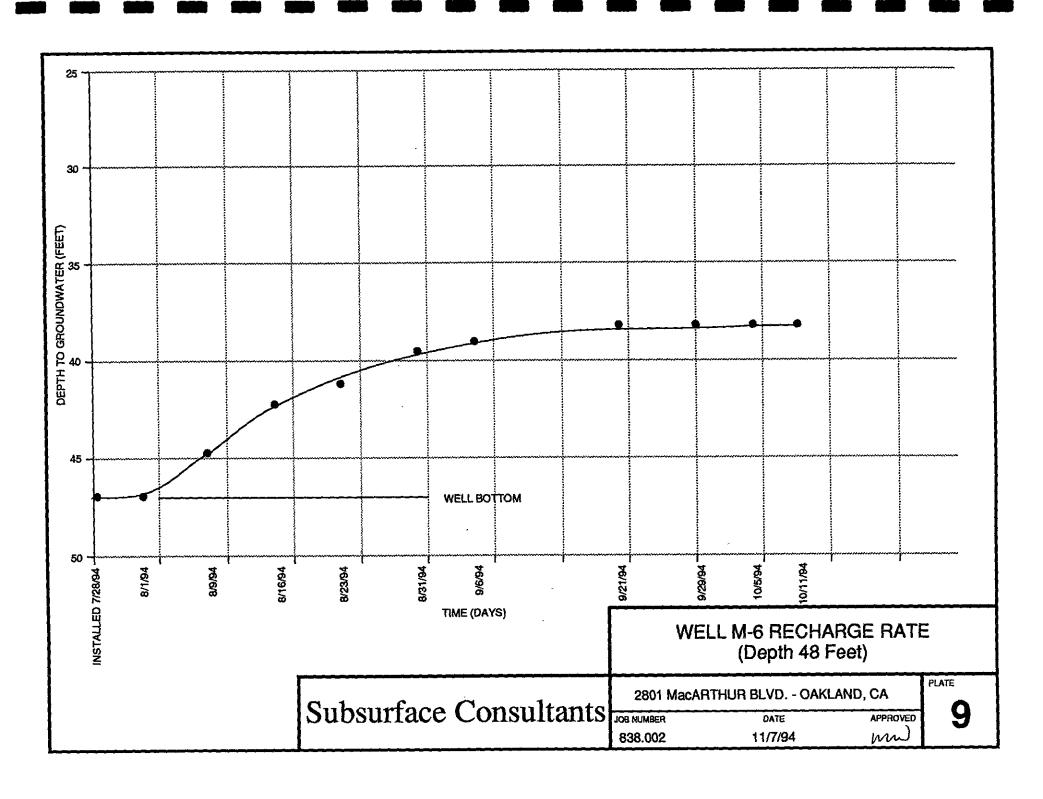
 JOB NUMBER
 DATE
 APPROVED

 838 602
 11/10/94
 MMJ

7

PLATE





ZO E 7 WATER AGENC'



5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588

VOICE (510) 484-2600 FAX (510) 482-3914

DRILLING PERMIT APPLICATION

LOCATION OF PROJECT 250 (Mac Arthur	FOR OFFICE USE PERMIT NUMBER 94465 LOCATION NUMBER			
CLIENT Name ADA Trud Ltd C/O ANIKOMONIA Address 1420 Main, Ste 400 Voice 714 - 476-6121 City Trying, Zp - 22714 APPLICANT Name Fachmurface Commandant, Tac Fax 510 - 268-0187	Circled Permit Requirements Apply A. GENERAL 1. A permit application should be submitted so as to arrive at the			
TYPE OF PROJECT Well Construction Geotechnical Investigation Cathodic Protection General Water Supply Contamination Manitoring Wall Destruction PHOPOSED WATER SUPPLY WELL USE Domestic Industrial Other Municipal Infigation	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 Retources 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. B. WATER WELLS, INCLUDING PIEZOMETERS 1. Minimum surface soal thickness is two inches of cement grout placed by tramie. 2. Minimum seal depth is 50 feet for municipal and industrial walls or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for			
ORILLING METHOD: Mud Rotary Air Rotary Auger Cable Other ORILLER'S LICENSE NO. C - 57 6 73 696 WELL PROJECTS Orill Hole Diameter 7 in. Maximum Casing Diameter 3 in. Depth 40 ft. Surface Seal Depth 25 ft. Number 2 GEOTECHNICAL PROJECTS Number of Borings Maximum	monitoring wells is the maximum depth practicable or 20 feet. C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tramled cament grout shall be used in place of compacted cuttings. D. CATHODIC. Fill hole above anode zone with concrete placed by tramle. E. WELL DESTRUCTION. See attached.			
ESTIMATED COMPLETION DATE 7/26/94	Approved Myman World Date 10 Aug 94 Syman Hong 91902			

350-2 (NEV. 0

CITY OF OAKLAND

PERMIT TO EXCAVATE IN STREETS OR OTHER WORK AS SPECIFIED

	PERMISSION TO EXCAVATE I	•	BETWEEN (Street/Ave.) (Specify) EREBY GRANTED TO: (STREET/AVE.) (Specify) PHONE #: 10.7-745-018	INSPECTION COSTS FOR UTILITY COMPANIES & ADDITIONAL INSPECTION HOURS WILL BE CHARGED IN CONFORMANCE WITH THE MASTER FEE SCHEDULE.
	NATURE OF WORK: GAS	Intractor's License Law for the following reason	ONE CABLE TV SEWER OTHER DELLS (Specify) FEA LECTURE OF ISSUE UNLESS EXTENSION GRANTED	OFFICIAL USE ONLY UTILITY COMPANY REPORT IT (1) 195,000 Supervisor 196,000
OWNER/BUILDER	CITY OF OAKLAND	de: Any city or county which requires a permit pair any structure, prior to it's issuance, also re- a signed statement that he is licensed pursuant se Law Chapter 9 (commencing with Sec. 7000) ions Code, or that he is exempt therefrom and violation of Section 7031.5 by any applicant for penalty of not more than \$500):	Approximate Starting Date Approximate Completion Date DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE DATE	CITY INSPECTOR'S REPORT BACKFILL PAVING
	NO REFUND W/O RECPT 07-25-94 #1	loyees with wages as their sole compensation, tended or offered for sale (Sec. 70044, Business ense Law does not apply to an owner of property o does such work himself or through his own to are not intended or offered for sale. If, however, I one year of completion, the owner-builder will at build or improve for the purpose of sale).	(7AM – 9AM/4PM – 6PM) DATE STREET LAST RESURFACED SPECIAL PAVING DETAIL REQUIRED YESNO NO	Hours Date Concrete
	EXCV 195.00 sided in the residence of appurtenance of talamed exemption in the APPL 40.00 any three-year period. (S	at from the sale requirements of the above due residence or appurtenances thereto, (2) the work esided in the residence for the 12 months prior t claimed exemption in this subdivision on more any three-year period. (Sec. 7044. Business and	24-HOUR EMERGENCY PHONE NUMBER PERMIT NOT VALID WITHOUT 24 HOUR NUMBER. Telephone 238-3651 Forty-eight (48) HOURS BEFORE ACTUAL CONSTRUCTION.	Asphalt Sidewalk Size of Cut: Sq. Ft Inches Paved by Type
	CHECK 235.00 ITEM 2 2CL 8264 08:33TM	ely contracting with licensed contractors to con- Professions Code: The Contractor's License Law o builds or improves thereon, and who contracts nsed pursuant to the Contractor's License Law)	ATTENTION State law requires that contractor/owner call Underground Service Alert two working days before excavating to have below-ground utilities located. This permit is not valid uness applicant has secured an inquiry identification number issued by Underground Service Alert.	Bill No
WORKER'S COMPENSATION		consent to self-insure, or a certificate of Workers'	Call Toll Free: 800-642-2444 USA 1D Number	Traffic Striping Replaced
	1		This permit is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmiess that lits officers and employees, from and against any and all suits, claims or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance.	Engineering Services Date Planning Date Field Services Date Construction Date
	(This section need not be completed it the permit is for one hundred dollars (\$100) or less.)		CONTRACTOR	Traffic Engineering Date
	I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Workers' Compensation Laws of California. Signature Date		I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect. LICENSE # AND CLASS TAX # Date T- 7 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3	DIRECTOR OF PUBLIC WORKS APPROVED BY: DATE: DATE:
_	NOTICE TO APPLICANT. If, after making this Certificate of Exemption, you should become subject to the Workers' Compensation provisions of the Labor Code, you must forthwith imply with such provisions or this permit shall be deemed revoked.		Signature of Contractor Owner of Agent Agent for Contractor Conner	EXTENSION GRANTED BY: DATE:

WELL SAMPLING FORM WATER LEVEL Only

Project Name: 2801	MACARTH	UR BOULEV	VEI NU	ımber: $M\omega$ -		
Job No.: 838.002 Sampled By:			Well Ca	Well Casing Diameter: 2 inch		
			Date:	Date: 8/23/94		
TOC Elevation: /	_			or: Logo	Y	
Depth to Casing Botto	om (below T	OC)	44	.50	feet	
Depth to Groundwater (below TOC)			34	7/32 32.27		
Feet of Water in Well	·		13	# 132 32.27 #\$ 2.23	feet	
Depth to Groundwater When 80% Recovered Casing Volume (feet of water x Casing DIA 2 x 0.0408)					gallons	
Depth Measurement				onic Sounder)/	Other	
Free Product						
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \						
Gallons Removed	pH 	Temp (°c)	Conductivity (micromhos/cm)	Salinity S%	Comments	
Total Gallons Purged					gailons	
Depth to Groundwater	Before Sam	pling (below 7	гос) ———		feet	
Sampling Method	BAILER					
Containers Used _	3 40 ml		liter	pint		
1 C		. 14 - 4	2801 MACARTI	HUR BLVD - OAKLAI	ND, CA	
ubsurface	Cons	uitants	JOB NUMBER 838.002	DATE	APPROVEO	

Sampling WELL DEVELOPMENT FORM

Project Name: 2801 MACARTHUR BLVD	Well Number: <u>Mw-Z</u>			
Job No.: 838.002	Well Casing Diameter: 2 inches			
Developed By: Developed By:	Date:			
TOC Elevation: 999.6	Weather: Snuny			
Depth to Casing Bottom (below TOC) Depth to Groundwater (below TOC) Feet of Water in Well	45.00 - feet 3117 32.32 (38.66 @ 50%) feet \$\frac{3}{2} \frac{3}{2} \frac{6}{6} \frac{6}{6} \frac{6}{6} \frac{6}{6} \frac{1}{6} 1			
Casing Volume (feet of water x Casing DIA 2 x 0.04)	08) gallons			
Depth Measurement Method	Recharge exte: ~6" every 5-7 min.			
FIELD MEAS	SUREMENTS			
Gallons Removed pH Temp (°c) (n 7.14 24.0 7.09 23.5 7.08 24.5 7.07 24.0	Conductivity nicromhos/cm) Salinity S% Comments 875 Clear Slight adver sheen 925 Semi-clear 950 rungky / Stronger adver			
Total Gallons Removed	gallons gallons			
Depth to Groundwater After Development (below TOO	c) 38.64' feet			
Subsurface Consultants 22	301 MacArthur Boulevard NUMBER DATE APPROVED			
1	88.002			

WELL SAI	MPLING FORM
Project Name: 2801 MacArthur Blvd	Well Number: MW-3
Job No.: 838.001	Well Casing Diameter: 2 inch
Sampled By:	Date:
TOC Elevation: 992.8	Weather: Oggy / Sunwy
Depth to Casing Bottom (below TOC)	
	25. 7 8 feet
Feet of Water in Well	
	28.62 (32.99 @ 50%) feet
Casing Volume (feet of water x Casing DIA 2 x 0.040	08) gallons
Depth Measurement Method Tape & Past	e / Electronic Sounder / Other
Free Product	
Purge Method <u>disposable</u> baile	1
FIELD MEAS	SUREMENTS
	Conductivity nicromhos/cm) Salinity S% Comments 1. further dirty/no 230 increasing full
otal Gallons Purged	gallons
Depth to Groundwater Before Sampling (below TOC)	30.68 feet
Sampling Method <u>fellon beuter</u>	
Containers Used 3	ter pint
shaurface Consultants	801 MacArthur Blvd., Oakland, California
ubsurface Consultants	NUMBER DATE APPROVED 338.001

WELL SAMPLING FORM

Project Name: 2801 MacArthur Blvd	Well Number: Mw-4
Job No.: 838.001	Well Casing Diameter: 2 inch
Sampled By: DWA	Date: 4494 8/22/74
TOC Elevation: 999 6	Weather: Coggy/Sunny
	,
Depth to Casing Bottom (below TOC)	45.00 feet
Depth to Groundwater (below TOC)	
Feet of Water in Well	7.57 feet
Depth to Groundwater When 80% Recovered	37.34 (40.21@50%) feet
Casing Volume (feet of water x Casing DIA 2 x 0.046	08) 1.56 gallons
Depth Measurement Method Tape & Past	e / Electronic Sounder / Other
Free Product	
Purge Method disposable bailer	
	SUREMENTS Recharge Roste: 1" every 5 min.
Gallons Removed pH Temp (°c) (r	Conductivity nicromhos/cm) Salinity S% Comments
O 1.53 #-023.0 :	500 Sear mod. odar
7.43 23.0	600
7/9	700
5 7.37 23.0	700 Decreasing edor
Total Gallons Purged 5	gallons '
Depth to Groundwater Before Sampling (below TOC)
Sampling Method <u>tellon bailer</u>	
Containers Used 3	ter pint
40 ml li	rai hurr
	2801 MacArthur Blvd., Oakland, California
Yestone Congrittantal	B NUMBER DATE APPROVED
	338.001

WELL	SAMPLING FORM Development
Project Name: 2801 MacArthur Blvd	Well Number: MW-5
Job No.: 838.001	Well Casing Diameter: 2 inch
Sampled By: DwA	Date: 8/23/94
TOC Elevation: 992.9	Weather: Sunw
Depth to Casing Bottom (below TOC)	37.50 feet
Depth to Groundwater (below TOC)	30.87 31.80 feet
Feet of Water in Well	
Depth to Groundwater When 80% Recovered	
Casing Volume (feet of water x Casing DIA 2 x	(0.0408) gallons
Depth Measurement Method Tape 8	
Free Product	
Purge Method	bailer
FIELD N	recharge rate: MEASUREMENTS 2-3" par 5 min.
Gallons Removed pH Temp (°c) 7.56 24.5 7.56 24.0 7.48 24.0	Conductivity (micromhos/cm) Salinity S% Comments 950 Clear us odo? Lt.tudiduty 900 west day 6590
Total Gallons Purged Depth to Groundwater Before Sampling (below	gallons (TOC) 34.65' feet
Sampling Method	
Containers Used 3 40 ml	liter pint
Subsurface Consultant	2801 MacArthur Blvd., Oakland, California
Subsurface Consultant	DATE APPROVED 838.001

Well Number: MW-6 Project Name: 2801 MacArthur Blvd Well Casing Diameter: 2 inch Job No.: 838.001 Date: 8/194 8/23/94 Sampled By: MA TOC Elevation: 997,7 Weather: Depth to Casing Bottom (below TOC) 47.00 Depth to Groundwater (below TOC) _______ feet 5.83 Feet of Water in Well -Depth to Groundwater When 80% Recovered Casing Volume (feet of water x Casing DIA 2 x 0.0408) Electronic Sounder Other Depth Measurement Method Tape & Paste Free Product _____ Purge Method _____ FIELD MEASUREMENTS Conductivity Comments Salinity S% (micromhos/cm) Temp (°c) Gallons Removed pН Total Gallons Purged _____ gallons Depth to Groundwater Before Sampling (below TOC) Sampling Method Containers Used pint liter PLATE 2801 MacArthur Blvd., Oakland, California Subsurface Consultants JOB NUMBER APPROVED 838.001

WELL SAMPLING FORM

Water Level July

		WELL DE	EVELOPMENT FO	ORM Wõ	ter urel (
Project Name: 2801	MACARTH	IUR BLVD	Well Nu	ımber: <u>P-J</u>	
Job No.: <u>838.002</u>			Well Ca	sing Diameter: _	inches
Developed By:	DWA.		Date: .	8/23/94	/
TOC Elevation:			Weathe	or: toony	
Depth to Casing Bott	T woled) mo	OC)	39.00		feet
Depth to Groundwate	er (below TC	OC)	349 39	2.72	feet
Feet of Water in Well			/2 -	~ O.	feet
Casing Volume (feet	of water x C	asing DIA 2 x (0.0408)		gallons
Depth Measurement				_	Other
Development Method					
		FIELD MI	EASUREMENTS		
allons Removed	рН	Temp (°c)	Conductivity (micromhos/cm)	Salinity S%	Comments
 					
otal Gallons Remove	d				gallons
otal Gallons Remove					-
	After Devel	opment (below	TOC)		-

WELL SAMPLING FORM

Project Name: 2801 MA	ACARTHUR BOULEVAR	Well Number	: <u>PPP</u>	2
Job No.: 838.00	2	Well Casing	Diameter: 2	inch
Sampled By:)A	Date:	H194 8/20 8	123/94
TOC Elevation:		Weather:	foggy	<u>'</u>
Depth to Casing Bottom	(below TOC)	42	2.00	feet
Depth to Groundwater (b	pelow TOC)	29.52 30	0.34	feet
				feet
Depth to Groundwater W	When 80% Recovered	32.6	7 (36.17'@5	<u>%)</u> feet
	water x Casing DIA ² x 0.0	, 9		gallons
				her
Depth Measurement Me		Ste	0000000	
Free Product				
Purge MethodBA	ILER			
	FIELD ME	ASUREMENTS		:
		Conductivity	aliaite Col	Comments
Gallons Removed	pH Temp (°c) 0_/7	(micromhos/cm) Si	alinity S% Cle	2 Strong oder/St
	196 21,0	400		
4	0-24 21.0	430435		
6	0.41 210	460		<u> </u>
	10			gallons
Total Gallons Purged	-	3/ 10/		
Depth to Groundwater Bo	efore Sampling (below TO	(C)		feet
Sampling Method	BAILER			
Containers Used	3	liter p	int	
	70 BB		·-	
		2801 MACARTHUR	BLVD - OAKLAND.	PLATE CA
Subsurface C	Consultants	IOB NUMBER	DATE	APPROVED
	1	838.002		

Water Level Only WELL SAMPLING FORM Well Number: P-3 Project Name: 2801 MACARTHUR BOULEVARD Well Casing Diameter: 2 inch Job No.: 838.002 Date: 8/23/94 Sampled By: Weather: TOC Elevation: Depth to Casing Bottom (below TOC) 45.00 Feet of Water in Well ______ feet Depth to Groundwater When 80% Recovered _______ feet Casing Volume (feet of water x Casing DIA 2 x 0.0408) Depth Measurement Method Tape & Paste / Electronic Sounder Other Free Product _____ Purge Method BAILER FIELD MEASUREMENTS Conductivity Comments Salinity S% Ηд Temp (°c) (micromhos/cm) Gallons Removed Total Gallons Purged _____ gallons Depth to Groundwater Before Sampling (below TOC) ______ feet Sampling Method BAILER Containers Used liter pint PLATE 2801 MACARTHUR BLVD - OAKLAND, CA

838.002

APPROVED

Subsurface Consultants JUB NUMBER

Subsurface Consultants FIELD REPORT

Sheet__of__

PROJECT: AVA Fund JOB NO: \$38.002 PERSONNEL PRESENT: DA (Sei) DATE: 10/11/94 HOURS - From: 10:30 To: 12:00 From: 1:00 To: 2:30 TOTAL HRS: 3 Travel Time Included EQUIPMENT IN USE: TYPE OF SERVICES PROVIDED: Exploration Field Density Testing Site Meeting Construction Observation Will Sampling Arrived on site at 10:45 g.m. Measured all wells for water levels except MW-6 due to Car parked our well. See Below for levels P-1 33.46 999.60 966.1 P-2 32.32 997.80 965.46 P-3 34.22 1000.00 965.85 M+1 34.12 1000.00 965.85 M-2 34.23 999.60 965.46 M-4 37.07 999.60 965.45 M-4 37.07 999.60 959.46			****	
HOURS - From: 10:30 To: 12:00 From: 1:00 To: 2:30 TOTAL HRS: 3 Travel Time Included EQUIPMENT IN USE: TYPE OF SERVICES PROVIDED: Exploration Field Density Testing Site Meeting Construction Observation While Sampling ARRIVED ON SITE at 10:45 a.m. Measured all wells for water levels except MWG Auc to Car parked our well. See Below for levels Well Water level TOC EVEV WATER P-1 33.46 999.60 965.46 P-2 32.32 999.80 965.46 P-3 32.00 999.10 967.11 M+1 34.12 1000.00 965.3 M+2 34.23 999.60 965.4 M-3 27.36 992.80 965.4 M-4 37.07 949.60. 965.5 M-4 37.07 949.60. 965.5 M-5 33.61 992.90 959.5 M-6 38.20 997.70 959.5 Returned on site at 1:15 pm. to measure Water level in M-6. Took grab sample of M-6.	PROJECT: APA Fund	JOB NO: _	838.002	REPORT NO.
The Third Included EQUIPMENT IN USE: Exploration Field Density Testing Site Meeting Construction Observation Swell Sampling	PERSONNEL PRESENT: D.A (SCI)	DAT	E: <u>10/11/94</u>	_
Site Meeting Construction Observation WWELL SAMPLING ARRIVED ON SITE at 10:45 a.m. Measured all wells for water levels except MW-6 due to Car parked over well. See Below for levels Water level TOC EVEV WATER P-1 33.46 999.60 966.10 P-2 32.32 997.80 965.46 P-3 32.00 999.10 965.80 M+1 34.12 1000.00 965.80 M+2 34.23 999.60 965.80 M-3 27.36 992.80 965.44 M-4 37.07 999.60 965.50 M-5 33.61 992.90 959.50 M-6 38.20 997.70 959.50 Returned on site at 1:15 pm. to measure Water level in M-6. Took grab sample of M-6.	Travel Time Included	From: <u>/:00</u> To: <u>2:</u>	30 TOTAL HRS:	:_3
### ARRIVED ON SITE at 10:45 a.m. Measured all wells for water levels except MW6	TYPE OF SERVICES PROVIDED:	☐ Exploration	☐ Field Densi	ity Testing
Measured all wells for water levels except MW-6 due to car parked over well. See Below for levels Well # Water level TOC EVEV WATER P-1 33.46 999.60 965.46 P-2 32.32 997.80 965.46 P-3 32.00 999.10 965.80 M+1 34.12 1000.00 965.80 M+2 34.23 999.60 965.80 M-3 27.36 992.80 965.44 M-4 37.07 999.60. 967.5 M-5 33.61 992.90 959.5 M-6 38.20 997.70 959.5 Returned on site at 1:15 pm. to measure Water level in M-6 Took grab sample of M-6.	Site Meeting Constru	ction Observation	Www sa	MPLING-
due to car parted over well. See Below For levels well # water level toc ELEV WATER P-1 33.46 999.60 966.1 P-2 32.32 997.80 965.46 P-3 32.00 999.10 967.10 M+1 34.12 1000.00 965.80 M+2 34.23 999.60 965.35 M-3 27.36 992.80 965.4 M-4 37.07 999.60 967.5 M-5 33.61 992.90 959.5 M-6 38.20 997.70 959.5 Returned on site at 1:15pm. To measure water level in M-6. Took grab sample of M-6.	Arrived	on site at 10:45	5 q.m.	
Well # Water level TOC ELEV WATER P-1 33.46 999.60 966.1 P-2 32.32 997.80 965.4 P-3 32.00 999.10 965.85 M+1 34.12 1000.00 965.85 M+2 34.23 999.60 965.35 M-3 27.36 992.80 965.4 M-4 37.07 999.60. 967.5 M-5 33.61 992.90 959.5 M-6 38.20 997.70 959.5 Returned on site at 1:15 pm. to measure Water level in M-6. Took grab sample of M-6.	Measured all	wells for water	levels except	- MW-6
P-1 33.46 999.60 966.1 P-2 32.32 997.80 965.46 P-3 32.00 999.10 967.10 M+1 34.12 1000.00 965.80 M+2 34.23 999.60 965.35 M-3 27.36 992.80 965.44 M-4 37.07 999.60. 962.5 M-6 33.61 992.90 959. Returned on site at 1:15 pm. to measure Water level in M-6 Took grab sample of M-6.	due to car parke	d over well. See	Below Foz H	evels_
P-2 32.32 997.80 965.46 P-3 32.00 999.10 967.10 M+1 34.12 1000.00 965.87 M+2 34.23 999.60 965.35 M-3 27.36 992.80 965.44 M-4 37.07 999.60. 967.5 M-5 33.61 992.90 959.5 M-6 38.20 997.70 959.5 Returned on site at 1:15 pm. to measure Water level in M-6. Took grab sample of M-6.	well #	Water level	TOC ELEV	WATEL
P-3 32.00 999.10 967.19 M+1 34.12 1000.00 965.88 M+2 34.23 999.60 965.35 M-3 27.36 992.80 965.44 M-4 37.07 999.60. 967.5 M-5 33.61 992.90 959. M-6 38.20 997.70 959. Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	P-1	33.46	999.60	966,14
M+1 34.12 N000.00 965.88 M+2 34.23 999.60 965.3 M-3 27.36 992.80 965.4 M-4 37.07 999.60 967.5 M-5 33.61 992.90 959. Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	P-2	<i>32</i> .32	997,80	965.48
M+2 34.23 999.60: 965.3 M-3 27.36 992.80 965.4 M-4 37.07 999.60. 967.5 M-5 33.61 992.90 959. Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	P-3	32.00	999.10	967.10
M+2 34.23 999.60: 965.3 M-3 27.36 992.80 965.4 M-4 37.07 999.60. 967.5 M-5 33.61 992.90 959. Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	M+1	34.12	1000.00	965.88
M-4 37.07 999.60. 967.5 M-5 33.61 992.90 959.5 M-6 38.20 997.70 959.5 Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	M+2	34.23	999.60	965,37
M-5 M-6 Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	M-3	27. 36	992.80	965.44
M-6 Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	M-4	37.07	999.60.	962.53
Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	M-5	33.61	992.90	959.79
Returned on site at 1:15 pm. to measure water level in M-6. Took grab sample of M-6.	M-6	38.20	997.70	959.50
water level in M-6. Took grab sample of M-6.	Returned a	on site at 1:15 p.	m. to measua	ee
· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·
- TORGET PTG WAY. THENDER, S GUITONS WELL HEND UPOL.			•	
15+ 2 gallons were clear with remaining 3 murky. Water				
had slight gas odor. Water level was 46.36 @ 1:45 pm.				,
and had Risen to 45.74' @ 2:00 p.m. left site at 2:10 p.m.				
to take sample to lab.				
Prepared by: Reviewed by: APAOR MY.	·	·	>	. Proson.



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Subsurface Consultants 171 12th Street Suite 201 Oakland, CA 94608

Date: 11-AUG-94 Lab Job Number: 116635 Project ID: 838.002 Location: A.P.A. Fund

Reviewed by: Tues K Morris

Reviewed by: Many Alexa

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Berkeley Los Angeles



CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 838.002 LOCATION: A.P.A. FUND DATE SAMPLED: 07/26/94
DATE RECEIVED: 08/01/94
DATE ANALYZED: 08/02/94
DATE REPORTED: 08/11/94

Total Volatile Hydrocarbons with BTXE in Soils & Wastes TVH by California DOHS Method/LUFT Manual October 1989 BTXE by EPA 5030/8020

LAB ID	SAMPLE	ID	TVH AS GASOLINE (mg/Kg)	BENZENE	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
116635-001	M-5 @ 2	29′	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
METHOD BLAN	ĸ		ND(1)	ND(5)	ND(5)	ND(5)	ND(5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %
RECOVERY, %

114



CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 838.002 LOCATION: A.P.A. FUND DATE SAMPLED: 07/28/94
DATE RECEIVED: 08/01/94
DATE ANALYZED: 08/08/94
DATE REPORTED: 08/11/94

Total Volatile Hydrocarbons with BTXE in Soils & Wastes TVH by California DOHS Method/LUFT Manual October 1989 BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
116635-002 116635-003	M-6 @ 36.5' M-6 @ 39.5'	330 · 300	ND(70) 660*	1100 780*	2700 4000	3000 5800
METHOD BLAN	K	ND(5)	ND(30)	ND(30)	ND(30)	ND(30)

- * Presence of this compound confirmed by second column; however, the confirmation concentration differed from the reported result by more than a factor of two.
- ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY	
RPD, %	<1
RECOVERY, %	109
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JOB NUMBER:																												•	-										
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SAMPLED BY:	John W	الـا د	کد						—	—	R	EQL	JES	TE	DΒ	Y:	_	<u> </u>	يا.	ب	<u>a</u>	ta	d	2		-			-	111									
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116635-1	M-5@29'		X				土				X		1				X		0	7	a	6	9	4						X					\Box	\Box	\Box		
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2323 Fifth Street, Berkeley, CA 9471O, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Subsurface Consultants 171 12th Street Suite 201 Oakland, CA 94608

Date: 14-SEP-94
Lab Job Number: 117039
Project ID: 838.001

Location: A.P.A. Fund

Reviewed by:

Reviewed by

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Berkeley Los Angeles



CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 838.001 LOCATION: A.P.A. FUND DATE SAMPLED: 08/23/94
DATE RECEIVED: 08/23/94
DATE ANALYZED: 09/04/94
DATE REPORTED: 09/14/94
DATE REVISED: 09/15/94

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions TVH by California DOHS Method/LUFT Manual October 1989 BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
117039-1 117039-2 117039-4	P-2 M-2 M-4	70,000 21,000 19,000	3,800 1,600 5,800	8,700 540 200	1,500 520 460	9,900 1,100 630
117039-METH	OD BLANK	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.



CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 838.001 LOCATION: A.P.A. FUND DATE SAMPLED: 08/23/94
DATE RECEIVED: 08/23/94
DATE ANALYZED: 08/31/94
DATE REPORTED: 09/14/94

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE	ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
117039-3 117039-5	M-3 M-5		ND(50) ND(50)	ND(0.5) ND(0.5)	ND(0.5) ND(0.5)	ND(0.5) ND(0.5)	ND(0.5) ND(0.5)
117039-METH	OD BLANK	ζ	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

CHAIN OF CUSTODY FORM PAGE PROJECT NAME: APA Fund OF ANALYSIS REQUESTED JOB NUMBER: 738.001 LAB: Curtis + Tompkins PROJECT CONTACT: Marianne Wotada TURNAROUND: normal RAMPLED BY: _____ REQUESTED BY: M. Watada MATRIX METHOD CONTAINERS PRESERVED SCI LABORATORY SAMPLING DATE SAMPLE I.D. NUMBER WATER SOIL NUMBER WAST PINT TABE HNO3 区元 MONTH DAY YEAR TIME P-2 082394 M-2 M-3 3333 M-4 CHAIN OF CUSTODY RECORD COMMENTS & NOTES: ELEASED DY: (Signaturo) RECEIVED BY: (Signaturo) DATE / TIME 8/23/44 4:15 ELEASED BY; (Signature) DATE / TIME MECEIVED BY: (Signature) DATE / TIME ELEASED BY: (Signature) DATE / TIME RECEIVED BY: (Signature) DATE / TILE Subsurface Consultants, Inc. LEASED BY: (Signature) DATE / TIME RECEIVED BY: (Signature) DATE / TIME 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607 (510) 268-0461 • FAX: 510-268-0137



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Subsurface Consultants 171 12th Street Suite 201 Oakland, CA 94608

Date: 04-NOV-94 Lab Job Number: 117927 Project ID: 838.002

Location: A.P.A. Fund

Reviewed by: Tuesa K. Morris

Reviewed by: Guddhei C. Shila

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Irvine Berkeley



CLIENT: SUBSURFACE CONSULTANTS, INC.

PROJECT ID: 838.002 LOCATION: A.P.A FUND DATE SAMPLED: 10/11/94
DATE RECEIVED: 10/11/94
DATE ANALYZED: 10/19/94
DATE REPORTED: 11/04/94

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions TVH by California DOHS Method/LUFT Manual October 1989 BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
		(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
117927-1	MW-6	3600	340	27	65	240
	METHOD BLANK	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	92

117927 HAIN OF CUSTODY FORM **PAGE** OF ANALYSIS REQUESTED APA Fund ROJECT NAME: _ 838.002 ____ LAB: ____ Cuetis + Tompkins OB NUMBER: ____ ROJECT CONTACT: Malianne ubtada NoRmal TURNAROUND: ____ _____ REQUESTED BY: Maliagne Watada AMPLED BY: Dennis Alexander METHOD MATRIX CONTAINERS PRESERVED SAMPLING DATE SCI LABORATORY SAMPLE SOIL WASTE AIR I.D. NUMBER NOTES NUMBER VOA LITER AVE HIMOW NO REPORT TO SECTION OF THE SECTION OF TH YEAR TIME MW-6 94 3 COMMENTS & NOTES: **CHAIN OF CUSTODY RECORD** DATE / TIME RELEASED BY: (Signature) RECEIVED BY: (Signature) DATE / TIME RELEASED BY: (Signature) DATE / TIME RECEIVED BY: (Signature) DATE / TIME RELEASED BY: (Signature) DATE / TIME DATE / TIME RECEIVED BY: (Signature) Subsurface Consultants, Inc. RECEIVED BY: (Signature) RELEASED BY: (Signature) DATE / TIME DATE / TIME 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607 Trum k Morns 1911/24 215 (510) 268-0461 • FAX: 510-268-0137