

ALAMEDA COUNTY  
HEALTH CARE SERVICES

AGENCY  
DAVID J. KEARS, Agency Director



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

August 12, 1997  
StID # 35

REMEDIAL ACTION COMPLETION CERTIFICATION

Mr. Albert Yuen c/o  
Yuen's Exxon Service  
1901 Park Blvd.  
Oakland CA 94606

**RE: Yuen's Exxon Service, 1901 Park Blvd., Oakland CA 94606**

Dear Mr. Yuen:


This letter confirms the completion of site investigation and remedial action for the 6,000 gallon gasoline, 8,000 gallon gasoline, 10,000 gallon gasoline and 550 gallon waste oil tanks at the above described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground tank is greatly appreciated.

Based upon the available information and with provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank releases is required.

This notice is issued pursuant to a regulation contained in Title 23, Division 3, Chapter 16, Section 2721 (e) of the California Code of Regulations.

Please contact Barney Chan at (510) 567-6765 if you have any questions regarding this matter.

Sincerely,

  
Mee Ling Tung  
Director, Environmental Health

c: B. Chan, Hazardous Materials Division-files  
Kevin Graves, RWQCB  
Mr. Dave Deaner, SWRCB Cleanup Fund  
Mr. Leroy Griffin, City of Oakland OES, 505 14th St., Suite  
702, Oakland CA 94612

RACC1901

ENVIRONMENTAL PROTECTION

Tank Protect  
John  
1-800-523-8088  
429-8088

CASE CLOSURE SUMMARY  
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

Date: January 7, 1997

Agency name: Alameda County-HazMat Address: 1131 Harbor Bay Pkwy  
City/State/Zip: Alameda, CA 94502 Phone: (510) 567-6700  
Responsible staff person: D. Klettke Title: Hazardous Materials Spec.

II. CASE INFORMATION

Site facility name: Yuen's Exxon Service  
Site facility address: 1901 Park Blvd., Oakland, CA 94606  
RB LUSTIS Case No: N/A Local Case No./LOP Case No.: 35  
URF filing date: 1/10/90 SWEEPS No: N/A

Responsible Parties: Addresses: Phone Numbers:  
Albert & Grace Yuen (510)893-4204  
c/o Yuen's Exxon Service, 1901 Park Blvd., Oakland, CA 94606

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	6,000	gasoline	removed	12/08/89
2	10,000	gasoline	removed	12/13/89
3	8,000	gasoline	removed	12/08/89
4	500	waste oil	removed	10/03/94

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: unknown  
Site characterization complete? Yes  
Date approved by oversight agency: approximately May 1990  
Monitoring Wells installed? Yes Number: three (3)  
Proper screened interval? Yes, wells MW-2 & MW-3 screened 3 to 20 feet bgs; unknown, well MW-1 screened 7 to 22 feet bgs  
Highest GW depth below ground surface: 1.66' (MW-1 on 10/30/95)  
Lowest depth: 4.92' (MW-1 on 7/29/94)  
Flow direction: predominantly west to west-southwest  
Most sensitive current use: commercial  
Are drinking water wells affected? Unknown Aquifer name: N/A  
Is surface water affected? NO Nearest affected SW name: N/A  
Off-site beneficial use impacts (addresses/locations): N/A  
Report(s) on file? YES Where is report(s) filed? Alameda County  
1131 Harbor Bay Pkwy  
Alameda, CA 94502

**Treatment and Disposal of Affected Material:**

<u>Material</u>	<u>Amount</u> (include units)	<u>Action (Treatment</u> <u>or Disposal w/destination)</u>	<u>Date</u>
Tank #1	6,000 gallon	disposal/Erickson, Richmond, CA	12/08/89
Tank #2	10,000 gallon	disposal/Erickson, Richmond, CA	12/13/89
Tank #3	8,000 gallon	disposal/Erickson, Richmond, CA	12/08/89
Tank #4 & piping	500 gallon	disposal/H & H Environmental South San Francisco, CA	10/03/94
Soil	270 tons	treatment/unknown destination	
Soil	25.3 tons	disposal/Vasco Road Landfill Livermore, CA	11/13/95
Contents*	2,300 gallon	disposal/ H & H Environmental Service San Francisco, CA	12/20/89

\*Tank contents consisted of gasoline and rinse water.

**Maximum Documented Contaminant Concentrations - - Before and After Cleanup**

Contaminant	Soil (ppm)		Water (ppb)	
	Before <sup>1</sup>	After <sup>2</sup>	Before <sup>3</sup>	After
TPH (Gas)	16,000	11,000	680	81
TPH (Diesel)	<1	NA	44,000	67
TOG (total oil & grease)	<50	NA	<5.0	NA
Benzene	30	190	490	2.2
Toluene	680	950	12	<0.5
Ethyl benzene	290	280	2.7	<0.5
Xylenes	1400	1200	50	<1.5
Heavy metals <sup>4</sup>				
SVOCs <sup>5</sup>				
Other-MTBE	NA	NA	NA	<5.0

NA=Not Analyzed

<sup>1</sup>Before TPHg and BTEX results were detected in soil sample W-2-N, collected at a depth of approximately 11' below ground surface (bgs), from the gasoline UST excavation. TPHd results were detected in verification soil sample S-1, collected at a depth of approximately 5' bgs, after overexcavation of the waste oil UST pit.

<sup>2</sup>After results were detected in hand augered soil sample B-1 collected at a depth of approximately 3.5-4.0' bgs, from the vicinity of the pump islands. Although over-excavation of the gasoline UST pit resulted in the removal of approximately 270 tons of contaminated soil, no verification soil samples were collected from the final limits of the over-excavation.

<sup>3</sup>Before results were detected in groundwater sample collected from monitoring well MW-3.

<sup>4</sup>The metals chromium, lead, nickel and zinc were detected in soil sample S-1, collected at a depth of five feet bgs from the waste oil excavation, at concentrations of 22.56, 8.98, 32.32 and 37.80 ppm, respectively. Cadmium was not found at the method detection limit of 0.50 ppm.

<sup>5</sup>SVOCs were analyzed by EPA Method 8270. Sample SP-(1-2), which was collected from the stockpiled soil associated with removal of the waste oil UST, detected 1,2-dichlorobenzene, naphthalene, 2-methyl naphthalene, phenanthrene, fluoranthene and pyrene at concentrations of 617, 522, 589, 921, 742, and 583 ppb, respectively. All SVOC results were non-detectable for sample S-1, collected from beneath the waste oil UST. In addition, SVOC analyses were non-detectable for groundwater samples collected from wells MW-1, MW-2 and MW-3 for the 2/26/96 sampling event.

**Comments (Depth of Remediation, etc.):**

On December 8, 1989, Tank Protect Engineering (TPE) removed one 6000-gallon and one 8000-gallon gasoline underground storage tanks (USTs) from the site (See Figures 1 and 2). On December 13, 1995 one 10,000-gallon gasoline UST was removed from the subject site. All three USTs were located in a common excavation. After all three USTs were removed, five confirmatory soil samples were collected and analyzed for TPHg and the aromatic hydrocarbons benzene, toluene, ethyl benzene and total xylene isomers (BTEX). Soil sampling locations are documented in Figure 2. Analytical results of these five soil samples are found in Table 1 below.

TABLE 1 (values in ppb or ug/kg)

Soil Sample #	TPHg	benzene	toluene	ethyl benzene	total xylenes
W-1-S	610000	<125	610	1600	8700
W-2-S	520000	<1250	<1250	6900	28000
W-3-S	33000	<125	<125	<125	<125
W-3-W	6400	15	21	17	<5
W-2-N	16000000	30000	680000	90000	1400000

During the week of March 19, 1990, TPE overexcavated contaminated soil from the gasoline UST excavation and began on-site remediation. A total of approximately 270 tons of contaminated soil, excavated during initial tank removal and later overexcavation, were remediated (See Figures 3 & 4). After remediation of the excavated soil, chemical analyses revealed 6000 ppb-TPHg, 8.8 ppb-ethyl benzene, 25 ppb-total xylenes from composite sample (Y-S-1 through Y-S-4).

In addition, five soil borings (B-1 through B-5) were collected at depths ranging from 3.0-4.0' below ground surface (bgs). Laboratory analytical results are documented in Table 3.

On October 3, 1994, TPE removed one 500-gallon underground waste oil tank from the site (See Figure 5). Because of obvious soil staining and odors from the excavation and the stockpiled soil, limited over-excavation and verification soil sampling was performed. Horizontal excavation was conducted on all four sidewalls to an extent of approximately 1 to 3 feet, and was stopped upon reaching the pea gravel backfill of the previous excavation. Vertical excavation was conducted to the depth of groundwater.

Approximately 18 cubic yards of contaminated soil was excavated from the sidewalls of the former 500-gallon waste oil UST area. The extent of over excavation was based on field-screening methods that included the detection of apparent soil contamination as evidenced by visible hydrocarbon stains or odors.

Verification soil samples S-1 through S-3, were collected from soil approximately 1 to 2 feet into the native soil. Analytical results of the soil samples collected after removal of the waste oil UST are summarized in Tables 3 and 4.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? **Undetermined**  
 Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? **Undetermined**  
 Does corrective action protect public health for current land use? **YES**  
 Site management requirements: **ACHCSA notification prior to any subsurface work in the vicinity of the former service islands. Health and safety plan must be in place prior to any disturbance of subsurface soils in the area surrounding the former service islands.**  
 Should corrective action be reviewed if land use changes? **Yes**  
 Monitoring wells Decommissioned: **None**  
 Number Decommissioned: **None** Number Retained: **3, pending closure**  
 List enforcement actions taken: **None**  
 List enforcement actions rescinded: **N/A**

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Dale Klettke Title: Haz Materials Specialist  
 Signature: *Dale Klettke* Date: 1/31/97  
 Reviewed by

Name: Barney Chan Title: Haz Materials Specialist  
 Signature: *Barney Chan* Date: 1/15/97

Name: Thomas Peacock Title: LOP Manager  
 Signature: *Thomas Peacock* Date: 1-30-97

VI. RWQCB NOTIFICATION

Date Submitted to RB: 1/31/97 RB Response: *Approved*  
 RWQCB Staff Name: Kevin Graves Title: AWRCE  
 Signature: *Kevin Graves* Date: 3-3-97

VII. ADDITIONAL COMMENTS, DATA, ETC.

During May 23 and 24, 1990, three (3) monitoring wells were installed at the locations in Figure 3 to further investigate the horizontal and vertical extent of soil contamination. Well MW-1 was located in the farthest estimated up gradient direction from the former underground gasoline tank excavation to establish background soil and groundwater chemical levels. Well MW-2 was located within 10 feet and in the estimated down gradient direction of the excavation. Well MW-3 was located in the estimated down gradient direction from an in-place waste oil tank.

Historical groundwater sampling data is summarized in Table 5. The boring logs and the well construction details for all three wells are found at the end of this summary.

Case closure is warranted for this site as a "Low-Risk Groundwater Case" for the following reasons:

- a) The source has been sufficiently removed or has been remediated.

*Although no verification soil sampling was performed during the over-excavation of the gasoline UST pit, soils were screened for volatile petroleum hydrocarbons using a portable organic vapor detector (GasTech). A total of approximately 270 tons of soil were removed from the gasoline UST excavation and approximately 19 tons of contaminated soil from the waste oil UST excavation.*

- b) The site has been adequately characterized.

*Laboratory analysis of soil and groundwater samples collected during site investigations document that the previous release is somewhat small in extent and appears to be limited to soils remaining in place surrounding monitoring well MW-3 and the service island boring samples B-1, B-3 and B-4.*

- c) The dissolved hydrocarbon plume appears to be stable and is not migrating.

*TPHg and BTEX were initially detected in groundwater samples collected from monitoring wells MW-3, located near the former waste oil UST service islands, in June 1990. It appears that groundwater sampling was not performed again until April 1994. Once groundwater sampling events resumed again in 1994, maximum concentrations of TPHd, TPHg and BTEX detected in wells MW-1 through MW-3 are 170, <50, 16, <0.5, 0.9 and <1.5 ug/L (ppb), respectively.*

- d) No water walls, deeper drinking water wells, surface water or other sensitive receptors are likely to be impacted.

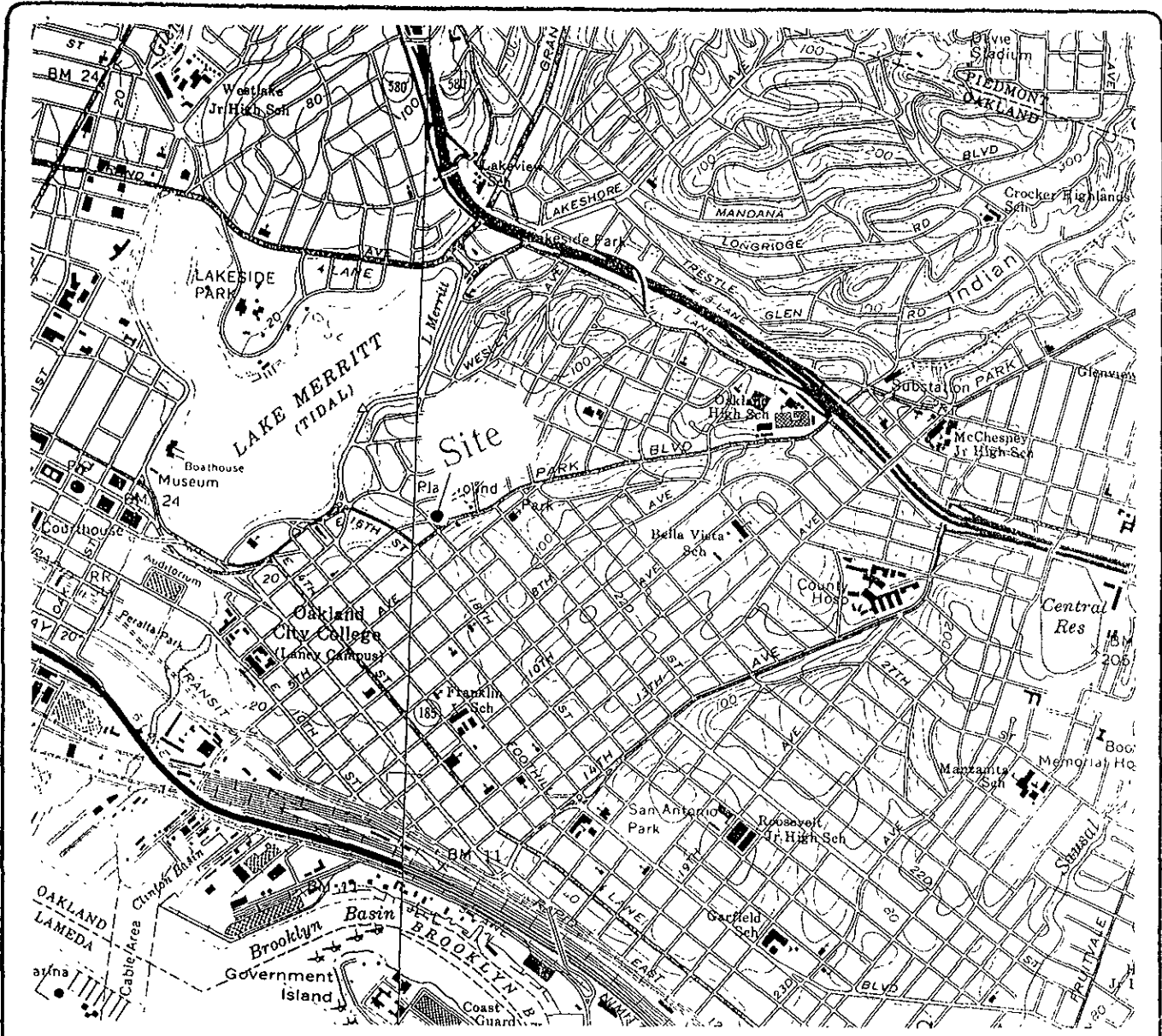
*The petroleum hydrocarbon groundwater contamination appears to have been significantly attenuated since the initial groundwater sampling event (June 1990). The concentrations historically detected in wells MW-2 and MW-3 should not impact the quality of groundwater down gradient of the site.*

- e) The site presents no significant risk to human health or the environment.

*Benzene concentrations in soil samples B-1, B-3 and B-4, collected upgradient of the service island excavations, and verification soil samples S-1, S-2 and S-3, collected from the waste oil excavation, are in exceedance of the ASTM RBCA CA-modified Tier 1 RSBL value (0.049 ppm) for a commercial/industrial receptor scenario for a target level of 1E-05 (1 in 100,000 excess cancer risk) for the exposure pathway "Soil-Vapor Intrusion from Soil to Buildings". In addition, benzene concentrations in soil sample S-2 exceed the Tier 1 RSBL for a*

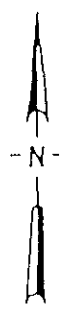
commercial/industrial receptor for a target level of  $1E-04$  (1 in 10,000 excess cancer risk) for the exposure pathway "Soil-Volatilization to Outdoor Air". However, since the area is currently capped (asphalt paved), the risk of exposure due to soil volatilization to indoor/outdoor air is substantially reduced.

In addition, since April 1994, maximum benzene concentrations detected in groundwater samples collected from the three (3) on-site monitoring wells was 16 ppb (MW-2 on 7/29/94). Although benzene has been detected at levels above MCLs, Tier 1 RSBLs are not exceeded for a commercial/industrial receptor, at a target level of  $1E-06$  (1 in 1,000,000 excess cancer risk), for the exposure pathway "Groundwater-Vapor Intrusion from Groundwater to Buildings". In addition, the shallow groundwater aquifer is not a preferred source of drinking water.



LEGEND

REFERENCE: USGS 7.5 MINUTE  
 SERIES QUADRANGLE MAPS OAKLAND  
 EAST AND WEST, CALIFORNIA,  
 PHOTO REVISED 1980



SITE VICINITY MAP  
 YUEN'S AUTOMOTIVE  
 1901 PARK BOULEVARD  
 OAKLAND, CALIFORNIA

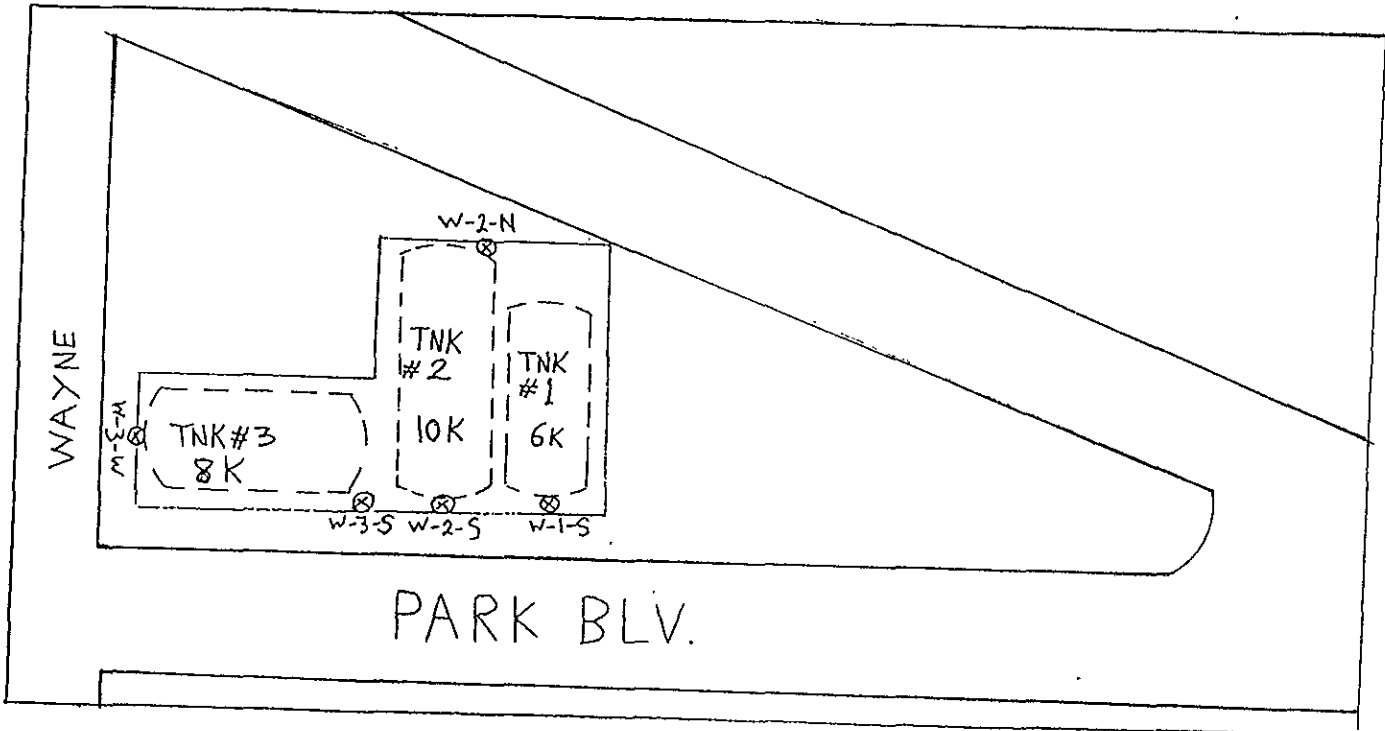
FIGURE  
 1



# SOIL SAMPLING LOCATIONS

Figure 2

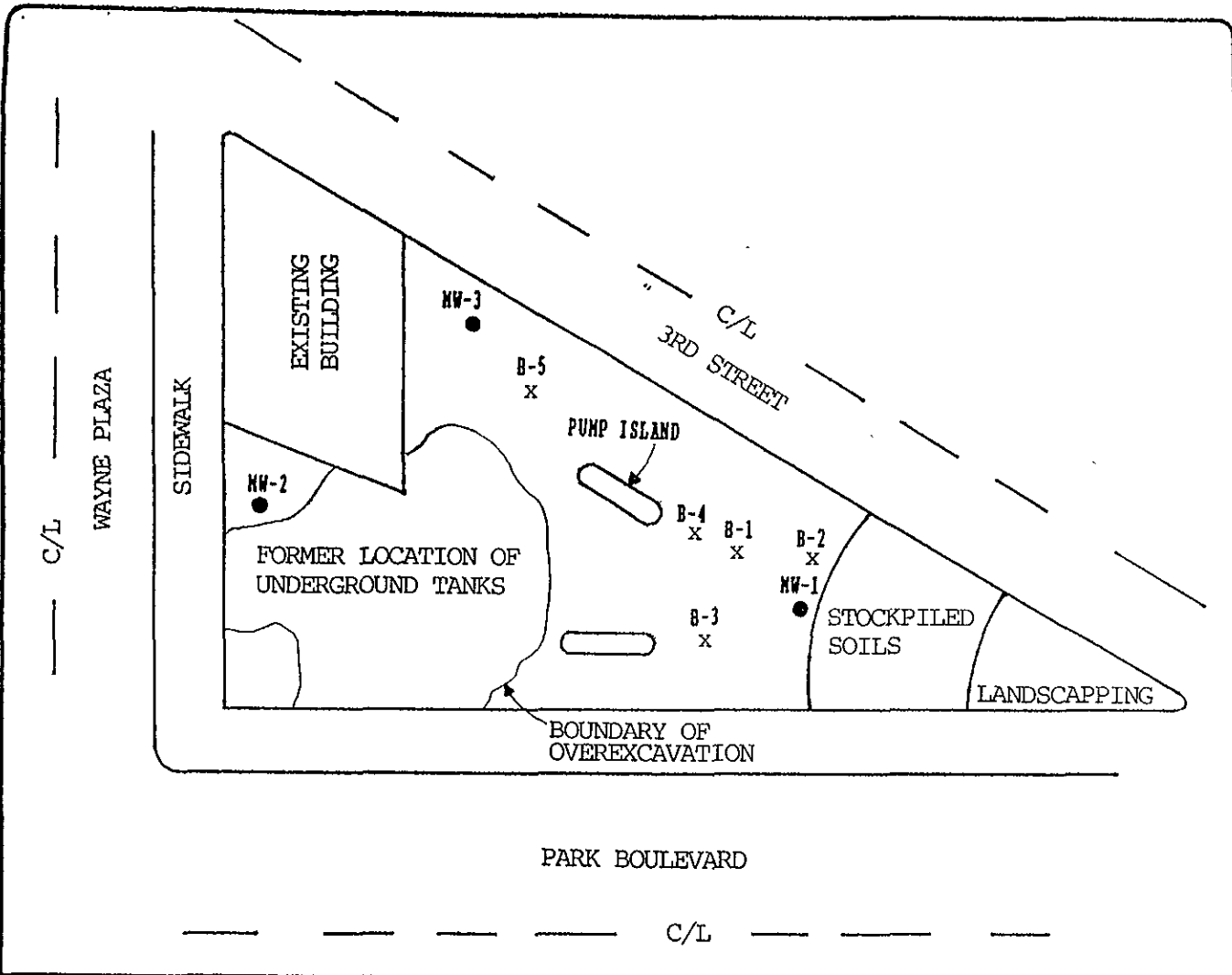
DATE: Dec. 13, 1989



YUEN'S EXXON SERVICES  
 1901 PARK BLV.  
 OAKLAND, CA. 94606

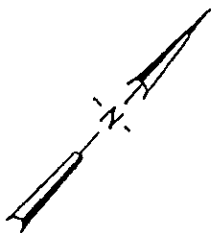
## UST closure soil sampling results (in mg/kg) December 1989

Sample	TPHg	benzene	toluene	ethylbenzene	xylenes
W-1-S	610	<0.125	0.61	1.6	8.7
W-2-S	520	<1.25	<1.25	6.9	28.0
W-3-S	33	<0.125	<0.125	<0.125	<0.125
W-3-W	6.4	0.015	0.021	0.017	<0.005
W-2-N	16,000	30.0	680	290	1400

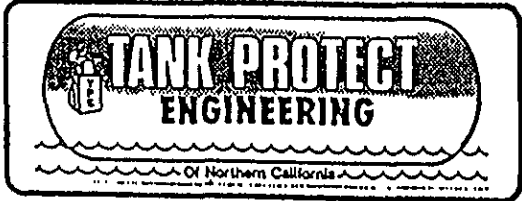


**LEGEND**

- HW-3  
 ●  
 B-5  
 x
- GROUNDWATER MONITORING WELL
- HAND AUGER SAMPLE LOCATION

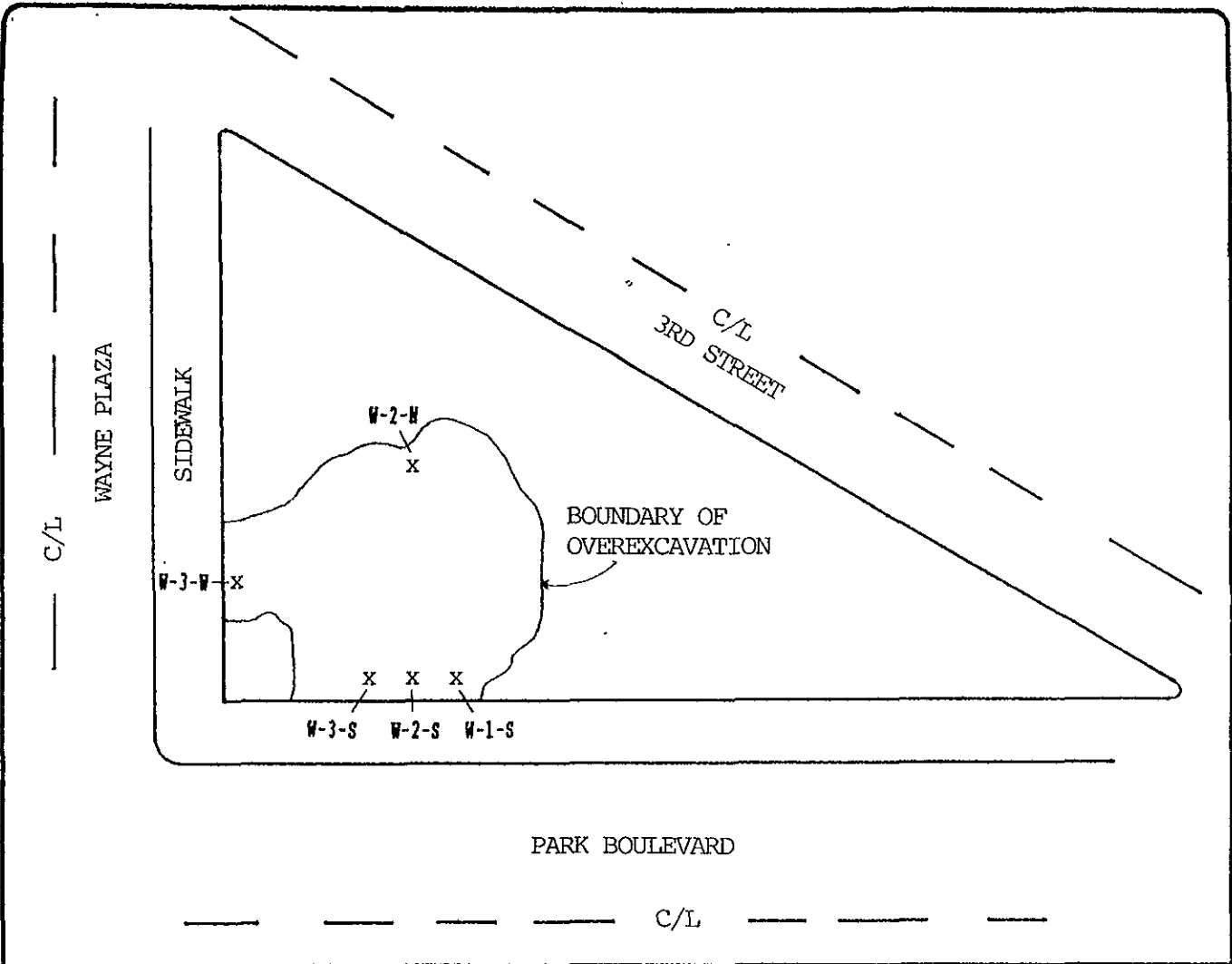


0 30  
SCALE IN FEET



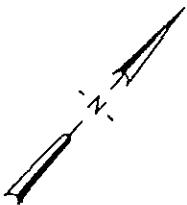
SITE PLAN  
YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CALIFORNIA

FIGURE  
3



LEGEND

x — W-2-W SOIL SAMPLE TAKEN DURING TANK REMOVAL



0 30  
SCALE IN FEET



TANK REMOVAL SOIL SAMPLING LOCATIONS  
YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CALIFORNIA

FIGURE  
4

TABLE 1  
SUMMARY OF SOIL ANALYTICAL RESULTS\*  
(ppm)

Sample Identification	Depth (feet)	TOG	TPHD	TPHG	Benzene	Toluene	Ethyl-Benzene	Xylenes
MW-1	6.0-6.5	NA**	NA	1.4	0.022	<0.0050	<0.0050	0.086
MW-3	6.0-6.5	<30	<1.0	4.9	0.26	0.0092	0.011	0.079
B-1	3.5-4.0	NA	NA	11,000	190	950	280	1,200
B-2	3.0-3.5	NA	NA	2.0	0.33	0.029	0.015	0.11
B-3	3.0-3.5	NA	NA	250	6.4	11	8.1	25
B-4	3.0-3.5	NA	NA	54	3.2	0.46	1.5	2.6
B-5	3.0-3.5	NA	NA	2.2	0.30	<0.0050	0.0056	0.069

\* Chemicals for Halogenated Volatile Organics (EPA 8010) and Aromatic Volatile Organics (EPA 8020) are presented in this Table only if detected. See Appendix A for all data.

\*\* NA = Not analyzed

\*\*\* Detected by EPA Method 5030/8020, 6/5/90, all other BTEX detected by EPA Method 5030/8020, 6/6/90.

TABLE 2  
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS  
(ppb)

Sample Identification	Date Sampled	TOG	TPHD	TPHG	Benzene	Toluene	Ethyl-Benzene	Xylenes
MW-1	6/5/90	NA**	NA	<30	1.3	<0.30	<0.30	<0.30
MW-2	6/5/90	NA	NA	600	1.0	1.2	2.7	4.9
MW-3*	6/5/90	<5.0	44,000	680	490	10	2.2	50
					490***	12***	2.7***	50

\* No Purgeable Halocarbons (EPA Method 601) were detected in well MW-3 (see Appendix A for analytical data).

\*\* Not analyzed

\*\*\* Detected by EPA Method 602, all other Purgeable Aromatics not present above detection limit. All other BTEX detected by EPA Method 5030/8020.

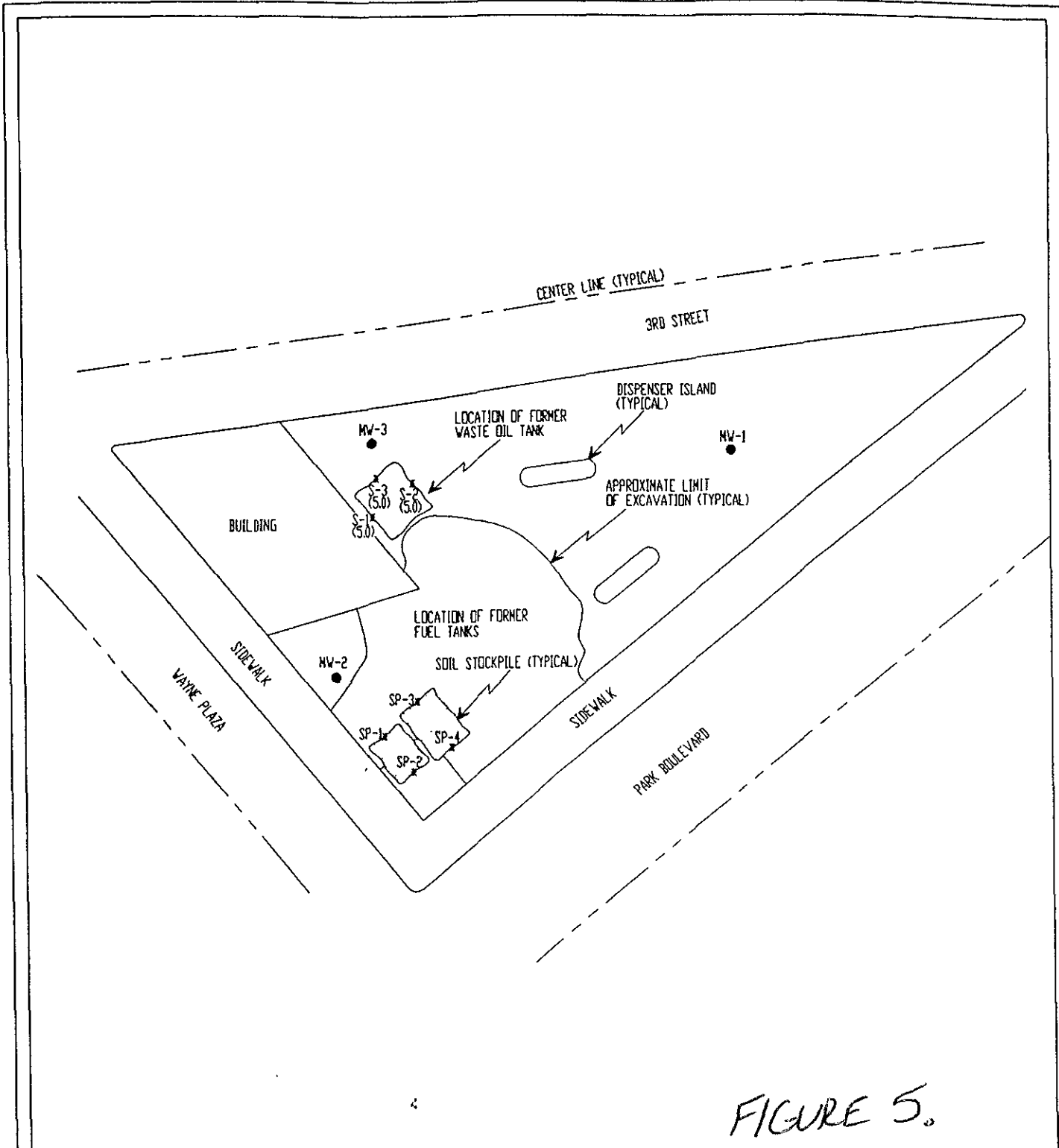


FIGURE 5.

**LEGEND**

MW-1  
● NAME AND LOCATION OF GROUNDWATER MONITORING WELL

SP-1  
\* (5.0) NAME, LOCATION, AND DEPTH OF SOIL SAMPLE

0 30  
SCALE IN FEET

<b>TANK PROTECT ENGINEERING</b>											
<b>SITE PLAN</b>											
YUEN'S AUTOMOTIVE 1901 PARK BOULEVARD OAKLAND, CA 94606	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">DATE</td> <td>12/13/95</td> </tr> <tr> <td>FIGURE</td> <td>1</td> </tr> <tr> <td>FILE #</td> <td>103-5N</td> </tr> <tr> <td>DRAWN BY</td> <td>VK</td> </tr> <tr> <td>CHECKED BY</td> <td>LNH</td> </tr> </table>	DATE	12/13/95	FIGURE	1	FILE #	103-5N	DRAWN BY	VK	CHECKED BY	LNH
DATE	12/13/95										
FIGURE	1										
FILE #	103-5N										
DRAWN BY	VK										
CHECKED BY	LNH										

TABLE 3  
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS  
(ppm<sup>1</sup>)

Sample ID Name	Date	Depth (Feet)	TPHD	TPHG	Benzene	Toluene	Ethyl-benzene	Xylenes	Oil & Grease
SP-(1-2) <sup>2</sup>	10/03/94	---	220	1,470	9.1	32	26	83	450
SP-(3-4)	10/03/94	---	NA <sup>3</sup>	760	<.003	2.1	7.9	33	NA
S-1 <sup>2</sup>	10/03/94	5.0	<1.0	30	.650	.320	<.003	<.003	<50.0
S-2	10/03/94	5.0	NA	9.9	27	250	170	520	NA
S-3	10/03/94	5.0	NA	910	4.3	7.5	<.003	<.003	NA

PARTS PER MILLION

ALSO ANALYZED FOR SEMI-VOLATILE ORGANICS BY EPA METHOD 8270. SAMPLE SP-(1-2) DETECTED 1,2,-DICHLOROBENZENE, NAPHTHALENE, 2-METHYLNAPHTHALENE, PHENANTHRENE, FLUORANTHENE, AND PYRENE AT CONCENTRATIONS OF 617 ppb, 522 ppb, 589 ppb, 921 ppb, 742 ppb, AND 583 ppb, RESPECTIVELY. ALL RESULTS WERE NONDETECTABLE FOR SAMPLE S-1.  
NOT ANALYZED

TABLE 4  
SUMMARY OF SOIL ANALYTICAL RESULTS  
FOR METALS-TTLC  
(ppm<sup>1</sup>)

Sample ID Name	Date	Cadmium	Chromium	Lead	Nickel	Zinc
SP-(1-2)	10/03/94	<0.50	13.60	36.15	21.70	90.80
S-1	10/03/94	<0.50	22.56	8.98	32.32	37.80

<sup>1</sup> PARTS PER MILLION

TABLE 5  
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS  
(ppb<sup>1</sup>)

Sample ID Name	Date	TPHD	TPHG	Methyl t-butyl ether	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Oil & Grease
MW-1	06/05/90	NA <sup>2</sup>	<30	NA	1.3	<0.30	<0.30	<0.30	NA
	04/22/94	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	07/29/94	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	10/21/94	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	01/20/95	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	04/28/95	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	07/31/95	<50	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA
	10/30/95	<50	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA
	02/26/96	<50	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA
MW-2	06/05/90	NA	600	NA	1.0	1.2	2.7	4.9	NA
	04/22/94	170	<50	NA	10	<0.50	0.88	<1.5	NA
	07/29/94	100	<50	NA	16	<0.50	<0.50	<1.5	NA
	10/21/94	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	01/20/95	<50	<50	NA	9.0	<0.50	<0.50	<1.5	NA
	04/28/95	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	07/31/95	58	<50	18	<0.50	<0.50	<0.50	<1.5	NA
	10/30/95	<50	<50	<5.0	4.3	<0.50	<0.50	<1.5	NA
	02/26/96	67	81	<5.0	2.2	<0.50	<0.50	<1.5	NA
MW-3	06/05/90	44,000	680	NA	490	10	2.2	50	<5,000
	04/22/94	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	07/29/94	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	10/21/94	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	01/20/95	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	04/28/95	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	07/31/95	<50	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA
	10/30/95	<50	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA
	02/26/96	<50	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA
MW-4 <sup>3</sup>	06/05/90	NA	NA	NA	NA	NA	NA	NA	NA
	04/22/94	NA	<50	NA	<0.50	<0.50	<0.50	<1.5	NA

TABLE 5 (cont)  
 SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS  
 (ppb<sup>1</sup>)

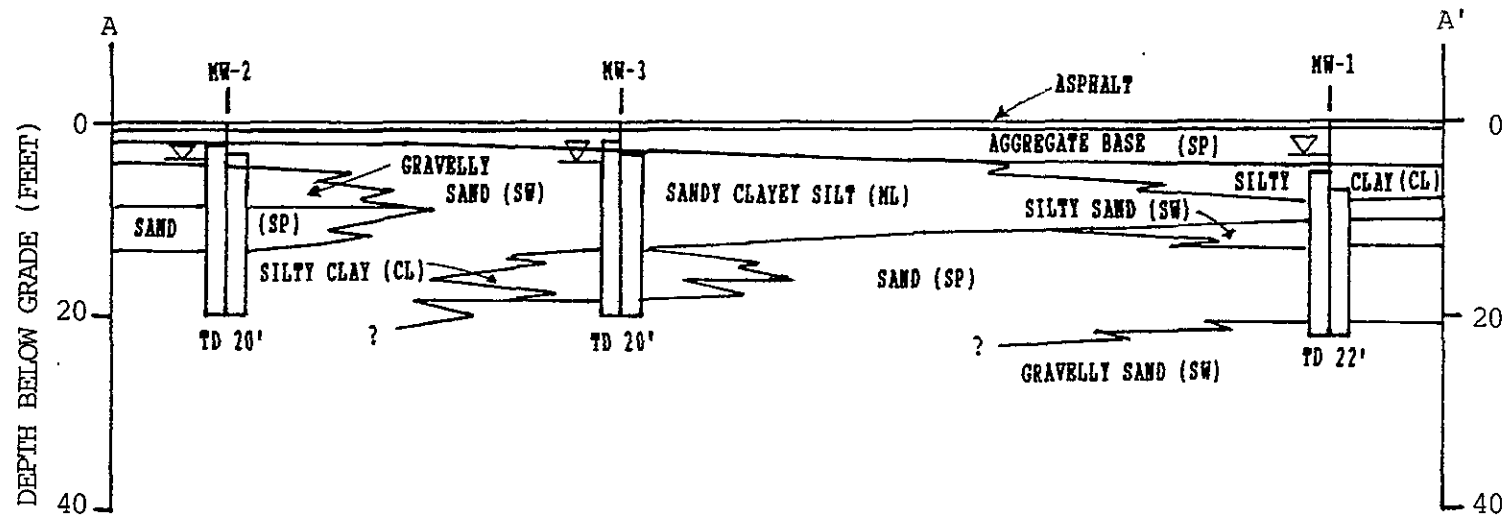
Sample ID Name	Date	TPHD	TPHG	Methyl t-butyl ether	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Oil & Grease
MW-4 <sup>3</sup>	07/29/94	NA	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	10/21/94	NA	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	01/20/95	NA	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	04/28/95	<50	<50	NA	<0.50	<0.50	<0.50	<1.5	NA
	07/31/95	NA	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA
	10/30/95	NA	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA
	02/26/96	NA	<50	<5.0	<0.50	<0.50	<0.50	<1.5	NA

<sup>1</sup> PARTS PER BILLION

<sup>2</sup> NOT ANALYZED

<sup>3</sup> TRIP BLANK

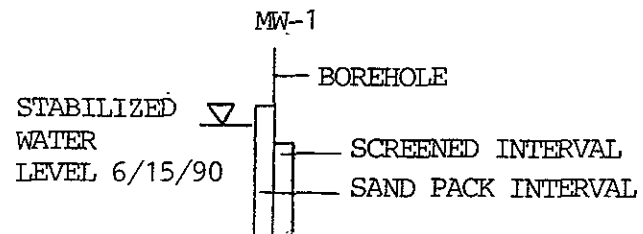




NOTE: NO VERTICAL EXAGGERATION

SEE FIGURE 5 FOR  
LOCATION OF CROSS SECTION

0 20  
SCALE IN FEET

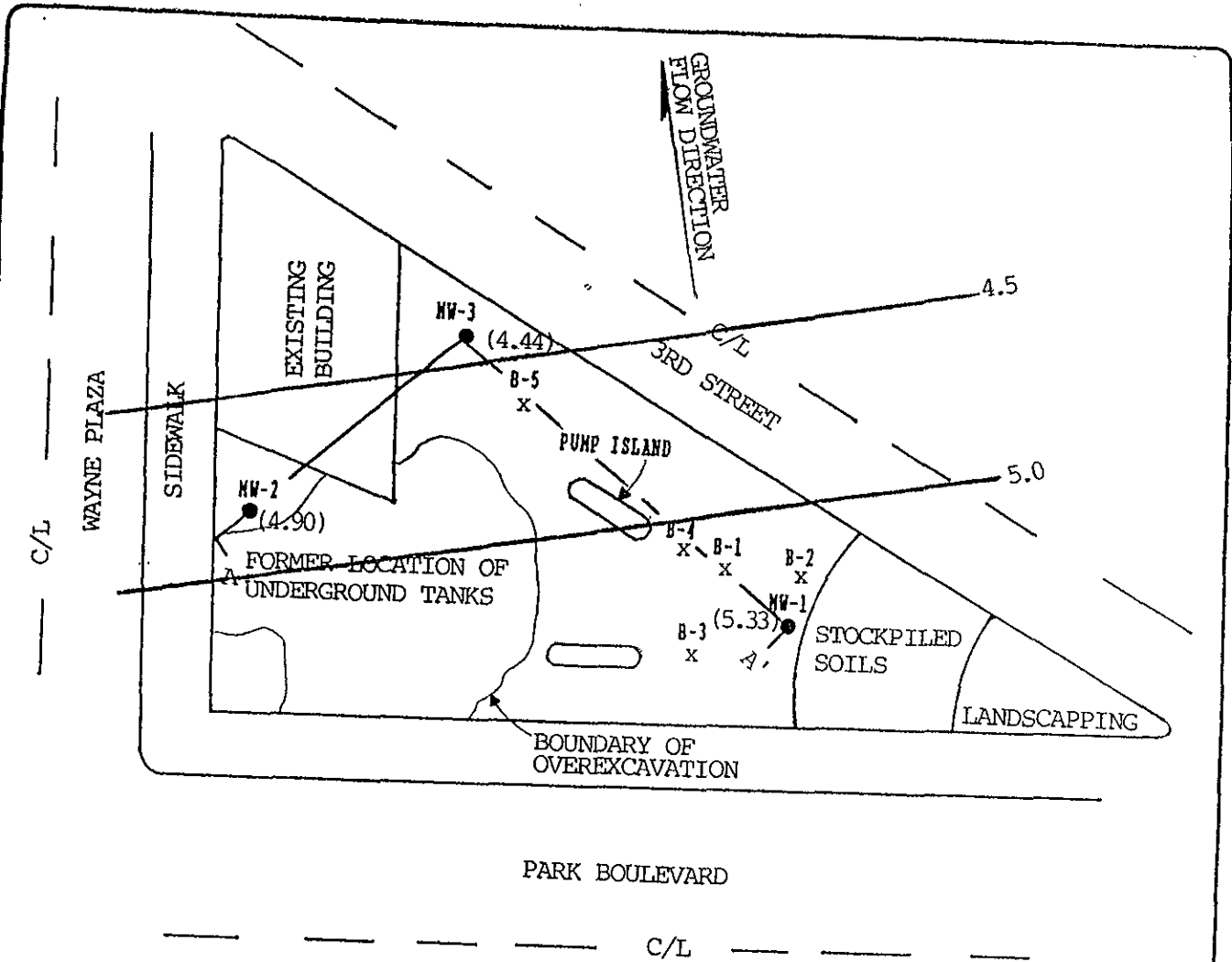


TD 22' - TOTAL DEPTH OF BOREHOLE



GEOLOGIC CROSS SECTION  
YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CALIFORNIA

FIGURE



PARK BOULEVARD

C/L

**LEGEND**

HW-3



GROUNDWATER MONITORING WELL

B-5



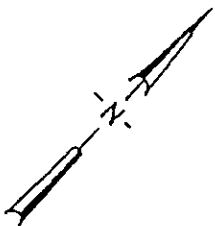
HAND AUGER SAMPLE LOCATION

4.5

POTENTIOMETRIC CONTOUR



CROSS SECTION, SEE FIGURE 4



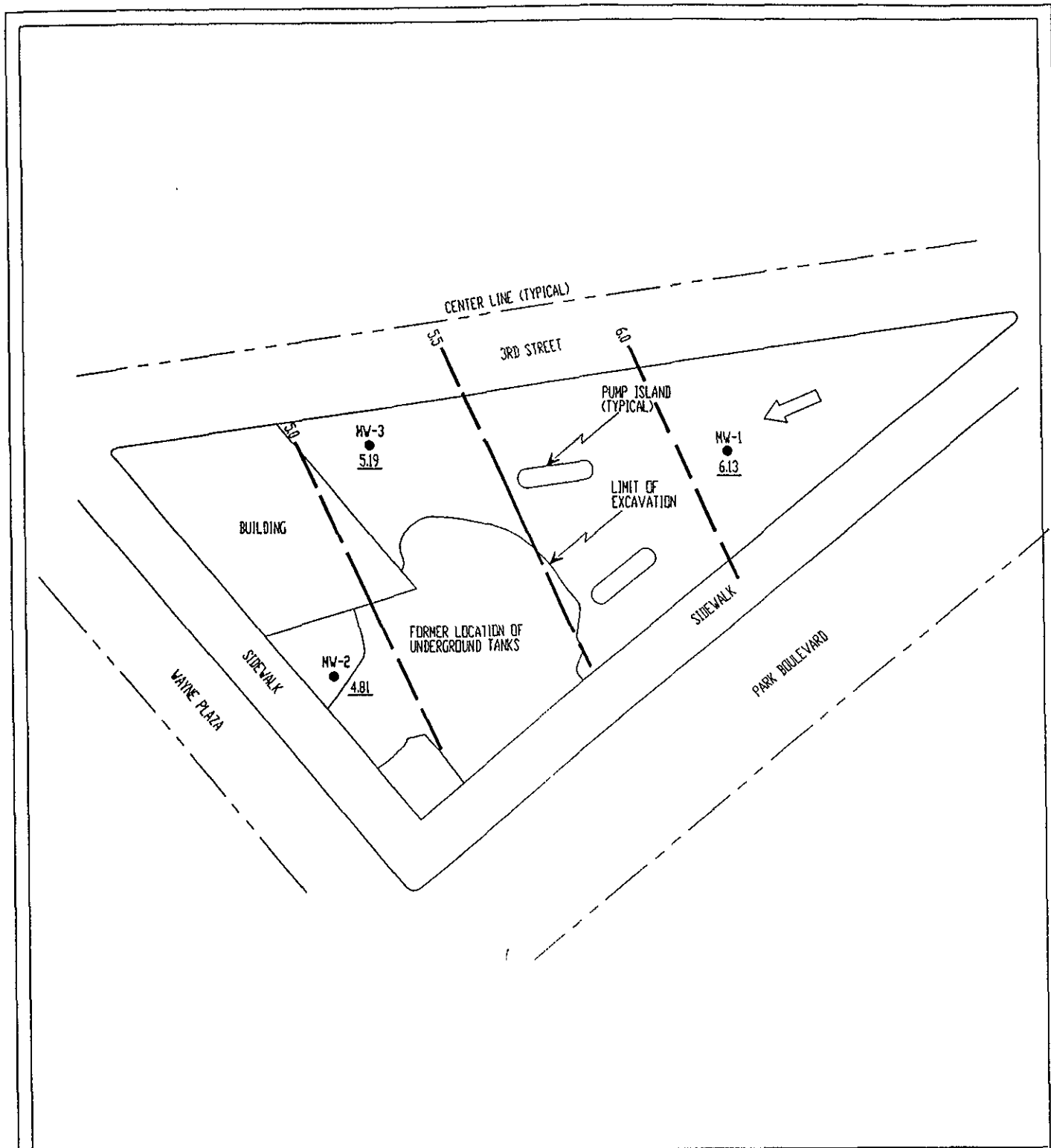
0 30  
SCALE IN FEET

WELLS SAMPLED 6/15/90



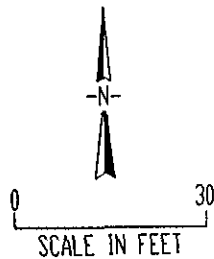
GROUNDWATER GRADIENT  
YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CALIFORNIA

FIGURE



LEGEND

- MW-1 ● NAME AND LOCATION OF GROUNDWATER MONITORING WELL
- 6.13 POTENTIOMETRIC ELEVATION
- 5.5 POTENTIOMETRIC CONTOUR
- ← GROUNDWATER FLOW DIRECTION

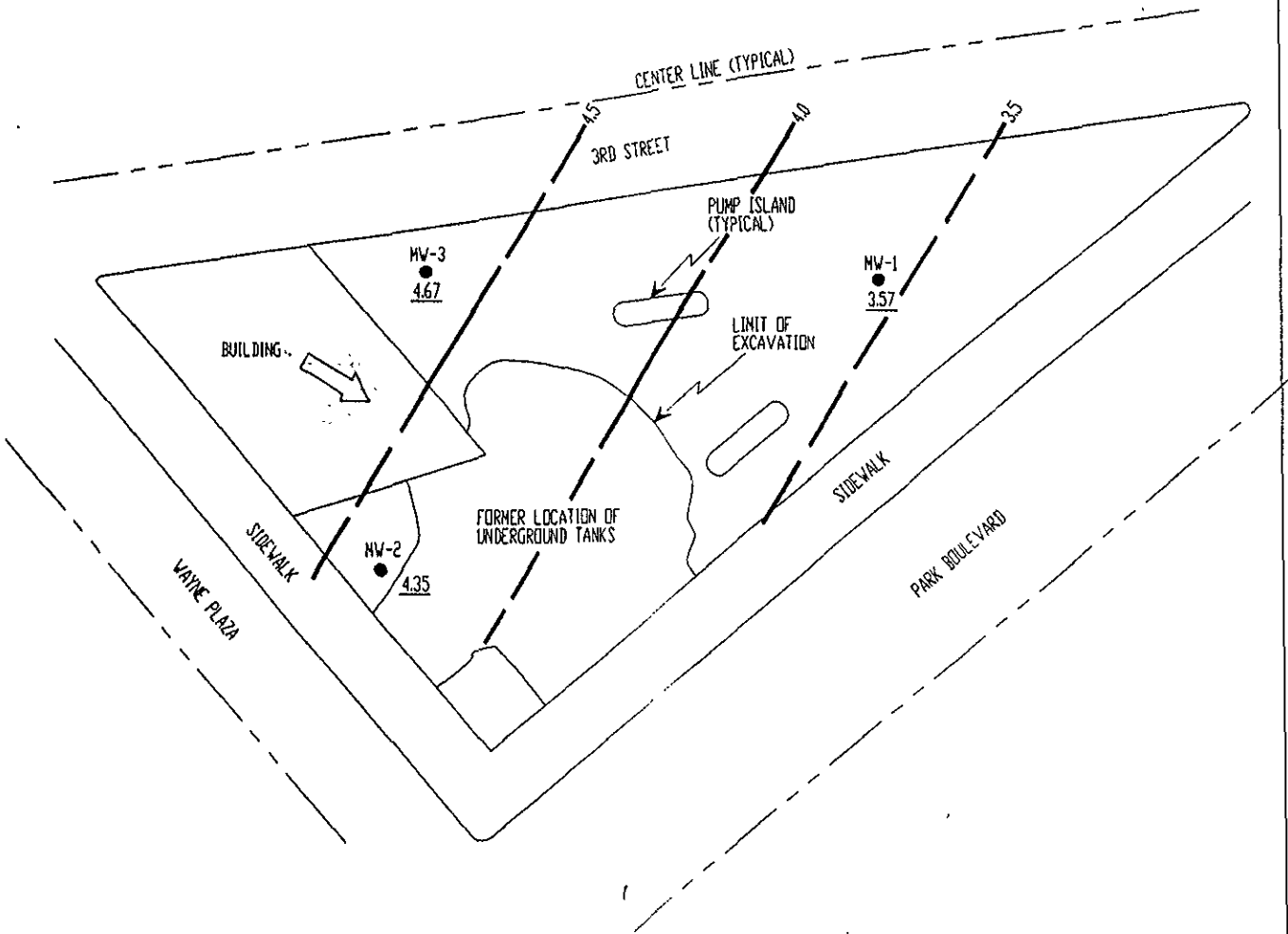


TANK PROTECT ENGINEERING

SITE PLAN:  
GROUNDWATER GRADIENT MAP (4/22/94)

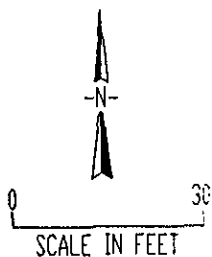
YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CA 94606

DATE	4/26/94
FIGURE	1
FILE #	103-1
DRAWN BY	AK
CHECKED BY	JVM



LEGEND

- MW-1 ● NAME AND LOCATION OF GROUNDWATER MONITORING WELL
- 3.57 POTENTIOMETRIC ELEVATION
- 4.5 - POTENTIOMETRIC CONTOUR
- ← GROUNDWATER FLOW DIRECTION

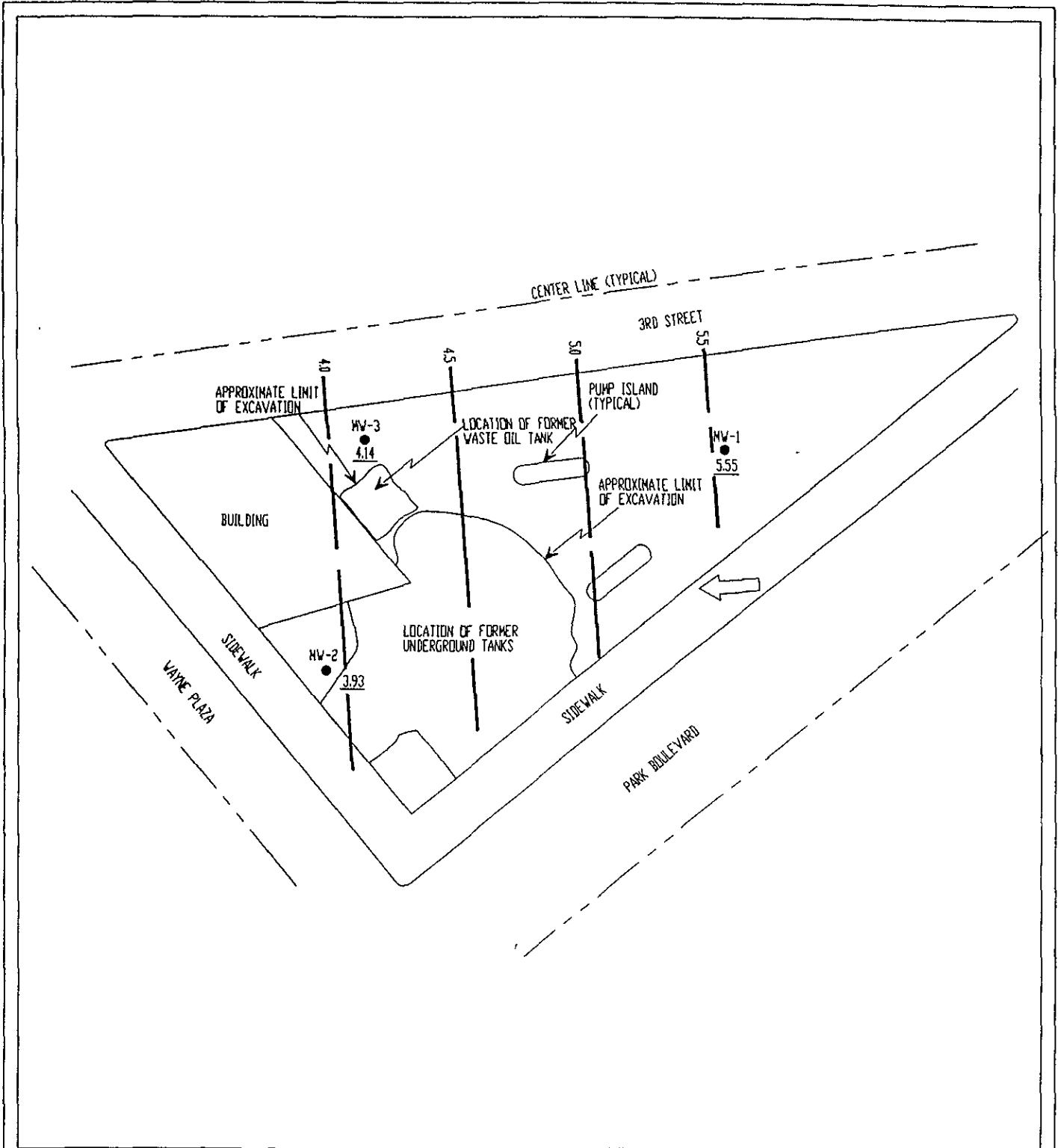


TANK PROTECT ENGINEERING

GROUNDWATER GRADIENT MAP (7/29/94)

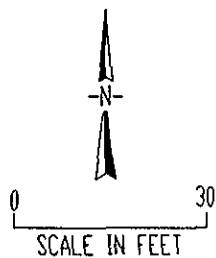
YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CA 94606

DATE	8/1/94
FIGURE	1
FILE #	103-3
DRAWN BY	AK
CHECKED BY	JVM



LEGEND

- MW-1 ● NAME AND LOCATION OF GROUNDWATER MONITORING WELL
- 5.55 POTENTIOMETRIC ELEVATION
- 4.5 POTENTIOMETRIC CONTOUR
- ← GROUNDWATER FLOW DIRECTION



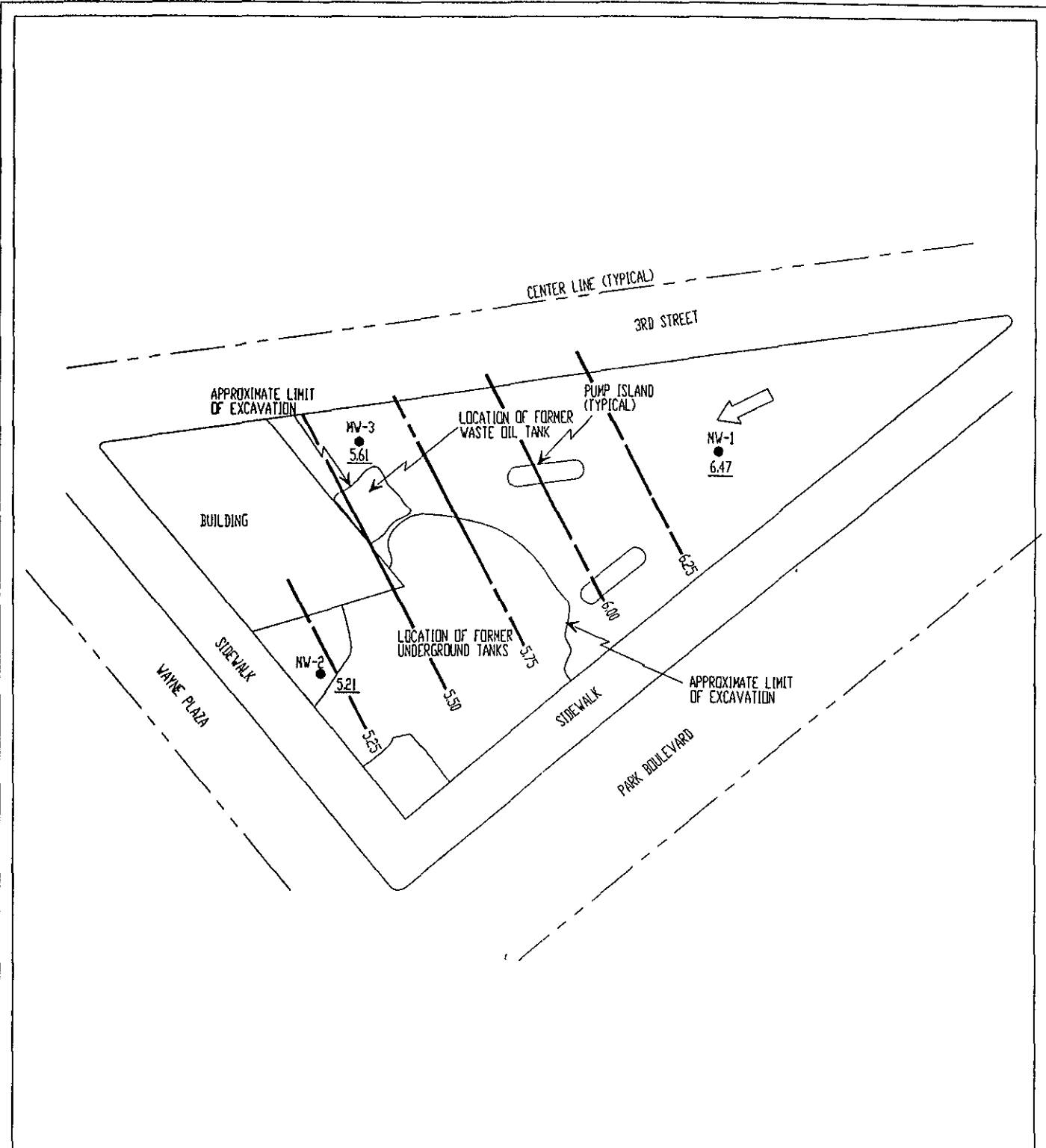
TANK PROTECT ENGINEERING

GROUNDWATER GRADIENT MAP (10/21/94)

YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CA 94606

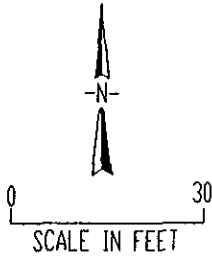
DATE	10/24/94
FIGURE	1
FILE #	103-4D
DRAWN BY	AK
CHECKED BY	JVM

for  
1991



LEGEND

- MW-1 ● NAME AND LOCATION OF GROUNDWATER MONITORING WELL
- 5.21 POTENTIOMETRIC ELEVATION
- 6.00 POTENTIOMETRIC CONTOUR
- ← GROUNDWATER FLOW DIRECTION

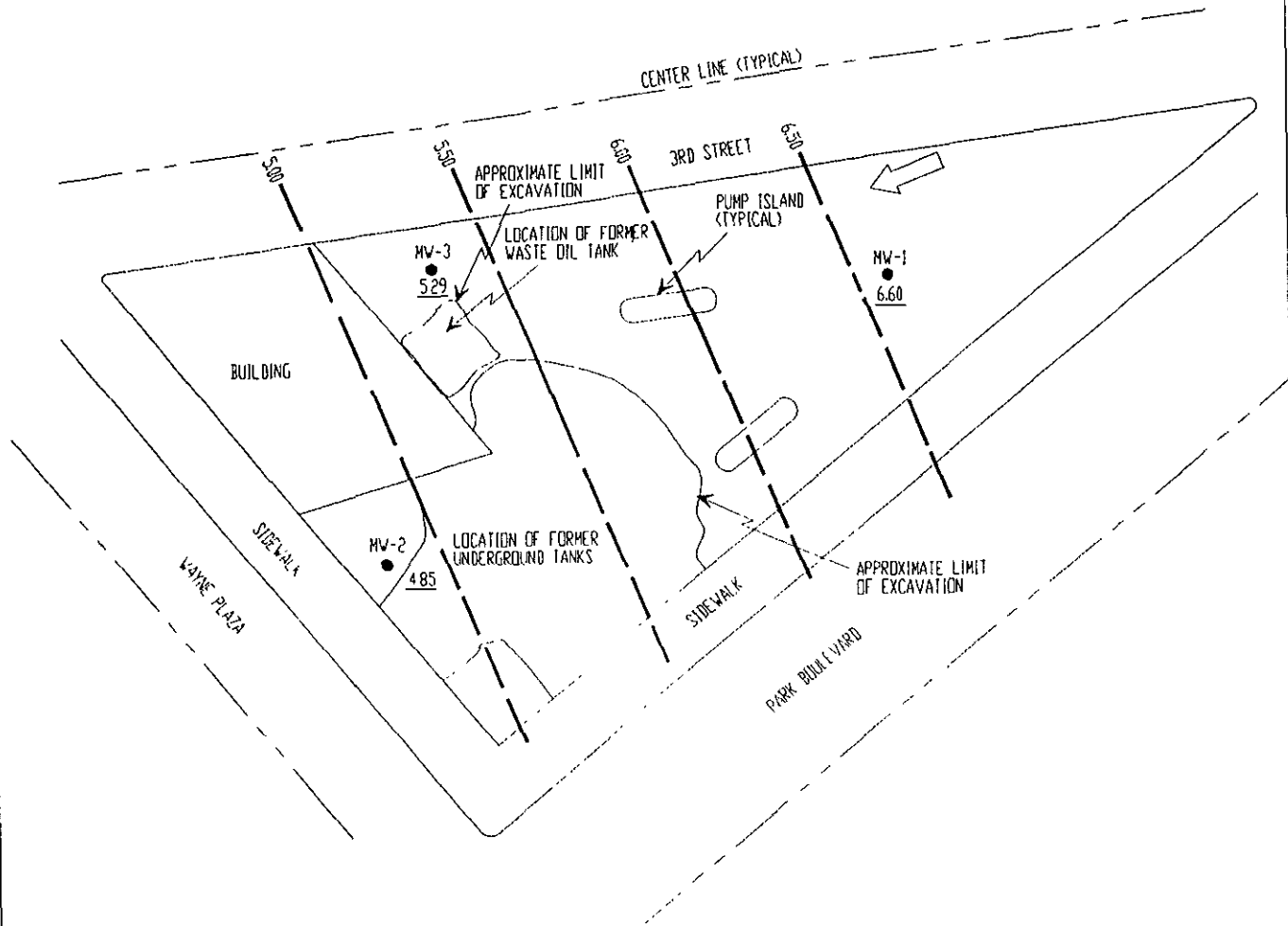


TANK PROTECT ENGINEERING

GROUNDWATER GRADIENT MAP (1/20/95)

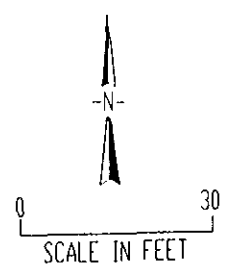
YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CA 94606

DATE	2/8/95
FIGURE	1
FILE #	103-6D
DRAWN BY	HT
CHECKED BY	JVM



LEGEND

- MW-1 ● NAME AND LOCATION OF GROUNDWATER MONITORING WELL
- 5.29 POTENTIOMETRIC ELEVATION
- 5.00 POTENTIOMETRIC CONTOUR
- ← GROUNDWATER FLOW DIRECTION

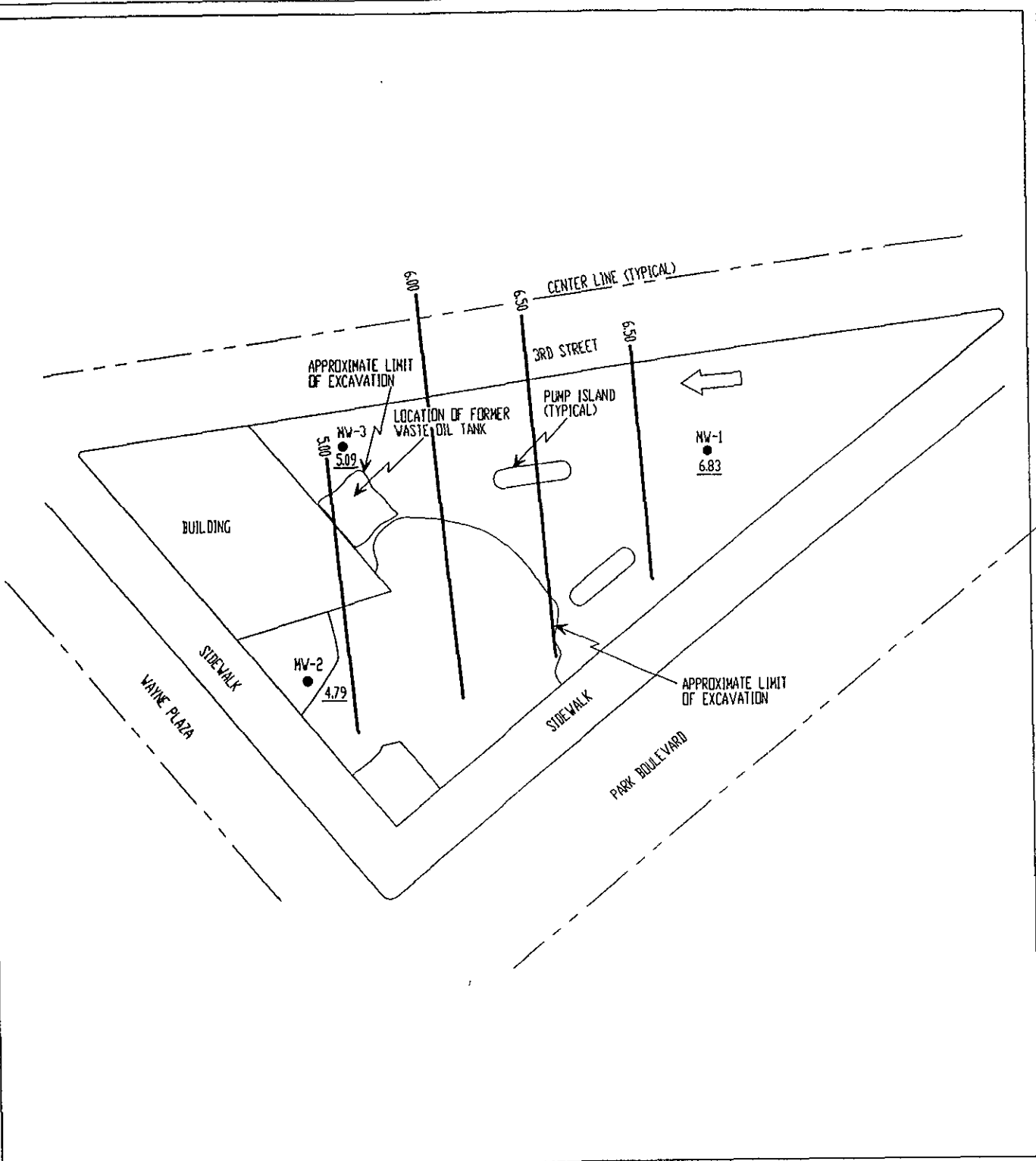


TANK PROTECT ENGINEERING

GROUNDWATER GRADIENT MAP (7/31/95)

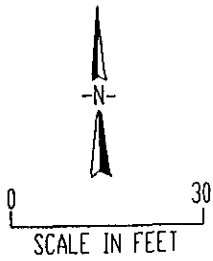
YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CA 94606

DATE	8/30/95
FIGURE	1
FILE #	103-0N
DRAWN BY	MT
CHECKED BY	LNH



**LEGEND**

- MW-1 ● NAME AND LOCATION OF GROUNDWATER MONITORING WELL
- 4.79 POTENTIOMETRIC ELEVATION
- 5.09 POTENTIOMETRIC CONTOUR
- ← GROUNDWATER FLOW DIRECTION



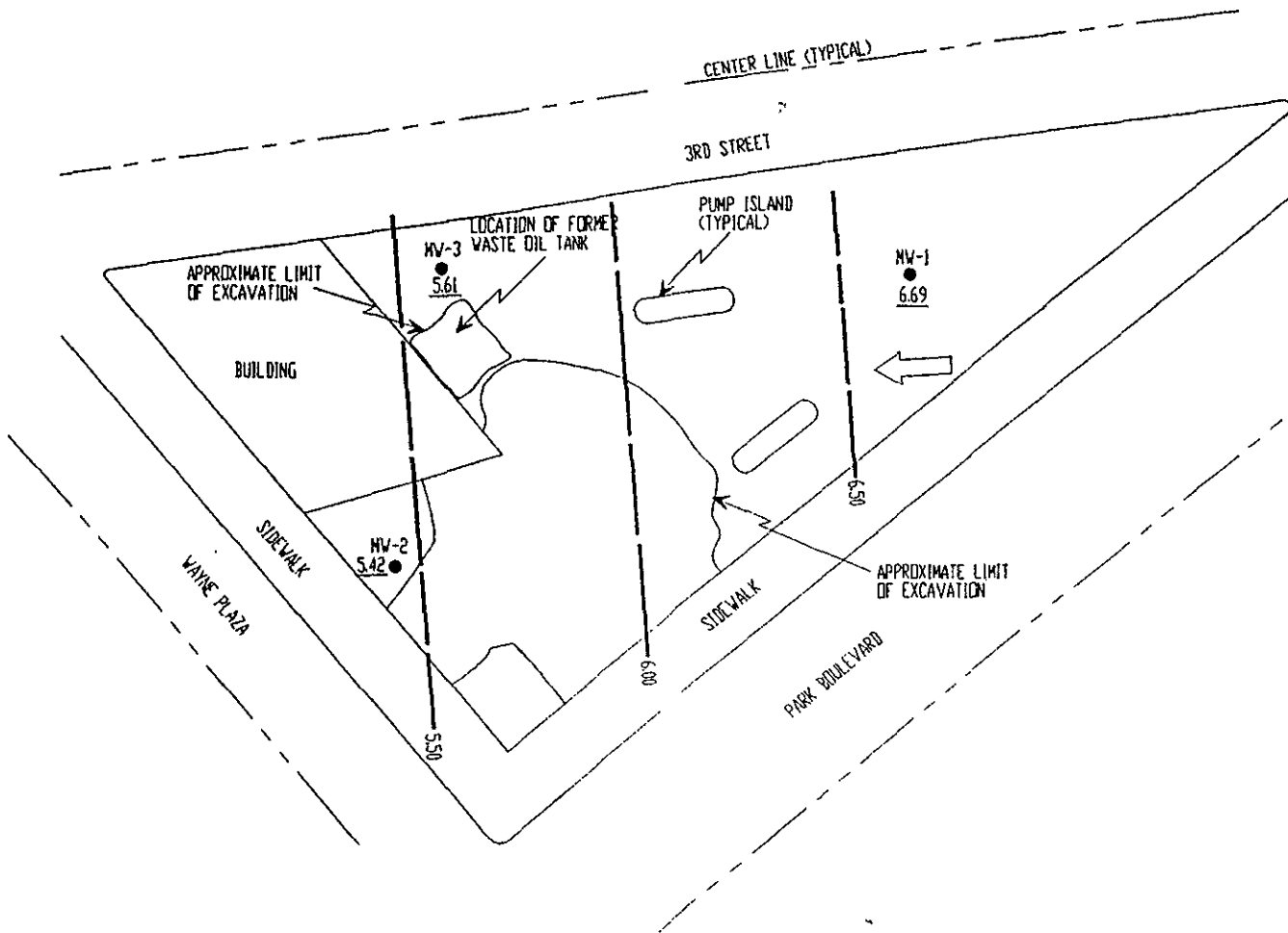
**TANK PROTECT ENGINEERING**

GROUNDWATER GRADIENT MAP (7/31/95)

YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CA 94606

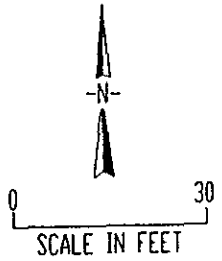
DATE	12/14/95
FIGURE	2
FILE #	103-9N
DRAWN BY	VK
CHECKED BY	RD





LEGEND

- MW-1 ● NAME AND LOCATION OF GROUNDWATER MONITORING WELL
- 5.42 POTENTIOMETRIC ELEVATION
- 5.50 POTENTIOMETRIC CONTOUR
- ← GROUNDWATER FLOW DIRECTION



TANK PROTECT ENGINEERING

GROUNDWATER GRADIENT MAP (2/26/96)

YUEN'S AUTOMOTIVE  
1901 PARK BOULEVARD  
OAKLAND, CA 94606

DATE	4/3/96
FIGURE	1
FILE #	103-10N
DRAWN BY	MT
CHECKED BY	LNH

# LOG OF EXPLORATORY BORING

PROJECT NUMBER 103

BORING NO. MW-1

PROJECT NAME 1901 Park Blvd., Oakland, CA.

PAGE 1 of 1

BY J. Mrakovich DATE 5/23/90

SURFACE ELEV. 9.0 ±

Recovery	PID	Penetration	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION
(ft./ft)	(ppm)	(blus/ft)					
			Stabilized water 6/15/90			Asphalt	
1.5/1.5		2/2/3	5		5	Aggregate sub-base, Gravelly Sand (SP), brown, particles to 5-inches, wet, perched water @ 1.0 foot.	
1.5/1.5		4/4/3			10	Silty Clay (CL), blue-green, damp to moist, firm to medium, sewer odor.	
					10	Clayey Silt (ML), grey, firm to medium, wet, slight sewage odor.	
1.5/1.5		2/2/2			15	Silty Sand (SW), grey, loose, wet, medium to coarse, slight sewage odor.	
1.5/1.5		4/10/20			20	Silty Sand (SP), dark grey, medium to fine, loose, wet, no odor.	
					19	@ 19', as above, strong sewage odor, cuttings wet.	
					20	@ 20', as above, mottled grey and brown, medium to coarse, medium dense, no odor.	
					22	Gravelly Sand (SW), red-brown, quartz gravel to 1.5-inches, carbonaceous, no odor.	
						Boring terminated at 22.0 feet.	

## REMARKS

Boring drilled with continuous-flight 8-inch O.D. augers. Samples collected in a 2.5-inch O.D. California sampler.

# WELL DETAILS

PROJECT NUMBER 103

BORING / WELL NO. MW-1

PROJECT NAME 1901 Park Blvd.

TOP OF CASING ELEV. 8.49

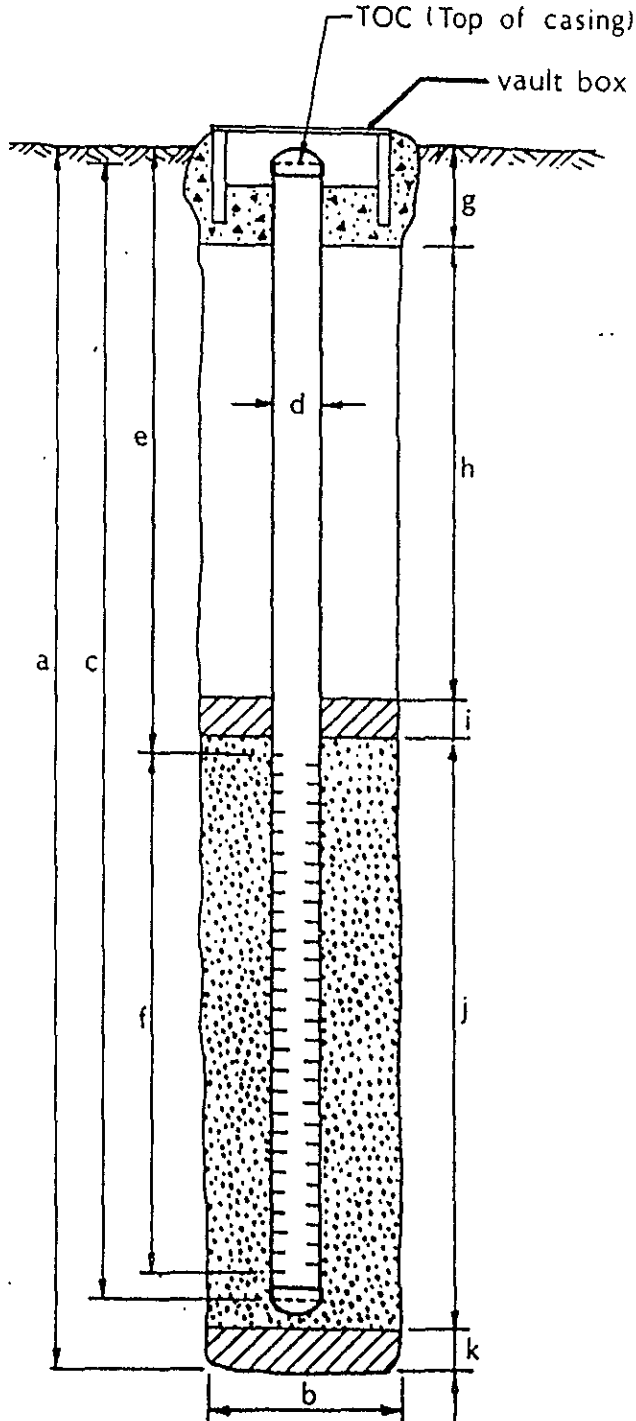
LOCATION Oakland, CA

GROUND SURFACE ELEV. 9.0 ±

WELL PERMIT NO. 90308

DATUM Mean sea level

INSTALLATION DATE 5/23/90



## EXPLORATORY BORING

- a. Total depth 22.0 ft.  
 b. Diameter 8 in.  
 Drilling method Hollow-stem auger

## WELL CONSTRUCTION

- c. Total casing length 7.0 ft.  
 Material Schedule 40 PVC  
 d. Diameter 2 in.  
 e. Depth to top perforations 7.0 ft.  
 f. Perforated length 15.0 ft.  
 Perforated interval from 22.0 to 7.0 ft.  
 Perforation type Machine slot  
 Perforation size .020-inch  
 g. Surface seal 1.0 ft.  
 Seal material Concrete  
 h. Backfill 3.0 ft.  
 Backfill material Cement  
 i. Seal 1.0 ft.  
 Seal material Bentonite  
 j. Gravel pack 17.0 ft.  
 Pack material 8x20 filter sand  
 k. Bottom seal 0.0 ft.  
 Seal material N/A

# LOG OF EXPLORATORY BORING

PROJECT NUMBER 103

BORING NO. MW-2

PROJECT NAME 1901 Park Blvd., Oakland, CA

PAGE 1 of 1

BY J. Mrakovich DATE 5/24/90

SURFACE ELEV 9.0±

Recovery (ft./ft.)	PID (ppm)	Penetration (blvs/ft)	GROUND WATER LEVELS	DEPTH IN FT.	LITHO-GRAPHIC COLUMN	DESCRIPTION
		Stabilized water	6/15/90		Asphalt	
2/1.5		3/1/2	5	5	Aggregate sub-base, Gravelly Sand (SP), brown, dry, no odor.	
	First water encountered				Sandy, Gravelly Silt (ML), brown, damp, no odor.	
1.5/1.5		2/1/1		10	Gravelly Sand (SW), brown-grey, very loose, wet, no odor.	
					@ 5', driller reports water	
					Sand, (SP), grey, interbedded clay, very soft, sewage odor.	
.3/1.5		1/2/6		15	Sandy, Clayey Silt (ML), grey, firm to medium, moist to wet, sewage odor.	
1.5/1.5		3/5/9		20	@ 20', as above, interbedded blue-green and brown, less sand, damp, no odor.	
Boring terminated at 20.0 feet. Sampled to 21.5 feet.						

### REMARKS

Boring drilled with continuous-flight 8-inch O.D. augers. Samples collected in a 2.5-inch O.D. California sampler.

# WELL DETAILS

PROJECT NUMBER 103

BORING / WELL NO. MW-2

PROJECT NAME 1901 Park Blvd.

TOP OF CASING ELEV. 8.23

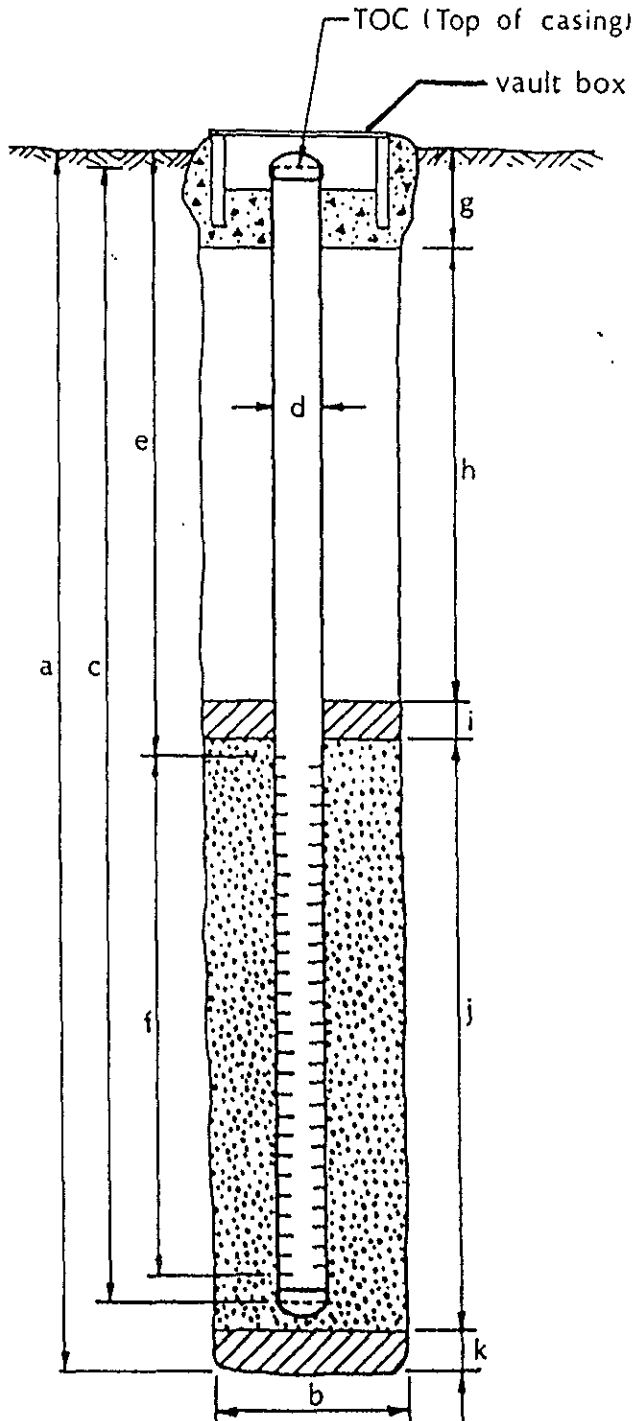
LOCATION Oakland, CA

GROUND SURFACE ELEV. 9.0 ±

WELL PERMIT NO. 90308

DATUM Mean sea level

INSTALLATION DATE 5/24/90



## EXPLORATORY BORING

- a. Total depth 20.0 ft.  
 b. Diameter 8 in.  
 Drilling method Hollow-stem auger

## WELL CONSTRUCTION

- c. Total casing length 3.0 ft.  
 Material Schedule 40 PVC  
 d. Diameter 2 in.  
 e. Depth to top perforations 3.0 ft.  
 f. Perforated length 17.0 ft.  
 Perforated interval from 3.0 to 20.0 ft.  
 Perforation type Machine slot  
 Perforation size .020-inch  
 g. Surface seal 1.0 ft.  
 Seal material Concrete  
 h. Backfill .5 ft.  
 Backfill material Cement  
 i. Seal .5 ft.  
 Seal material Bentonite  
 j. Gravel pack 18.0 ft.  
 Pack material 8x20 filter sand  
 k. Bottom seal 0.0 ft.  
 Seal material N/A

# LOG OF EXPLORATORY BORING

PROJECT NUMBER 103

BORING NO. MW-3

PROJECT NAME 1901 Park Blvd., Oakland, CA.

PAGE 1 of 1

BY J. Mrakovich DATE 5/23/90

SURFACE ELEV 9.0 ±

Recovery (ft/ft)	PID (ppm)	Penetration (blvs/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION
				6/15/90		Asphalt	
1.1/1.5		2/2/3	5			Aggregate sub-base, Gravelly Sand (SP), brown, no odor.	
	First encountered					Sandy, Clayey Silt (ML), dark olive green, 5 percent gravel, damp, sewage odor.	
1.5/1.5		1/2/2	10			@ 5', as above, grey, gravel seam at 5.5', firm/medium, moist, sewage odor.	
1.5/1.5		2/4/7		15		@ 10', as above, less clay, sand, seam at 10.0-10.3', moist to wet, sewage odor. Driller reports water.	
1.5/1.5		5/9/13		20		Silty Clay (CL), interbedded grey and brown, organics, stiff, damp, sewage odor.	
						@ 18', cutting returns very fluid.	
						Sand (SP), brown, medium dense, medium to coarse, carbonaceous, moist to wet, no odor.	
						Boring terminated at 20.0 feet. Sampled to 21.5 feet.	

## REMARKS

Boring drilled with continuous-flight 8-inch O.D. augers. Samples collected in a 2.5-inch O.D. California sampler.

# WELL DETAILS

PROJECT NUMBER 103

BORING / WELL NO. MW-3

PROJECT NAME 1901 Park Blvd.

TOP OF CASING ELEV. 8.37

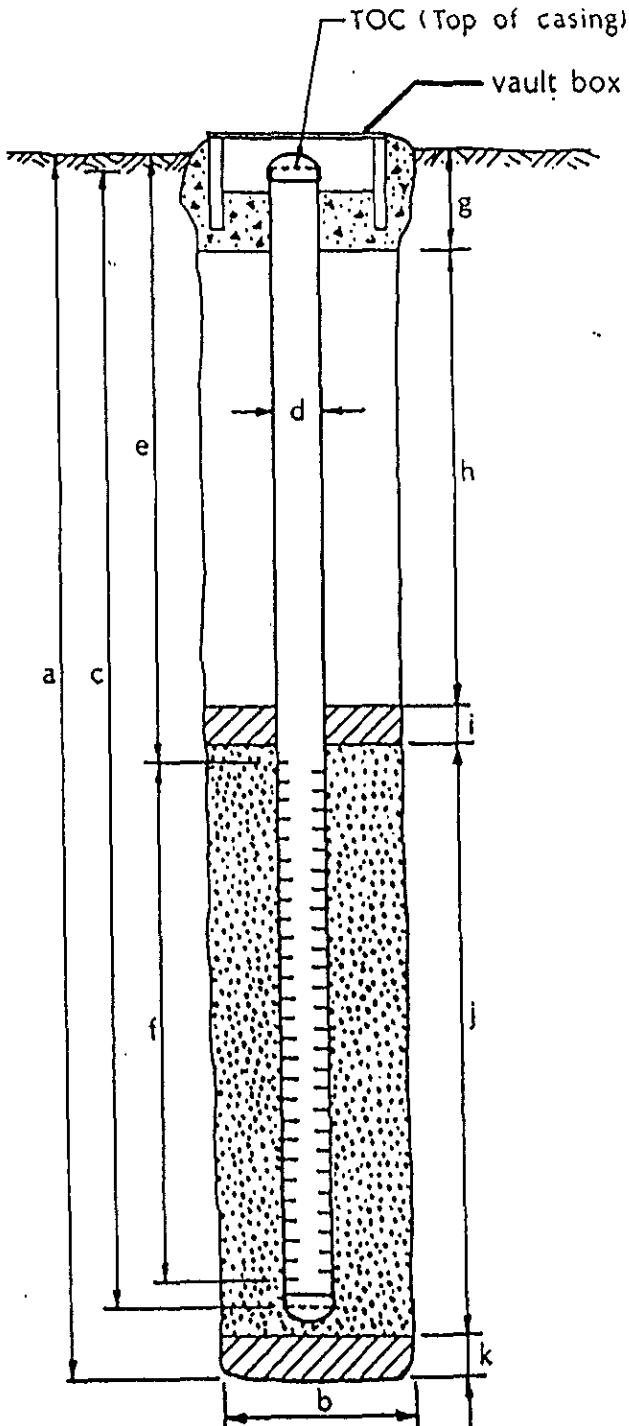
LOCATION Oakland, CA

GROUND SURFACE ELEV. 9.0 +

WELL PERMIT NO. 90308

DATUM Mean sea level

INSTALLATION DATE 5/23/90



## EXPLORATORY BORING

- a. Total depth 20.0 ft.  
 b. Diameter 8 in.  
 Drilling method Hollow-stem auger

## WELL CONSTRUCTION

- c. Total casing length <sup>DIC</sup> 20.0 ft.  
 Material Schedule 40 PVC  
 d. Diameter 2 in.  
 e. Depth to top perforations 3.0 ft.  
 f. Perforated length 17.0 ft.  
 Perforated interval from 3.0 to 20.0 ft.  
 Perforation type Machine slot  
 Perforation size .020-inch  
 g. Surface seal 1.0 ft.  
 Seal material Concrete  
 h. Backfill .5 ft.  
 Backfill material Cement  
 i. Seal .5 ft.  
 Seal material Bentonite  
 j. Gravel pack 18.0 ft.  
 Pack material 8x20 filter sand  
 k. Bottom seal 0.0 ft.  
 Seal material N/A