CAMBRIA

SEP 2 8 2001

September 24, 2001

Mr. Amir K. Gholami
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Sensitive Receptor Survey, Well Survey and Conduit Study Report**
Shell-branded Service Station
2120 Montana Street
Oakland, California
Incident #98995740
Cambria Project # 243-0733-00&

Dear Mr. Gholami:

On behalf of Equiva Services LLC, Cambria Environmental Technology, Inc. (Cambria) is submitting the results of the sensitive receptor survey, well survey and conduit study performed for the referenced site. The surveys and study were requested in an Alameda County Health Care Services Agency (ACHCSA) letter dated July 23, 2001. Presented below are the site background, sensitive receptor survey, well survey and conduit study results, and a summary.

SITE BACKGROUND

Site Location: This operating Shell-branded service station is located at the northwest corner of Montana Street and Fruitvale Avenue in Oakland, California. Commercial properties lie to the north and east of the site, and residential properties lie to the west. Montana Street, a freeway on-ramp, and Highway 580 are located south of the site (Figures 1 and 2).

1997 Dispenser/Turbine Sump Upgrades: In November 1997, Paradiso Mechanical of San Leandro, California upgraded fuel-related equipment at the service station. Secondary containment was added to the three existing dispensers and to the turbine sumps above the underground storage tanks (USTs). Soil samples D-1, D-2, and D-3 were collected from beneath the dispensers at a depth of approximately 5 feet below grade (fbg) (Figure 3). Soil samples were not collected from beneath the associated piping since it was not exposed during the upgrade

Oakland, CA
San Ramon, CA
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activities. The maximum total petroleum hydrocarbons as gasoline (TPHg), benzene, and methyl tertiary-butyl ether (MTBE by EPA Method 8020) concentrations were reported in sample D-3 at 59 parts per million (ppm), 0.76 ppm, and 1.1 ppm, respectively.

1999 Subsurface Investigation: In October 1999, Cambria advanced soil borings SB-1 through SB-3 (Figure 3). SB-1 was advanced to 16 fbg, and SB-2 and SB-3 were advanced to 20 fbg. The maximum detected hydrocarbon concentrations in soil were 54 ppm TPHg in boring SB-1 at 5.0 fbg, 0.019 ppm benzene in boring SB-2 at 15 fbg, and 0.24 ppm MTBE (by EPA Method 8260) in boring SB-2 at 10.0 fbg. The maximum reported hydrocarbon concentrations in groundwater were 2,380 parts per billion (ppb) TPHg in boring SB-3, 10.6 ppb benzene in SB-2, and 3,210 ppb MTBE (by EPA Method 8020) in SB-3.

2001 Groundwater Monitoring Well Installation: In February 2001, Cambria installed groundwater monitoring wells MW-1 through MW-3 (Figure 3). MW-1 was advanced to 28 fbg, and MW-2 and MW-3 were advanced to 21.5 fbg. The maximum detected hydrocarbon concentrations in soil were 10 miligrams per kilogram (mg/kg) TPHg in boring MW-2 at 21.0 fbg, 0.0666 mg/kg benzene in boring MW-1 at 10.0 fbg, and 5.2 mg/kg MTBE (by EPA Method 8260) in boring MW-2 at 15.5 fbg. The maximum detected hydrocarbon concentrations in groundwater were 16,600 ppb TPHg, 753 ppb benzene, and 27,500 ppb MTBE (by EPA Method 8020) all in boring MW-1.

Groundwater Monitoring: Blaine Tech Services, Inc. (Blaine) of San Jose, California has performed quarterly groundwater monitoring at the site since March 2001. Depth to water has ranged historically between 11.3 and 13.2 fbg, and flows to the west/northwest at an approximate gradient of 0.025 ft/ft.

SENSITIVE RECEPTOR SURVEY, WELL SURVEY AND CONDUIT STUDY RESULTS

Sensitive Receptor Survey: Cambria reviewed maps of the site vicinity to evaluate the presence of potential sensitive receptors including surface water bodies, churches, schools, hospitals, and wells, within a ½-mile radius of the site. Based on a review of the Oakland East, California USGS topographic quadrangle, the Central Reservoir and Sausal Creek are the only surface water bodies noted within a ½-mile radius of the site (see Figure 1). The Central Reservoir is located approximately 1,600 feet west/southwest of the site. Sausal Creek is located approximately 240 feet west of the site at its closest point. Based on a review of City of Oakland Engineering maps, Sausal Creek is diverted into a 10-foot by 10-foot underground culvert under

Interstate 580, approximately 420 feet west-northwest of the site, and surfaces approximately 730 feet southwest of the site. The flow line depth of the culvert is approximately 6.5 fbg.

Four churches are noted on the quadrangle within a ½-mile radius of the site, located approximately 600 south, 1,400 southeast, 2,000 east, and 1,600 feet northwest of the site.

Five schools are noted on the quadrangle within a ½-mile radius of the site. Saint Jarlath's School is located approximately 800 feet south of the site. Fruitvale School is located approximately 1,200 feet southeast of the site. Bret Harte Junior High School is located approximately 2,200 feet east of the site. Sequoia School is located approximately 2,000 feet northeast of the site. Finally, Glenview School is located approximately 2,200 feet northwest of the site. No hospitals were noted within the ½-mile radius of the site.

A review of the 2001 Alameda County Thomas Guide confirmed the five schools noted on the quadrangle, and an additional school was noted approximately 1,520 feet southwest of the site. No hospitals were noted in the 2001 Alameda County Thomas Guide within the ½-mile radius of the site.

Well Survey: Cambria contacted the California Department of Water Resources (DWR) in Sacramento, California for records of wells within a ½-mile radius of the site. Ten wells were identified within the ½-mile radius (see Table 1 and Attachment A). Two cathodic-protection wells are located approximately 2,000 feet and 2,600 feet west/northwest of site, and a third is located approximately 1,200 feet northeast of the site. Two groundwater-monitoring wells are located approximately 1,800 feet to the south, and five additional groundwater-monitoring wells are located approximately 1,300 feet to the east. DWR records did not identify any water-producing wells within the ½-mile radius of the site. The results of the survey are tabulated in Table 1, and the well locations are shown on Figure 1.

Conduit Study: A utility conduit survey was performed to determine the location of potential preferential pathways in the site vicinity. Conduit trenches are often back-filled with materials which are more permeable than the surrounding native soils, and therefore provide a path of least resistance for petroleum hydrocarbon and oxygenate migration. The utility survey consisted of reviewing maps and plans acquired from the City of Oakland Engineering Department, the East Bay Municipal Utility District (EBMUD), and the Pacific Gas and Electric Company. Conduit locations, and diameters and depths, where determined, are mapped on Figure 2.

City of Oakland engineering maps indicate that the sanitary sewer lines in the vicinity range in diameter from 6 to 21 inches and are typically buried approximately 3 to 8 fbg. Storm drains in the vicinity range in diameter from 24 to 27 inches and are typically buried approximately 2 to 10 fbg. A 10-foot by 10-foot storm drain culvert with a flow-line depth of approximately 6.5 fbg,

diverts Sausal Creek under Interstate 580. The exact depths to water mains were not available, but according to EBMUD, the lines are typically buried 8 fbg to the top of the pipe. Historically, depth-to-groundwater at the site has ranged from 11.4 to 13.2 fbg. Based on this information, utility lines identified, including the culvert for Sausal Creek, are shallower than the typical groundwater surface, and therefore are not likely to significantly affect groundwater flow.

Site Conceptual Model (SCM): The SCM presented in the May 22, 2001 *Groundwater Monitoring Well Installation Report* has been updated to include the sensitive receptor survey results presented herein and is included as Attachment B.

SUMMARY

The sensitive receptor survey presented herein indicates that no known water-producing wells are located within ½-mile radius of the site. The nearest surface water body is Sausal Creek, located approximately 240 feet west/northwest of the site. Sausal Creek is diverted into a 10-foot by 10-foot culvert, located approximately 420 feet west-northwest of the site, with a flow line depth shallower than the typical water table at the site. Sausal Creek resurfaces approximately 730 feet southwest of the site. The utility study completed indicates that utility conduits in the area do not typically encounter groundwater, and likely do not act as preferential pathways for contaminant migration. Based on this information, no known receptors are likely to be impacted by chemicals at the site.

CLOSING

We appreciate the opportunity to work with you on this project. Please call Jacquelyn Jones at (510) 420-3316 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc

for

James Loetterle
Staff Geologist

for

Stephan A. Bork, C.E.G., C.HG.
Associate Hydrogeologist

Figures: 1 - Area Well Survey
2 - Underground Utility Locations
3 - Monitoring Well Location Map

Table: 1 - Well Survey Results

Attachments: A - Well Driller's Report Forms
B - Site Conceptual Model

cc: Karen Petryna, Equiva Services LLC, P.O. Box 7869, Burbank, California 91510-7869

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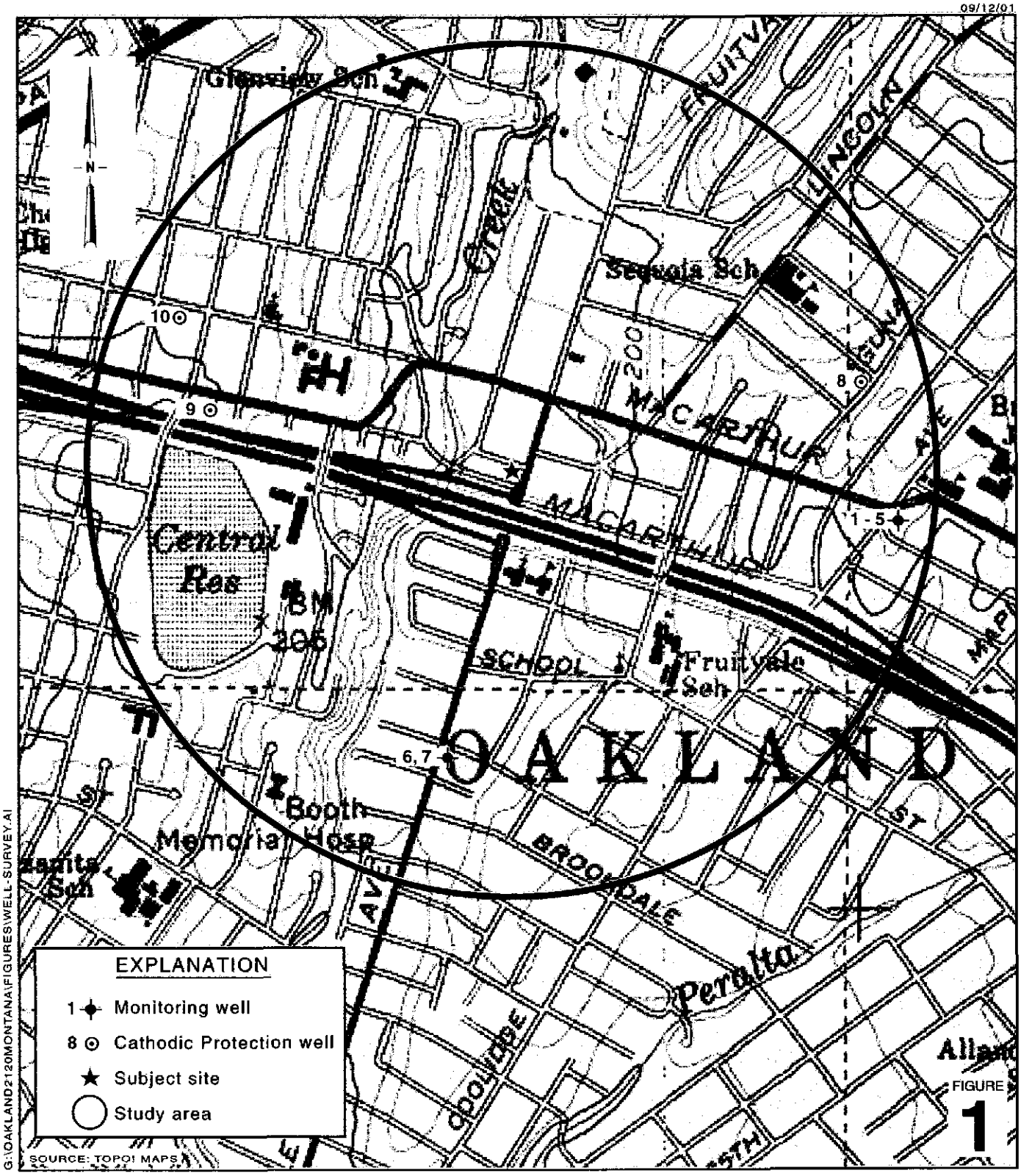
09/12/01



G:\OAKLAND2120MONTANA\FIGURES\WELL-SURVEY.AI

0 1/6 1/3 1/2 1

SCALE : 1" = 1/6 MILE

FIGURE 1

Shell-branded Service Station
2120 Montana Street
Oakland, California
Incident #98995740

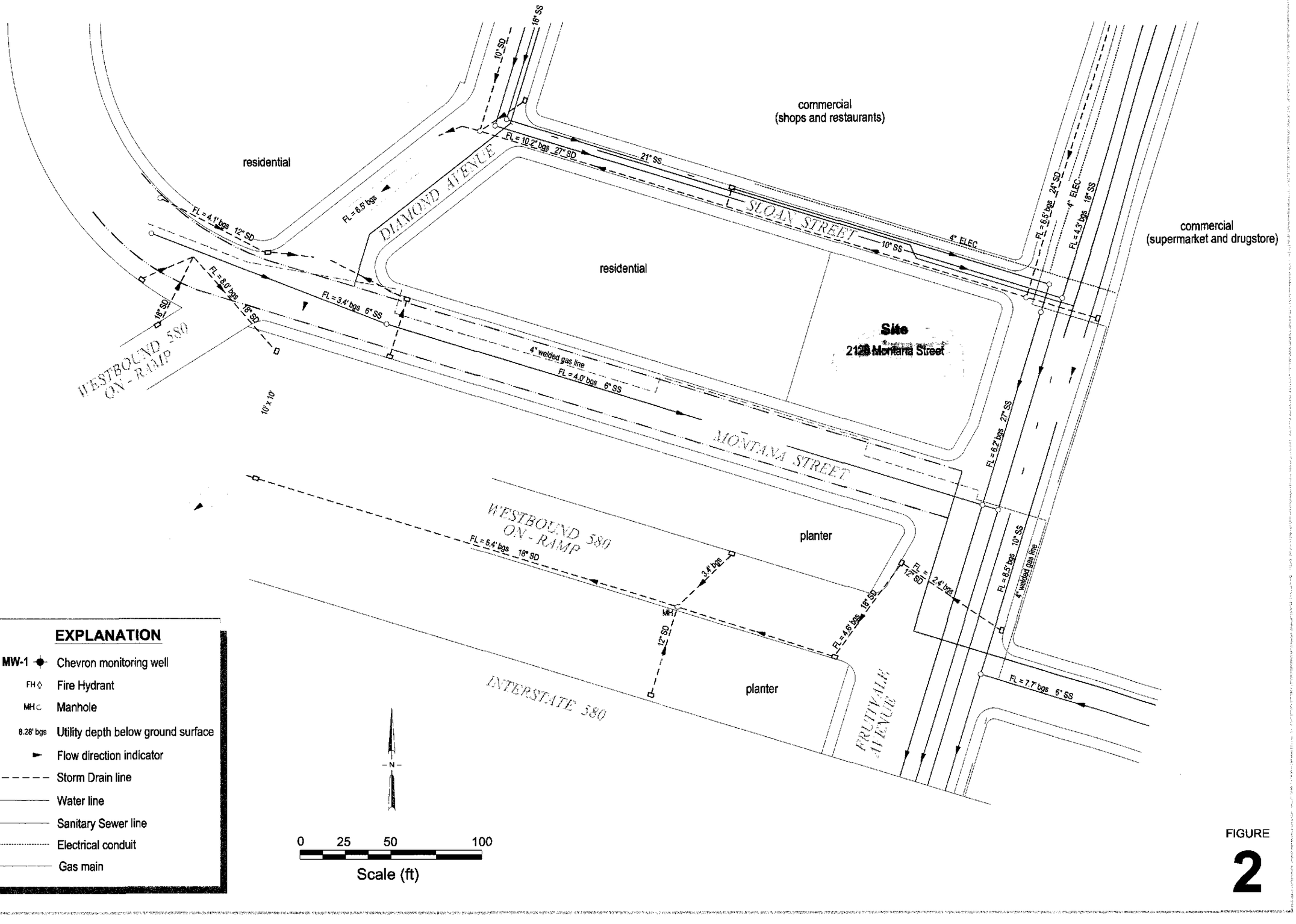
CAMBRIA

Area Well Survey

(1/2-Mile Radius)

09/24/01

Underground Utility Locations



EXPLANATION

- MW-1 — Chevron monitoring well
- FH — Fire Hydrant
- MH — Manhole
- 8.28' bgs — Utility depth below ground surface
- Flow direction indicator
- Storm Drain line
- Water line
- Sanitary Sewer line
- Electrical conduit
- Gas main

FIGURE

2

Shell-branded Service Station
2120 Montana Street
Oakland, California
Incident # 98995746

CAMBRIA

G:\2120 MONTANA\FIGURES\EXP-SITE.DWG

09/13/01

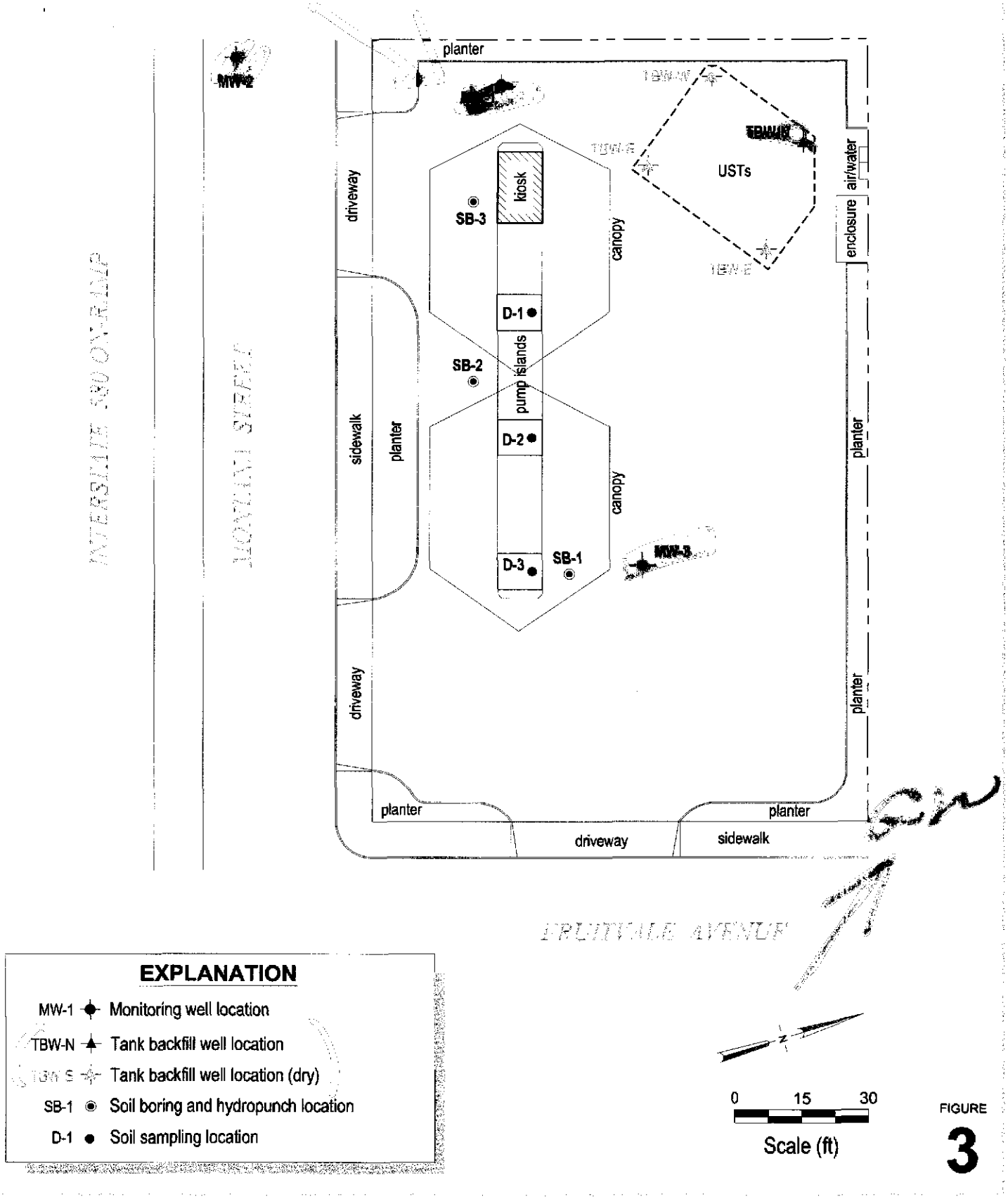


FIGURE
3

G:\OAKLAND\2120MONTANA\FIGURES\WELL-LOC-TBW.DWG

Shell-branded Service Station
2120 Montana Street
Oakland, California
Incident #98995740

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Monitoring Well Location Map

Table 1. Well Survey Results - Shell-branded Service Station, 2120 Montana Street Oakland California - Incident # 98995740

Location	DWR Well ID	Owner's Well ID	Well Address	Installation Date	Owner	Use	Well Status	Depth (ft bgs)	Screened Interval (ft bgs)
1	01S03W32J1	M1	2801 Mac Arthur Blvd.	October 20, 1990	Califrance Corp.	Mon	Active	44.5	34.5-44.5
2	01S03W32J2	P1	2801 Mac Arthur Blvd.	October 19, 1990	Califrance Corp.	Mon	Active	50	39-50
3	01S03W32J3	P2	2801 Mac Arthur Blvd.	October 19, 1990	Califrance Corp.	Mon	Active	42.5	32.5-42.5
4	01S03W32J4	P3	2801 Mac Arthur Blvd.	March 18, 1991	Califrance Corp.	Mon	Active	45	34.8-45.0
5	01S03W32J5	M2	2801 Mac Arthur Blvd.	March 18, 1991	Califrance Corp.	Mon	Active	45	34.8-45.0
6	01S03W32P2	MW-2	2964 Fruitvale Ave.	January 15, 1993	Ms. Frances Beddig	Mon	Active	22	5-22 fbg
7	01S03W32P3	MW-3	2964 Fruitvale Ave.	January 15, 1993	Ms. Frances Beddig	Mon	Active	25	5-25 fbg
8	01S03W32H80	--	Scenic Ave. at Laguna Ave,	December 11, 1975	Pacific Gas and Electric	Cath	Active	95	NA
9	01S03W32D1	--	MacArthur Blvd. between Ardley Ave. and Woodruff Ave.	February 3, 1976	East Bay Utility District	Cath	Active	53	NA
10	01S03W31H1	--	Excelsior Ave. between Brighton and Woodruff	December 17, 1975	Pacific Gas and Electric	Cath	Active	120	NA

Table 1. Well Survey Results - Shell-branded Service Station, 2120 Montana Street Oakland California - Incident # 98995740

Well Location Provided by the Department of Water Resources

Notes and Abbreviations:

Location = Number refers to well label on Figure 1.
DWR Well ID = California State well identification number as recorded by the Department of Water Resources in Sacramento, California.
Mon = Monitoring Well
Cath = Cathodic Protection well
fbg = feet below grade
NA = not applicable

ATTACHMENT A

Well Driller's Report Forms

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

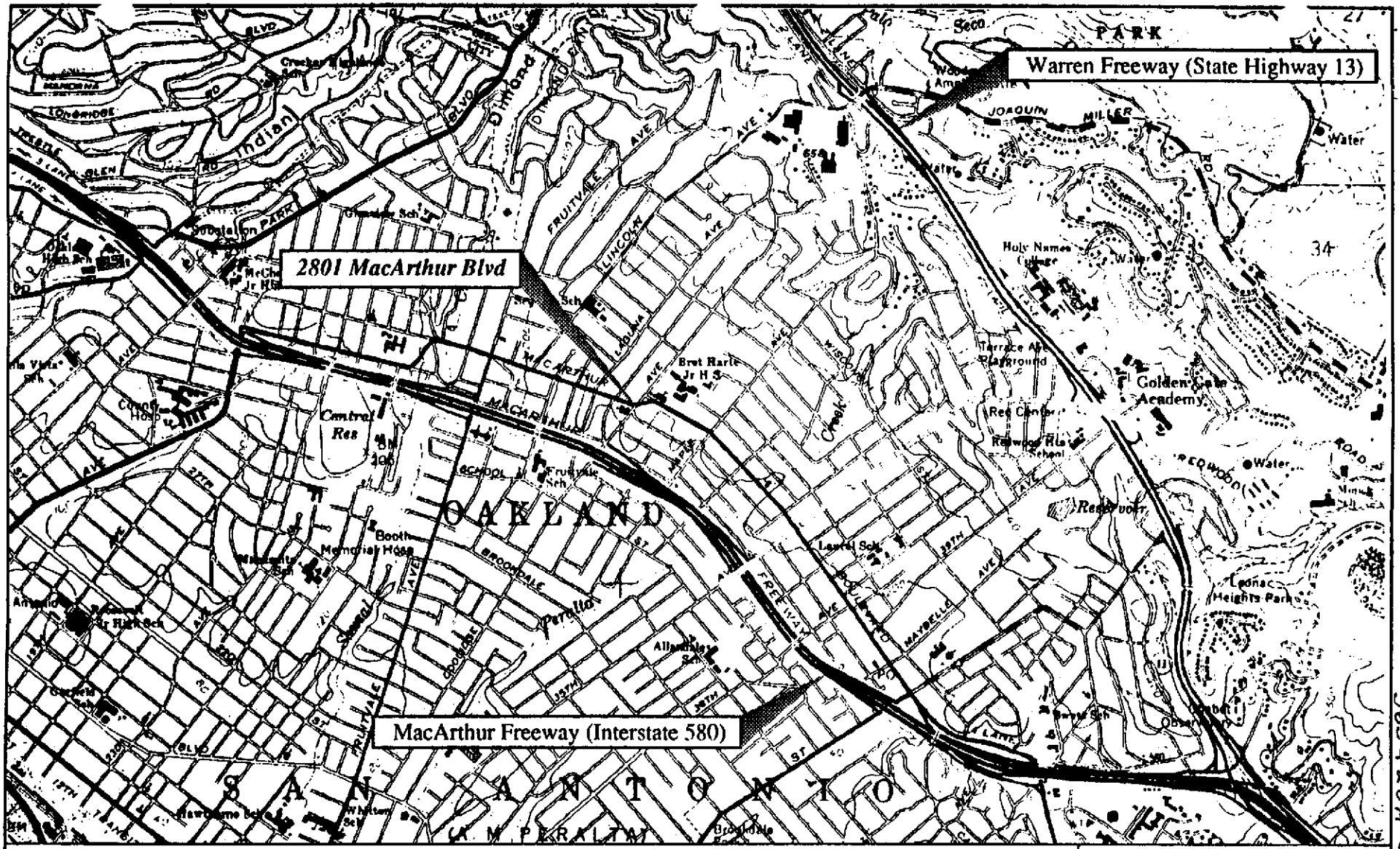


Figure 1

Location Map

2801 MacArthur Boulevard
Oakland CA

3654284-C 1S/3W 32J1-3

STREAMBORN

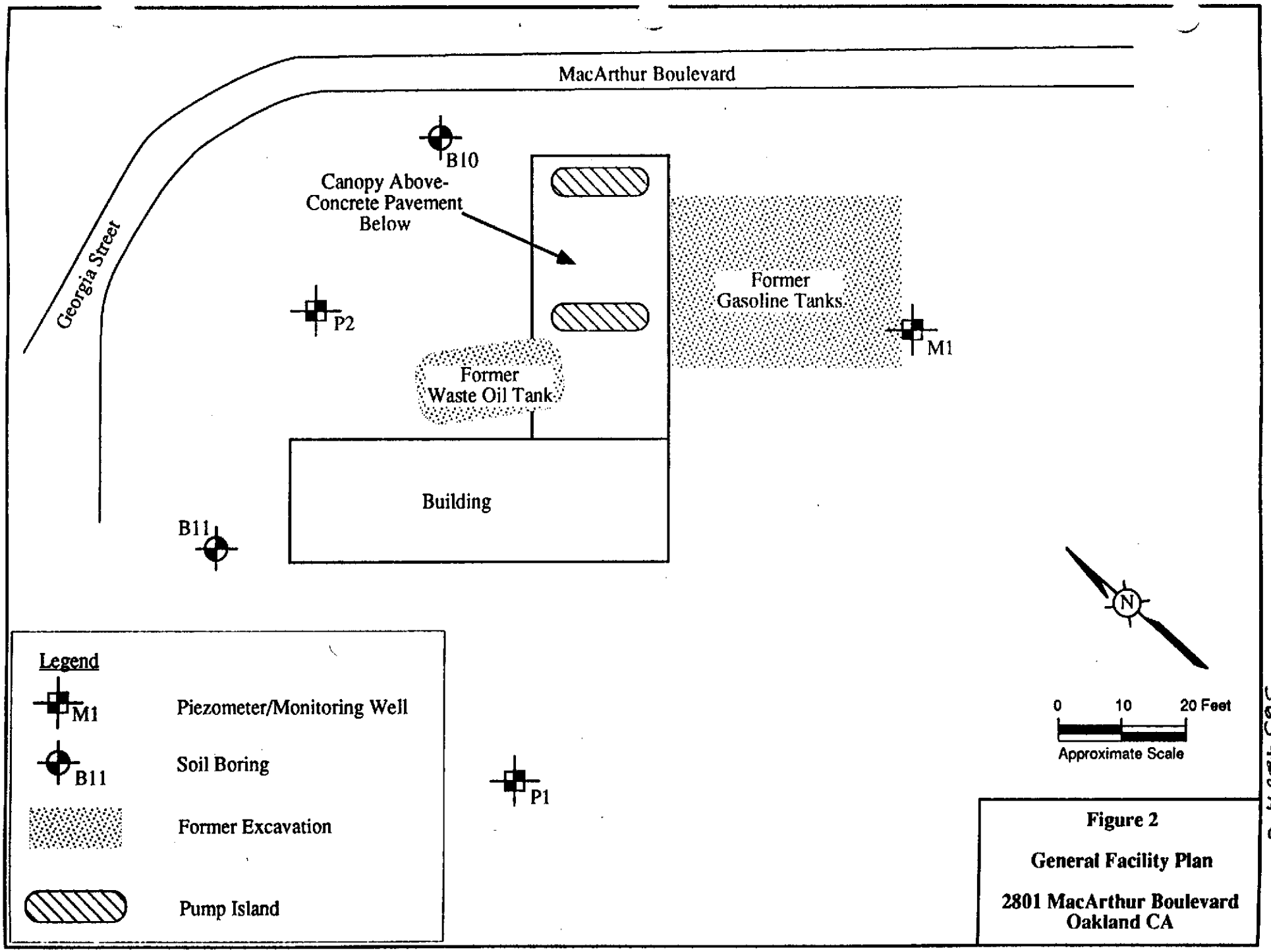


Figure 2

General Facility Plan

2801 MacArthur Boulevard
Oakland CA

STREAMBORN

365428A-C

1S/3W 32J 1-3

15/3W 32J1-3

365428A-C

Soil Classification

Soils were classified in the field in approximate accordance with ASTM D 2488-84 (Standard Practice for Description and Identification of Soils, Visual-Manual Procedure). Textural classifications represent the opinion of the field geologist or field engineer regarding the character of encountered materials. Laboratory classification tests were not performed to verify the field classifications. In general, mixtures of soil types and gradual transitions between soil types may more accurately represent the subsurface materials, instead of the distinct divisions depicted on the logs.

Textural Classification


CH/CL: Inorganic clay/Sandy clay


MH: Inorganic Silt


ML: Sandy silt


SM: Silty sand


SW: Well-graded sand


SC: Clayey sand


SP: Poorly-graded sand


GC: Clayey gravel


GM:Silty gravel


GW: Well-graded gravel, Well-graded gravel with sand

• • • • • Approximate location of gradational transition or inferred contact between soil types

——— Approximate location of soil transition

Sample Symbol


Sample from this depth interval retained in brass liner and shipped to the laboratory for possible testing

General Notes

(a) NR indicates information not recorded

(b) Soil samples were collected at 5-foot intervals by driving a 2-inch I.D. by 18 inch long split spoon using a 140-pound drop hammer

(c) Percentages of textural classes (sand, gravel, etc.) cited on logs are approximate

(d) Unpatterned intervals on graphic log represent locations not sampled, or from which no sample was obtained after attempting to collect a sample.

(e) Graphic log symbols are extrapolated beyond sample boundaries

(f) Depths measured from ground surface

15/3W32J1

365428A

Boring Log for M1 (page 1 of 3)

Project	Soil and Groundwater Investigation Former Gasoline Station Oakland CA	Address	2801 MacArthur Boulevard Oakland CA 94602
Location	Immediately south of former gasoline tanks	Project No.	P12
Elevation	Ground surface = 1,000.1 feet (surveyed)	Logged By	Greg Reller, Streamborn, Berkeley
Start	11:00, 20 October 1990	Finish	10:30, 21 October 1990
Completion	Piezometer with traffic-rated utility box at ground surface	Driller	Geo Drill Exploration, Berkeley CA
Drill Method/Rig	±4-inch ID by ±8-inch OD hollow-stem auger/Mobile B61	Total Depth	±46 feet
Sampling	±2-inch ID by ±2-1/2-inch OD driven split-spoon fitted with 2-inch diameter by 6-inch long brass liners. Samples collected by driving spoon ahead of auger bit.	Groundwater	±37 feet below ground surface (stabilized measurement after casing installed)

Depth (feet)	USCS	Graphic Log	Sample	Blows/6-inches	Soil Description, Observations, and Comments
					Ground surface was paved with asphalt
2.5					
5.0	CL			6 10 13	Sandy Clay, ±30% subround coarse sand and fine gravel in clay matrix, moist, hard, red-brown, black oxide mineral around some clasts
7.5					
10.0	CL			5 11 17	Sandy Clay, as above, ±30% medium to coarse subangular sand, poor blocky fracture, subhorizontal and subvertical zones of black oxide mineral
12.5					
15.0	SW			9 17 25	Sand, ±95% fine to very coarse subangular to subrounded sand with a trace of medium subangular gravel, ±5% silt, dry, red-brown, slightly cohesive, coarsens downward
17.5					
20.0	GM			11	Silty Gravel, fine to coarse subangular gravel (volcanic and

Boring Log for M1 (page 2 of 3)

1S/3W 32J1
365428A

Depth (feet)	USCS	Graphic Log	Sample	Blows/6-inches	Soil Description, Observations, and Comments
	GM			21 23	metamorphic), slightly bound by silt matrix, dry, firm, brown
22.5					
25.0	SW			12 18 29	Gravelly Sand, ±75% medium to coarse subangular to subrounded sand ±15% silt, ±10% medium subround gravel, moist, brown, pale green mottling along poorly developed fractures, trace of black oxide mineral
27.5					
30.0	SM			21 26 29	Silty Sand, ±15% silt, moist, firm, pale green with red brown mottling, strong gasoline odor, trace black (coal?) clasts.
32.5					
35.0	SM			20	Silty Sand, as above, ±25% silt
	GM			25 35	Silty Gravel, fine to coarse subangular to subround gravel bound in sandy silt matrix, moist, greenish, red-brown mottling, strong gasoline odor
37.5					
40.0	GW-GM			7 22 31	Well graded Gravel with Silt and Sand, medium to coarse subround to subangular gravel (serpentinite, volcanic, and sedimentary) in silty sand matrix, moist, pale green, slight gasoline odor
42.5					
45.0	GW-GM			25 41	Well graded Gravel with Sand and Silt, as above, wet, deeply weathered (clasts are soft), bottom of gravel between 45.5 and 46 feet

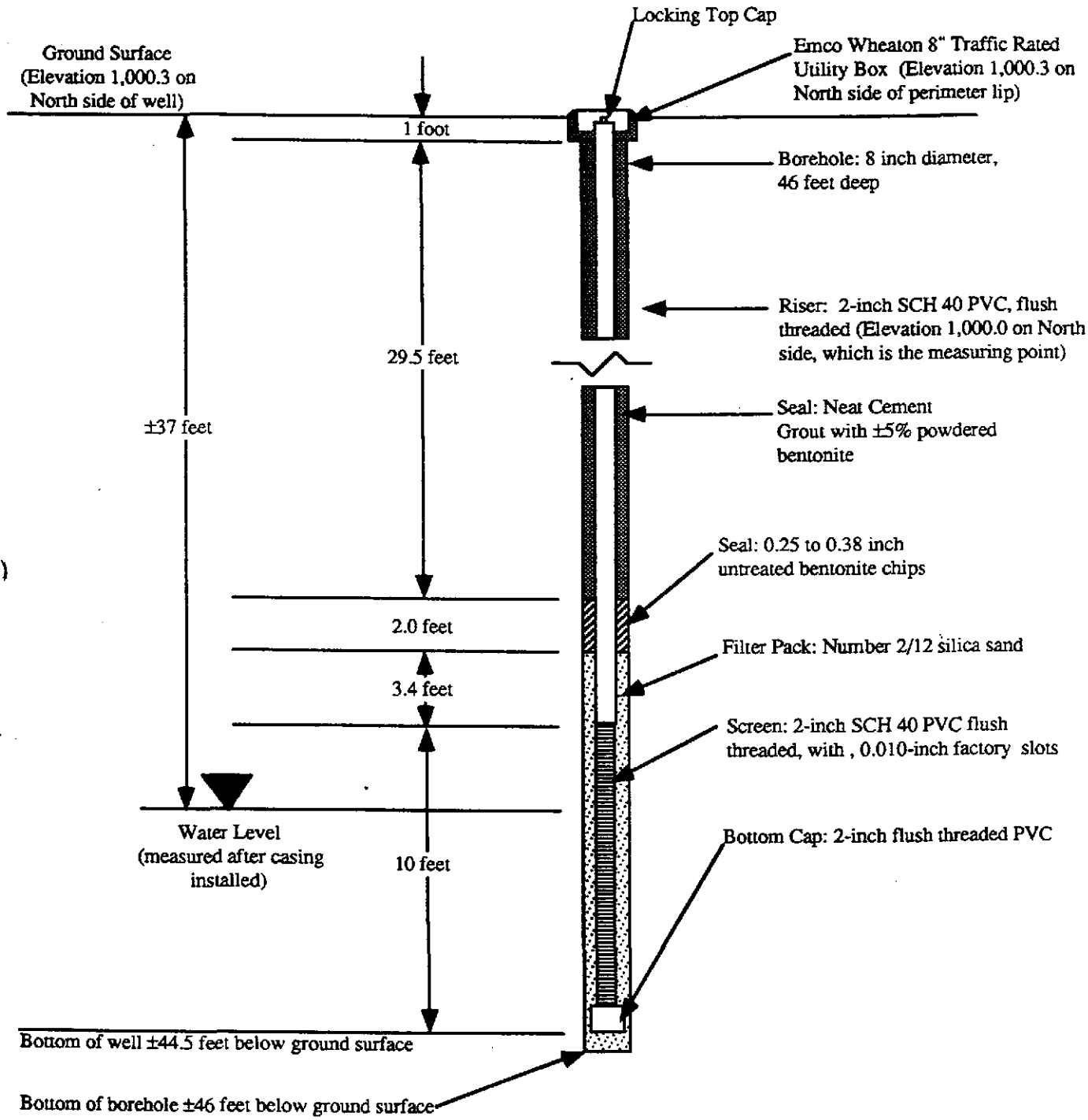
Boring Log for M1 (page 3 of 3)

1S/3W 32J1

365428A

Depth (feet)	USCS	Graphic Log	Sample	Blows/6-inches	Soil Description, Observations, and Comments
	ML		X	40	Drive Shoe contains Sandy silt, ±25% medium to coarse subangular sand bound in silt, moist (no water yielded upon pounding with hammer) hard, pale green
47.5					Total depth of boring = 46 feet Groundwater encountered at ±44.5 feet during drilling
50.0					
52.5					
55.0					
57.5					
60.0					
62.5					
65.0					
67.5					
70.0					

1S/3W 32J 1
365428A



M1 Completion Schematic

2801 MacArthur Boulevard
Oakland CA

Boring Log for P1 (page 1 of 3)

15/3W 3252
3654288

Project	Soil and Groundwater Investigation Former Gasoline Station Oakland CA	Address	2801 MacArthur Boulevard Oakland CA 94602
Location	±40 feet west of building	Project No.	P12
Elevation	Ground surface = 999.8 feet (surveyed)	Logged By	Greg Reller, Streamborn, Berkeley
Start	8:00, 19 October 1990	Finish	16:30, 19 October 1990
Completion	Piezometer with traffic-rated utility box at ground surface	Driller	Geo Drill Exploration, Berkeley CA
Drill Method/Rig	±4-inch ID by ±8-inch OD hollow-stem augers/Mobile B61	Total Depth	±50.5 feet
Sampling	±2-inch ID by ±2-1/2-inch OD driven split-spoon fitted with 2-inch diameter by 6-inch long brass liners. Samples collected by driving spoon ahead of auger bit.	Groundwater	±38 feet below ground surface (stabilized measurement after casing installed)

Depth (feet)	USCS	Graphic Log	Sample	Blows/6-inches	Soil Description, Observations, and Comments
					Ground surface was paved with asphalt
2.5					
5.0	SM			6	Slough
				11	Silty Sand, ±70% fine to medium subangular sand, ±5% coarse
				21	subround sand, bound in silt matrix (not plastic) moist, hard, red-brown,
					rootlet surrounded by gray-green mottling at ±5.2 feet
7.5					
10.0				8	Silty Sand, as above, with medium to coarse subangular sand, ± 10%
	SM			15	fine subangular gravel, dendritic black rootlets, subvertical fracture
				27	with black oxide coating
12.5					
15.0				9	Sandy Silt, ±25% fine to medium subangular to subrounded sand,
	ML			16	±10%black (coal?) clasts, slightly plastic, moist, hard, red-brown,
				18	sparse pale green mottling, trace rootlets-associated with mottling
17.5					
20.0	SM			13	Silty Sand, ±70% fine to coarse angular to subangular sand bound in

Inv 2dd

Boring Log for P1 (page 2 of 3)

1S/3W 32J2

365428B

Depth (feet)	USCS	Graphic Log	Sample	Blows/6-inches	Soil Description, Observations, and Comments
	SM			22 31	silt, trace fine subangular gravel, non-plastic fines, dry, red-brown, ±5% black (coal?) clasts
22.5					
25.0	SW-SM			14 26 33	Well graded Sand with Silt and Gravel, ±50% medium subangular sand with abundant medium to coarse subangular gravel (metamorphic and volcanic), dry, hard, red-brown, clasts are weathered and partially decomposed, soil is bound with silt or clay matrix, trace of pale green mottling
27.5					
30.0	MH			11 18 30	Silt, ±5% very fine sand, moist, hard, gray-green, rust-orange mottling, poor anastomozing subvertical fracture
32.5					
35.0	ML			12 24 32	Sandy Silt, ±15% fine to coarse subangular sand (mostly quartz), moist, hard, red-brown, gray-green mottling along fractures and rootlet tubes, gasoline odor
37.5					
40.0	GM			14 31 46	Silty Gravel, subround to round fine to medium gravel (chert and and volcanic) bound in sandy silt matrix, moist hard red-brown with greenish mottling, slight gasoline odor
42.5					
45.0	ML			11 28	Sandy Silt, ±25% medium to coarse subangular sand, ±5% black (coal?) clasts, trace round medium gravel, dry, hard, red-brown, poor

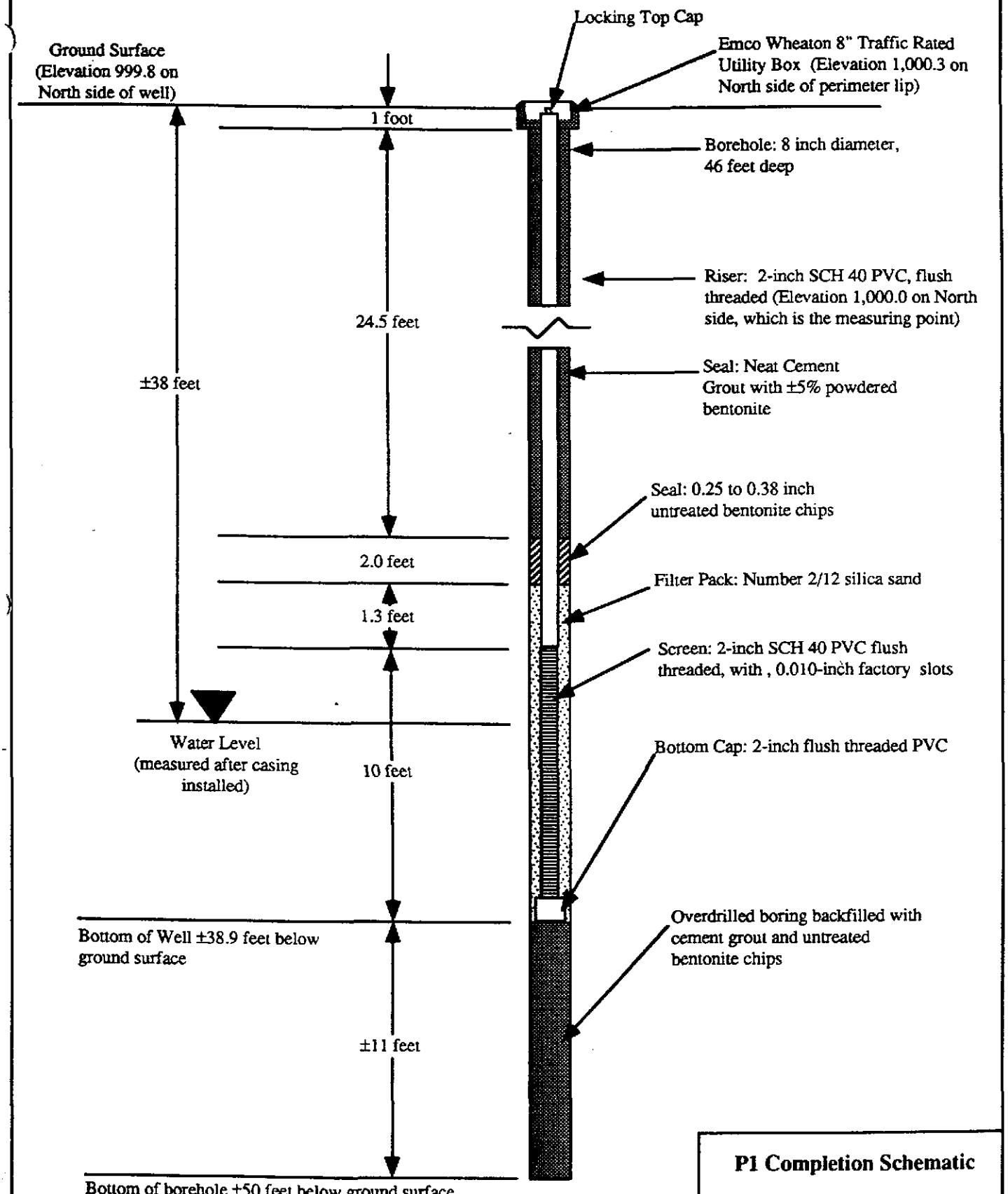
15/3W 32JZ

365428B

Boring Log for P1 (page 3 of 3)

Depth (feet)	USCS	Graphic Log	Sample	Blows/6-inches	Soil Description, Observations, and Comments
	ML			37	blocky fracture with shiny surfaces
47.5					
50.0	GM			39 64/ 4.5"	Silty Gravel, subround medium gravel (volcanic and metamorphic) in sandy silt matrix, wet, soft, red brown
					Total depth of boring = ±50.5 feet
52.5					Groundwater not observed during drilling
55.0					
57.5					
60.0					
62.5					
65.0					
67.5					
70.0					

1S/3W 32J2
365428B



P1 Completion Schematic

2801 MacArthur
Oakland CA

Boring Log for P2 (page 1 of 3)

15/3W 32J3
365428C

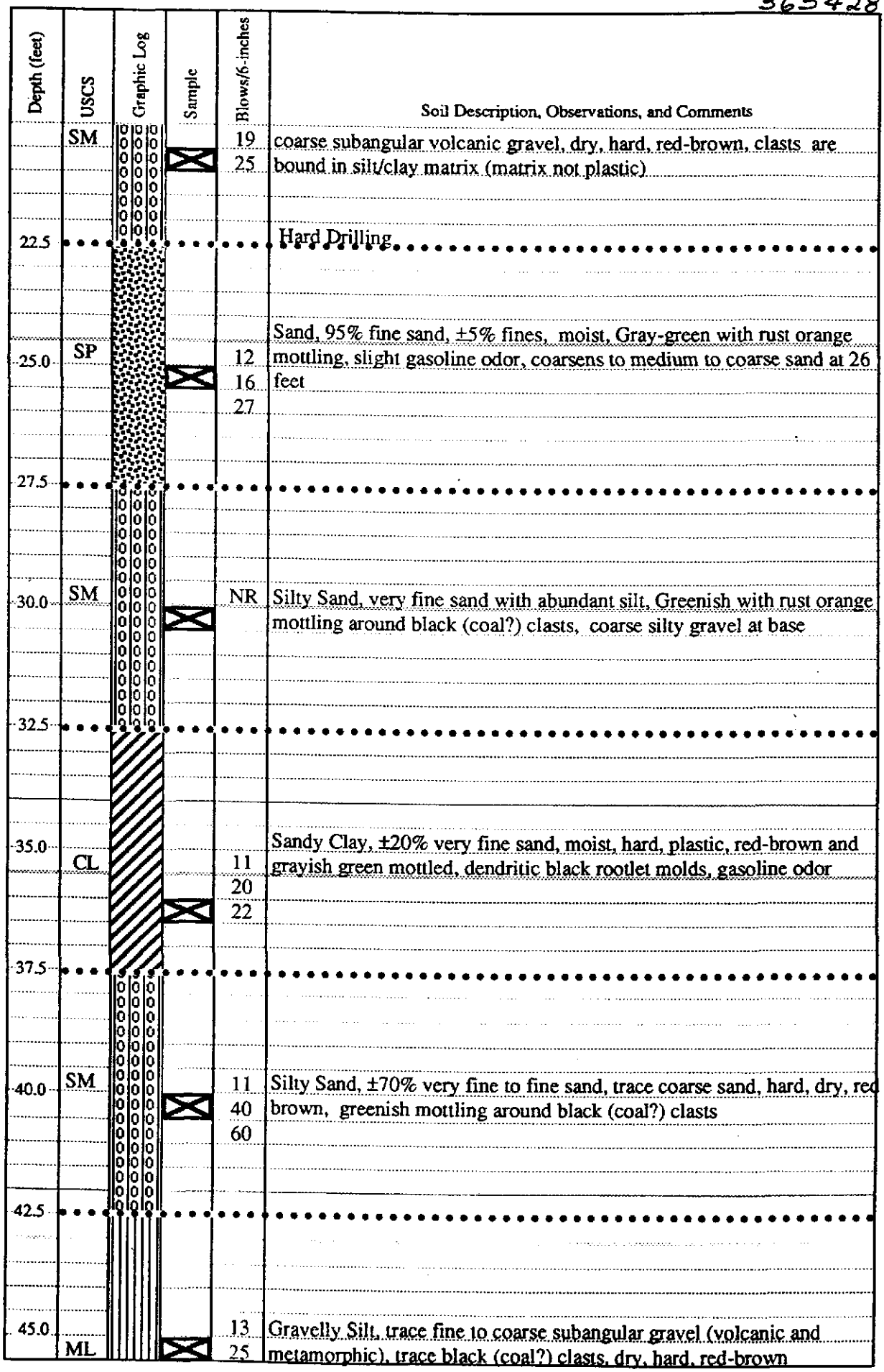
Project	Soil and Groundwater Investigation Former Gasoline Station Oakland CA	Address	2801 MacArthur Boulevard Oakland CA 94602
Location	±40 feet west of building	Project No.	P12
Elevation	Ground surface = 998.1 feet (surveyed)	Logged By	Greg Reller, Streamborn, Berkeley
Start	16:00, 19 October 1990	Finish	14:00, 21 October 1990
Completion	*Piezometer with traffic-rated utility box at ground surface*	Driller	Geo Drill Exploration, Berkeley CA
Drill Method/Rig	±4-inch ID by ±8-inch OD hollow-stem augers/Mobile B61	Total Depth	±61 feet
Sampling	±2-inch ID by ±2-1/2-inch OD driven split-spoon fitted with 2-inch diameter by 6-inch long brass liners. Samples collected by driving spoon ahead of auger bit.	Groundwater	±35 feet below ground surface (stabilized measurement after casing installed)

Depth (feet)	USCS	Graphic Log	Sample	Blows/6-inches	Soil Description, Observations, and Comments
					Ground surface was paved with asphalt
2.5					
5.0	SC			6 15 19	Clayey Sand, ±65% fine to coarse, subangular to subround sand bound in silt matrix, ± 5% black (coal?) clasts, dry, hard, red-brown, trace fine subangular pebbles
7.5					
10.0	GC			11 18 24	Clayey Gravel, fine to medium subangular to subrounded gravel bound in sandy clay matrix, ±5% black (coal?) clasts, moist, hard, red-brown
12.5					
15.0	GW			11 14 23	Sandy Gravel, as above, less gravel, better rounding, sand>> fines
17.5					
20.0	SM			12	Silty Sand, ±70% fine to medium subangular to subrounded sand, trace

15/3W 32J3

365428C

Boring Log for P2 (page 2 of 3)



Depth (feet)	USCS	Sample	Blows/6-inches	Soil Description, Observations, and Comments
	SM		19	coarse subangular volcanic gravel, dry, hard, red-brown, clasts are
			25	bound in silt/clay matrix (matrix not plastic)
22.5				Hard Drilling
				Sand, 95% fine sand, ±5% fines, moist, Gray-green with rust orange
25.0	SP		12	mottling, slight gasoline odor, coarsens to medium to coarse sand at 26
			16	feet
			27	
27.5				
30.0	SM		NR	Silty Sand, very fine sand with abundant silt, Greenish with rust orange
				mottling around black (coal?) clasts, coarse silty gravel at base
32.5				
35.0				Sandy Clay, ±20% very fine sand, moist, hard, plastic, red-brown and
	CL		11	grayish green mottled, dendritic black rootlet molds, gasoline odor
			20	
			22	
37.5				
40.0	SM		11	Silty Sand, ±70% very fine to fine sand, trace coarse sand, hard, dry, red
			40	brown, greenish mottling around black (coal?) clasts
			60	
42.5				
45.0			13	Gravelly Silt, trace fine to coarse subangular gravel (volcanic and
	ML		25	metamorphic), trace black (coal?) clasts, dry, hard, red-brown

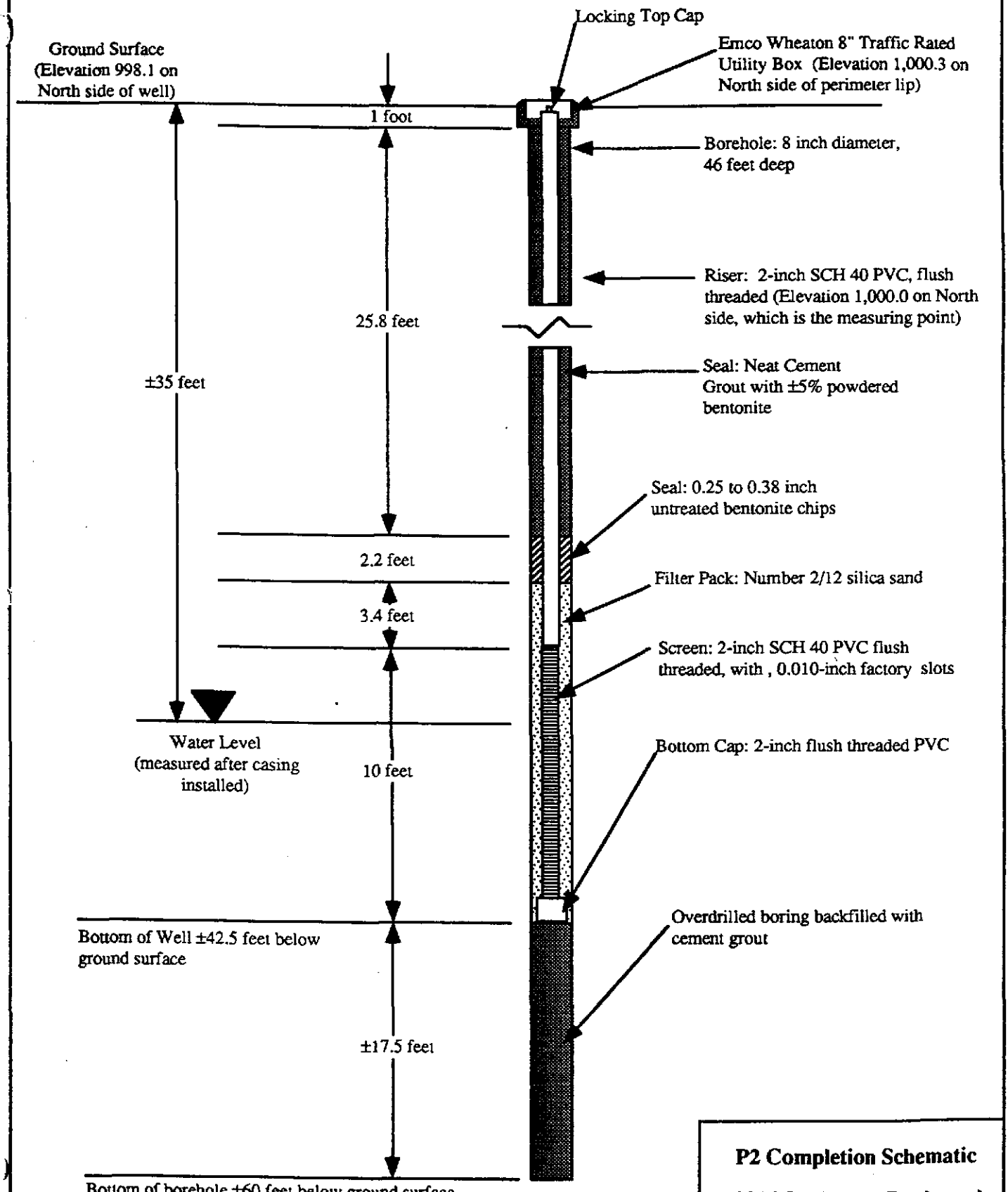
Boring Log for P2 (page 3 of 3)

1S/3W 32J3

365428C

Depth (feet)	USCS	Graphic Log	Sample	Blows/6-inches	Soil Description, Observations, and Comments
					See previous page
	ML			41	
47.5					
50.0	SM			NR	Silty Sand, ±80% fine sand with silt matrix, trace fine subround gravel and black (coal?) clasts, dry, hard, red-brown
52.5					
55.0	GW			27 42 53	Gravel with sand, fine to coarse subangular to subrounded gravel (volcanic and metamorphic) bound in silty sand matrix, dry, firm, red-brown.
57.5					
60.0	SM			14 34 61	Silty Sand, ±10% silt, moist, firm, red-brown, drive shoe contained a thin gravelly sand layer with sharp boundaries, silty sand had pale green motttling
					Total depth of boring = 61 feet
62.5					Groundwater not observed during drilling
65.0					
67.5					
70.0					

15/3W 32J3
365428C



P2 Completion Schematic

2801 MacArthur Boulevard
Oakland CA

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

1S/3W 32J4-5

365433A.B

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94588 ♦ (415) 484-2600

19 March 1991

Streamborn Consulting Services
P.O. Box 9504
Berkeley, CA 94709-0504

Gentlemen:

Enclosed is Groundwater Protection Ordinance permit 91144 for a monitoring well construction project at 2801 MacArthur Boulevard in Oakland for APA Fund Limited.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number.

If you have any questions, please contact Wyman Hong or Craig Mayfield at 484-2600.

Very truly yours,

J. Killingstad, Chief
Water Resources Engineering

WH:mm
Enc.

1S/3W 32J4-5

3654 33A, B

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 2801 MacArthur Blvd
Oakland CA
At Intersection Of Coolidge & MacArthur

CLIENT
Name APA Funds Limited c/o Cameron Corporation
Address 1904 Franklin St. Phone 415 452-4711
City Oakland Zip 94612

APPLICANT
Name Mark Buscheck
Steamboat
Address P.O. Box 9504 Phone 415 528-4234
City Berkeley Zip 94709-0504

TYPE OF PROJECT

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

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 374152

WELL PROJECTS
Drill Hole Diameter ± 8 in. Maximum
Casing Diameter ± 2 in. Depth ± 45 ft.
Surface Seal Depth ± 32 ft. Number 2

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

ESTIMATED STARTING DATE 18 March 1991
ESTIMATED COMPLETION DATE 15 April 1991

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

APPLICANT'S SIGNATURE [signature] Date 14 March '91

FOR OFFICE USE

PERMIT NUMBER 91144
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

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

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

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, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 14 Mar 91
Wyman Hong

121989

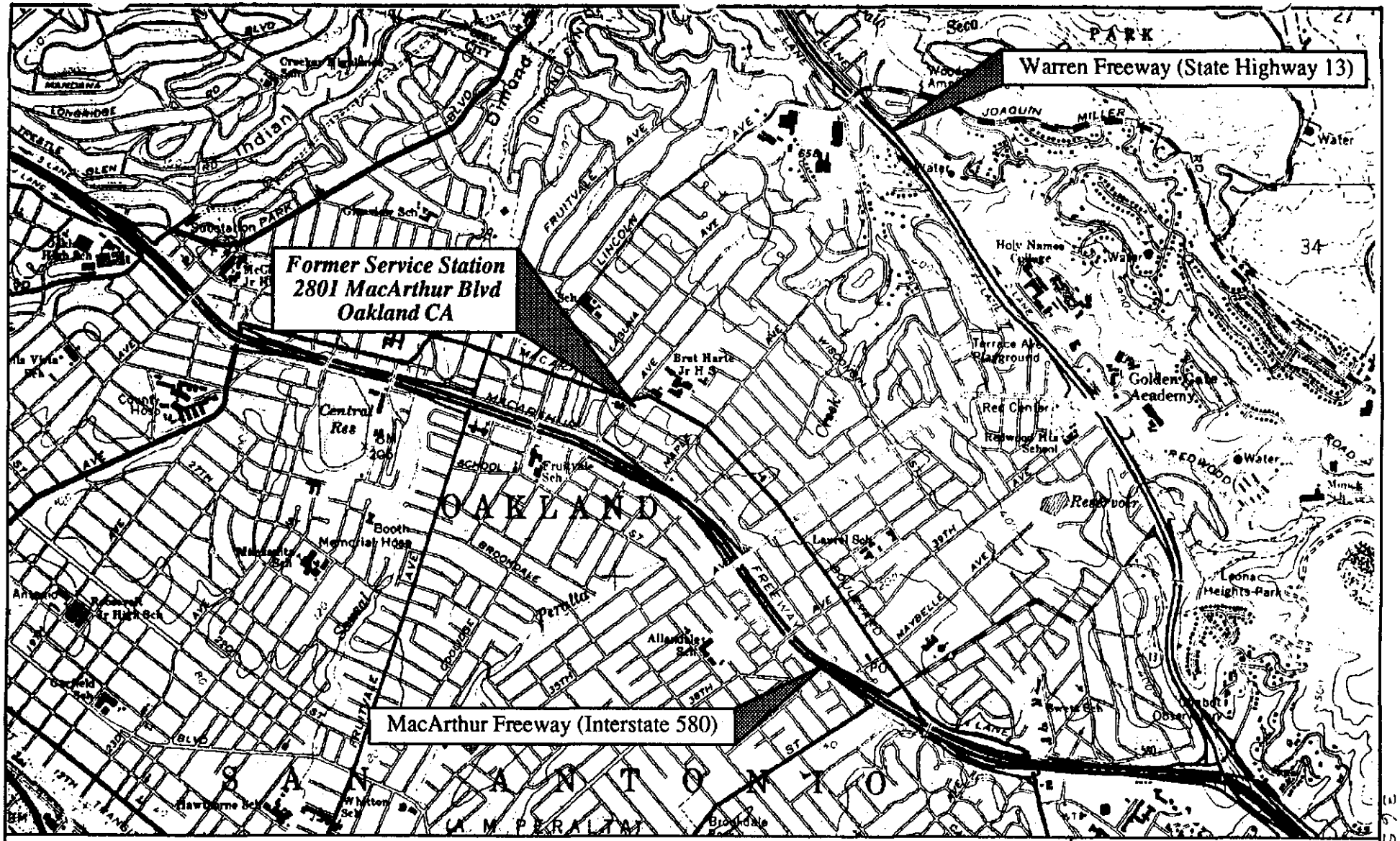


Figure 1

Location Map

2801 MacArthur Boulevard
Oakland CA

15/3W 32J4-5
36543A,B

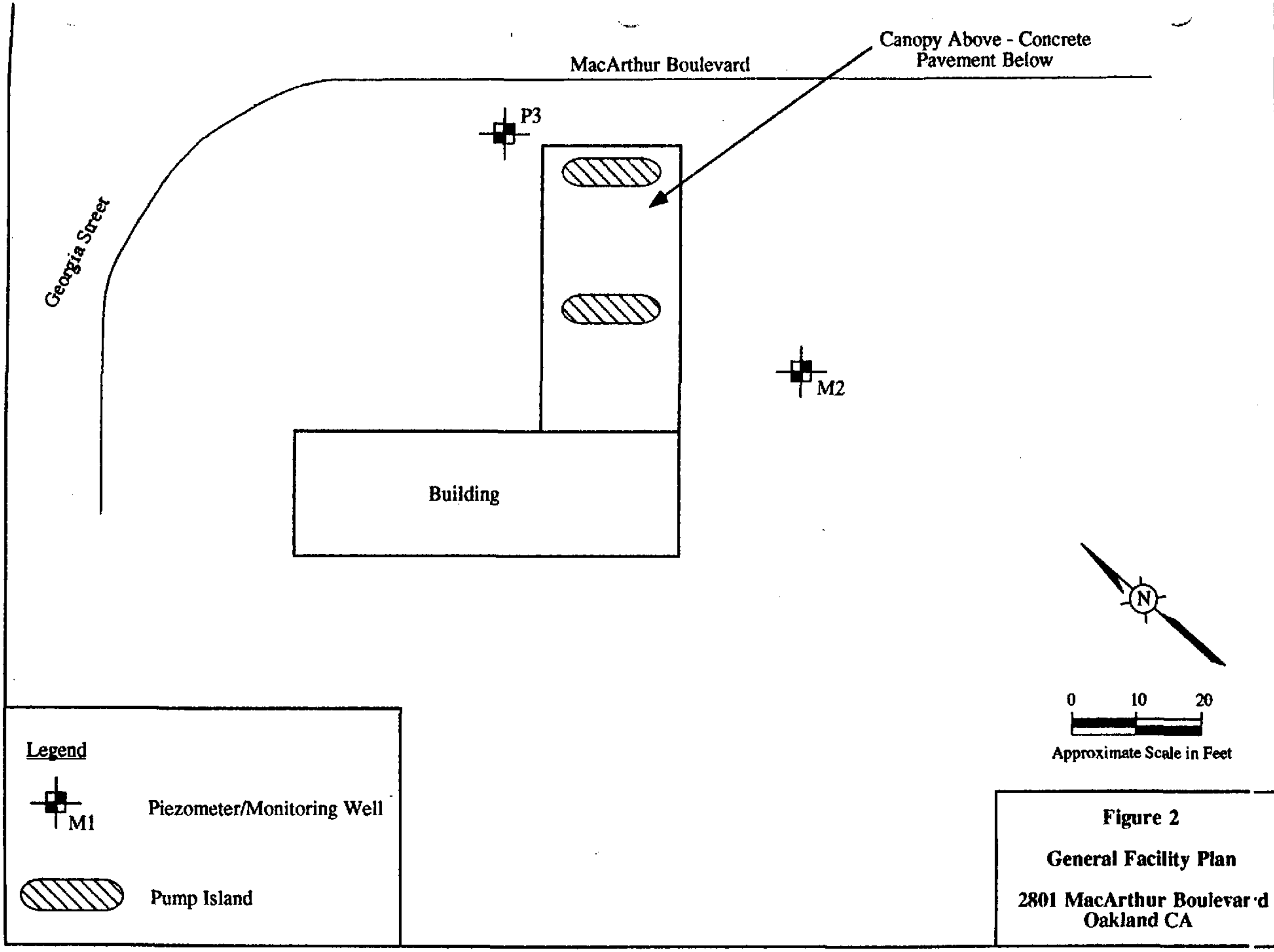


Figure 2

General Facility Plan

2801 MacArthur Boulevard
Oakland CA

1S/3W 32J4-5
365433A,B

BORING LOG LEGEND AND NOTES

Soil Classification

Soils were classified in the field in approximate accordance with ASTM D 2488-84 (Standard Practice for Description and Identification of Soils, Visual-Manual Procedure). Textural classifications represent the opinion of the field geologist or field engineer regarding the character of encountered materials. Laboratory classification tests were not performed to verify the field classifications. In general, mixtures of soil types and gradual transitions between soil types may more accurately represent the subsurface materials, instead of the distinct divisions depicted on the logs.

Textural Classification


CL: Sandy Clay,


MH: Inorganic Silt


ML: Sandy Silt


SM: Silty Sand


SW: Well-graded Sand


SC: Clayey Sand


SP: Poorly-graded Sand


GC: Clayey Gravel


GM: Silty Gravel


GW: Well-graded gravel, Well graded Gravel with Sand

— — — Approximate location of gradational transition or inferred contact between soil types

——— Approximate location of observed soil transition

Sample Symbol


Sample from this depth interval retained in brass liner and shipped to the laboratory for possible testing

General Notes

(a) NR indicates information not recorded

(b) Soil samples were collected by driving a 2-inch ID by 18 inch long split-spoon using a 140-pound weight

(c) Percentages of textural classes (sand, gravel, etc.) cited on logs are approximate

(d) Graphic log symbols are extrapolated beyond sample boundaries

(e) OVM (ppm) = Measurement by field organic vapor monitor in ppm volume/volume. Measurements performed using Thermo Environmental Instruments Model 580B OVM, 10.0 eV photoionization detector, calibrated to 100 ppm v/v isobutylene. Measurements performed by screening the ends of the freshly retrieved liners

(f) Depths measured from ground surface

1S13W 32J 4
365433A

Boring Log for P3 (page 1 of 3)

Project: Soil and Groundwater Investigation, Former Gasoline Station, Oakland CA
Address: 2801 MacArthur Blvd., Oakland CA 94602
Location: Immediately west of canopy extending from service station building
Project No.: P26
Elevation: Ground surface = 999.3 feet (surveyed)
Logged By: Mark Buscheck, STREAMBORN, Berkeley
Start: 8:00, 18 March 1991
Finish: 13:00, 18 March 1991
Completion: Monitoring well with traffic-rated utility box at ground surface
Driller: Bayland Drilling, Menlo Park CA
Drill Method/Rig: ±4-inch ID by ±8-inch OD hollow-stem auger/Mobile CME55
Drilled Depth: ±45 feet
Sampling: ±2-inch ID by ±2-1/2-inch OD driven split-spoon fitted with 2-inch diameter by 6-inch long brass liners. Samples collected by driving spoon ahead of auger bit.
Groundwater: ±39 feet below ground surface (measurement on 18 March 1991, after casing installed)

Depth (feet)	USCS	Graphic Log	Sample	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, and Comments	OVM (ppm)
0.0						Asphalt concrete pavement and aggregate base to ±1-foot depth	
2.5							
5.0				5	6	Silt with sand, ±85% silt, light brown to red hard, moist (>10% of silt in	<1
	SM			7	6	fine dark clasts), ±15% fine to coarse subangular to subrounded sand, light	<1
				14	6	brown	<1
7.5							
10.0				4	6	Sand with silt and gravel, ±70% fine to coarse subangular to subrounded	<1
	SM			9	6	sand, light brown to red, moist (±5% of sand in dark coarse clasts), ±15%	<1
				16	6	brown silt, ±15% poorly-graded subangular to subrounded gravel, grey,	<1
12.5						hard	
15.0				3	6	Sand with silt and gravel (as above)	<1
	SM			9	6	Hard drilling observed at ±15 feet	<1
				19	6		<1
17.5							
20.0							

1S/3W 32J4

365433A

Boring Log for P3 (page 2 of 3)

Depth (feet)	USCS	Graphic Log	Sample	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, and Comments	OVM (ppm)
20.0				9	6	Sand with gravel and silt, ±65% medium to coarse subangular to	<1
	SM			15	6	subrounded sand, light brown to red, moist , ±20% poorly graded,	<1
				24	1	subangular to subrounded gravel, grey, hard, ±15% light brown silt; <5%	<1
						clay in silt matrix	
22.5							
25.0				8	6	Sand with silt, ±85% fine sand, light brown with grey and olive green	<1
	SM			12	6	mottling, moist, ±15% light brown silt, <5% clay within sand and silt	<1
				18	6	matrix	<1
27.5							
30.0				9	6	Sand with silt, ±80% fine to medium subrounded sand, light brown with	<1
	SM			12	6	grey and olive green mottling, moist, ±15% light brown silt, ±5%	<1
				18	6	subangular hard gravel	<1
32.5							
35.0				9	6	Silt with sand, ±70% silt, light brown to red with grey and olive green	132
	ML		X	12	6	mottling, moist, ±20% fine to coarse subangular to subrounded sand, light	69
				20	6	brown, ±10% clay, slight petroleum odor observed	18
37.5							
						Groundwater measurement on 18 March 1991, after casing installed	
40.0				9	6	Silt with sand, ±75% silt, light brown to red with grey and olive green	<1
	ML		X	12	6	mottling, moist, ±15% fine brown sand, ±10% clay, within silt matrix <5%	<1
				22	6	black sand clasts (<0.25-inch diameter)	<1
42.5							
45.0							

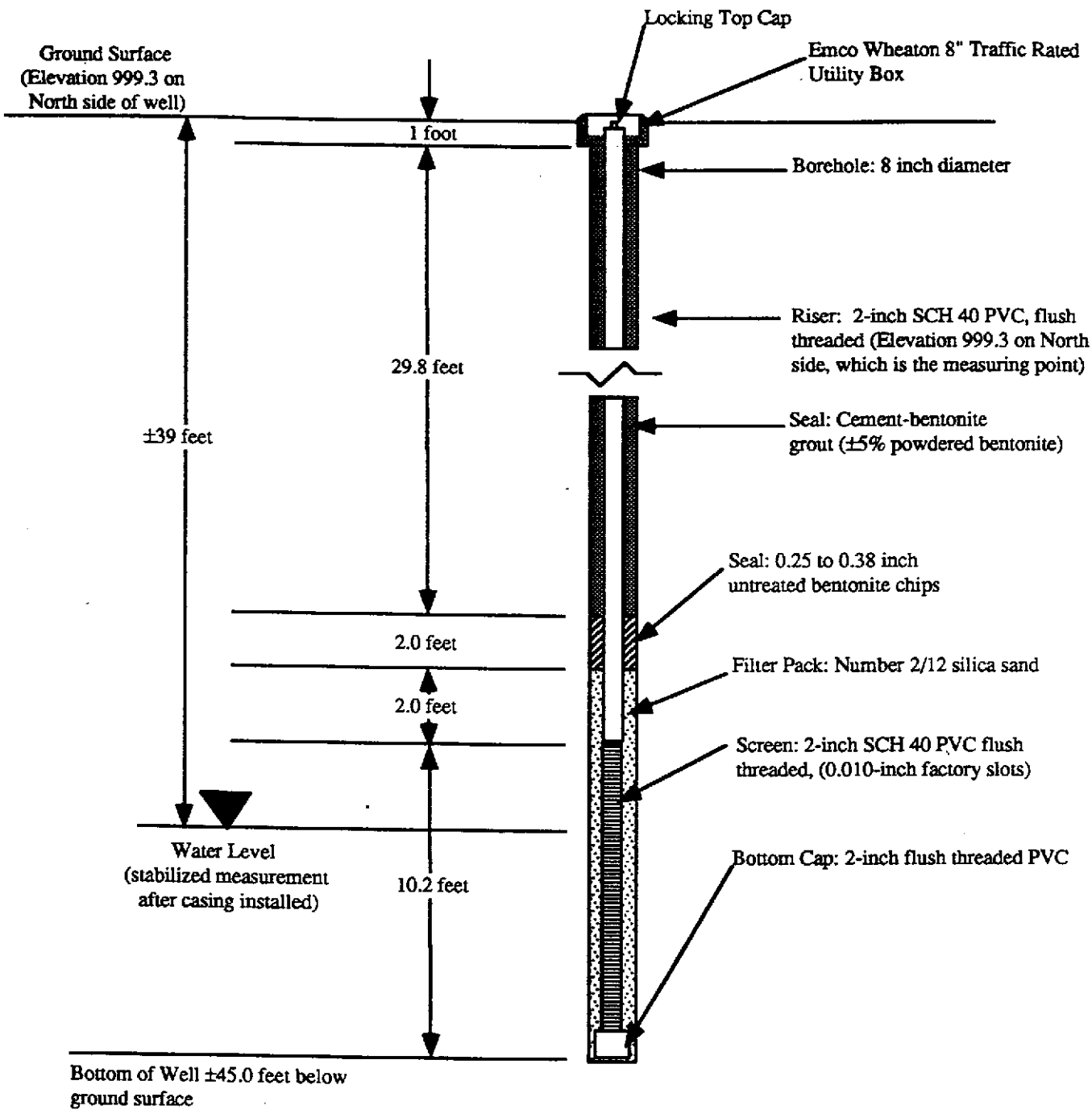
1S/3W 32J4

365433A

Boring Log for P3 (page 3 of 3)

Depth (feet)	USCS	Graphic Log	Sample	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, and Comments	OVM (ppm)
45.0				15	6	Silt with sand and gravel, ±70% silt, light brown to red with grey and olive	<1
	ML			16	6	green mottling, moist, ±15% fine to medium subrounded sand, ±15%	<1
				19	6	subrounded to rounded hard gravel, <10% clay, <5% of silt matrix contains	<1
						dark medium sand clasts	
47.5						Boring drilled to ±45 feet	
50.0							
52.5							
55.0							
57.5							
60.0							
62.5							
65.0							
67.5							
70.0							

1S/3W 32J4
365433A



P3 Completion Schematic

2801 MacArthur Blvd.
Oakland CA

1S/3W 32J S
3154390

Boring Log for M2 (page 1 of 3)

Project: Soil and Groundwater Investigation, Former Gasoline Station, Oakland CA

Address: 2801 MacArthur Blvd., Oakland CA 94602

Location: Immediately southwest of former gasoline tank location

Project No.: P26

Elevation: Ground surface = 999.9 feet (surveyed)

Logged By: Mark Buscheck, STREAMBORN, Berkeley

Start: 8:00, 18 April 1991

Finish: 13:00, 18 April 1991

Completion: Monitoring well with traffic-rated utility box at ground surface

Driller: Bayland Drilling, Menlo Park CA

Drill Method/Rig: ±4-inch ID by ±8-inch OD hollow-stem auger/Mobile CME55

Drilled Depth: ±45 feet

Sampling: ±2-inch ID by ±2-1/2-inch OD driven split-spoon fitted with 2-inch diameter by 6-inch long brass liners. Samples collected by driving spoon ahead of auger bit.

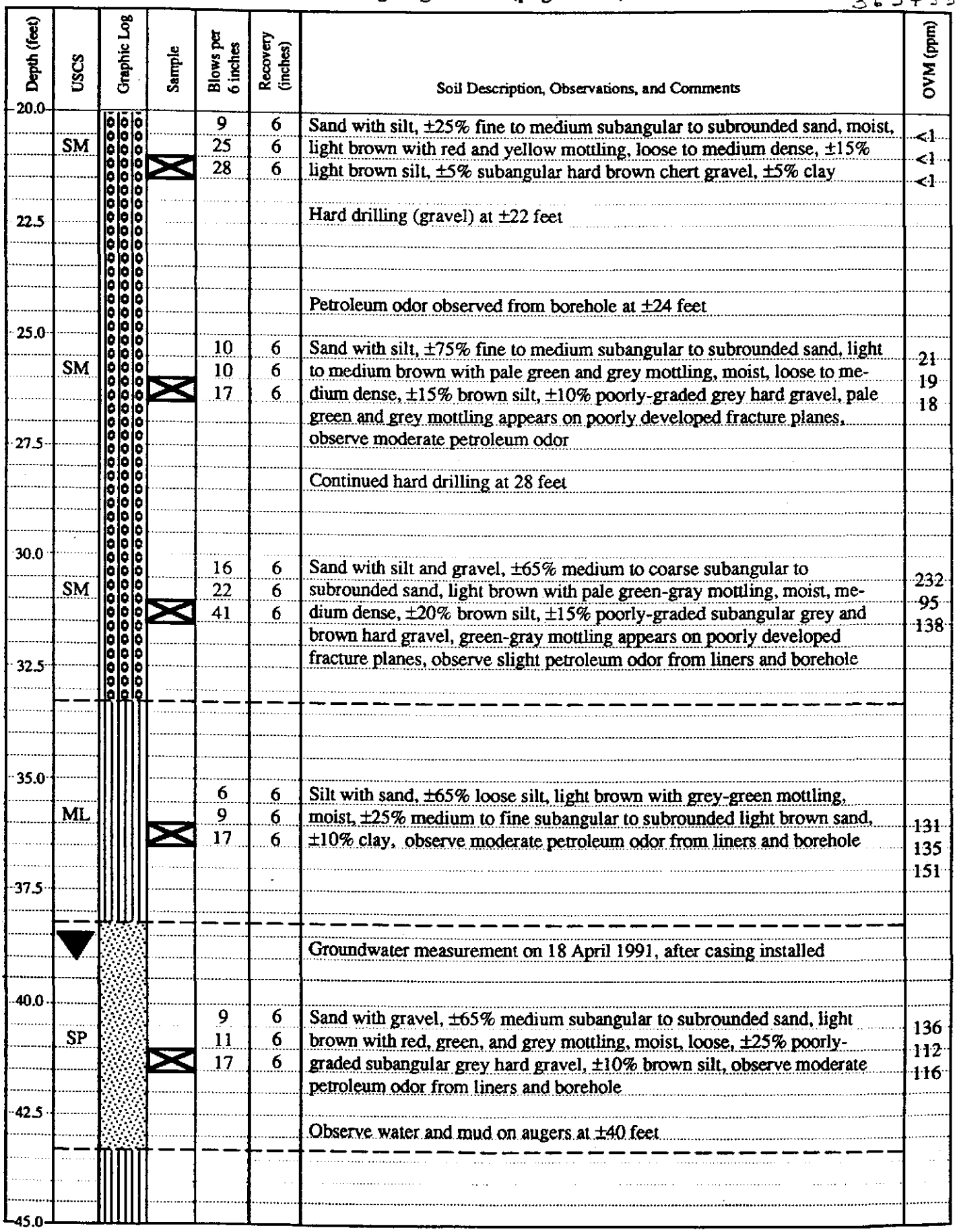
Groundwater: ±39 feet below ground surface (measurement on 18 April 1991, after casing installed)

Depth (feet)	USCS	Graphic Log	Sample	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, and Comments	OVM (ppm)
0.0						Asphalt concrete pavement and aggregate base to ±1-foot depth	
2.5							
5.0				3	6	Clay with silt and sand, ±60% lean clay, reddish-brown, cohesive, moist,	<1
	CL			5	6	±20% medium to coarse subangular to subrounded brown sand, 20% brown	<1
7.5				9	6	silt, some black silt clasts within clay matrix	<1
10.0				6	6	Clay with silt and sand, as above	<1
	CL			13	6		<1
12.5				17	6		<1
15.0				6	6	Sand with silt , ±70% medium to fine subangular to subrounded sand, light	<1
	SM			9	6	brown, slightly stiff, moist , ±15% light brown silt, 10% subangular to	<1
17.5				17	6	subrounded poorly-graded hard gravel, <5% black silt clasts within sand matrix	<1
20.0							

1S/3W 32J 5

3654338

Boring Log for M2 (page 2 of 3)



Depth (feet)	USCS	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, and Comments	OVM (ppm)
20.0		9	6	Sand with silt, ±25% fine to medium subangular to subrounded sand, moist,	<1
	SM	25	6	light brown with red and yellow mottling, loose to medium dense, ±15%	<1
		28	6	light brown silt, ±5% subangular hard brown chert gravel, ±5% clay	<1
22.5				Hard drilling (gravel) at ±22 feet	
				Petroleum odor observed from borehole at ±24 feet	
25.0		10	6	Sand with silt, ±75% fine to medium subangular to subrounded sand, light	21
	SM	10	6	to medium brown with pale green and grey mottling, moist, loose to me-	19
		17	6	dium dense, ±15% brown silt, ±10% poorly-graded grey hard gravel, pale green and grey mottling appears on poorly developed fracture planes,	18
27.5				observe moderate petroleum odor	
				Continued hard drilling at 28 feet	
30.0		16	6	Sand with silt and gravel, ±65% medium to coarse subangular to	232
	SM	22	6	subrounded sand, light brown with pale green-gray mottling, moist, me-	95
		41	6	dium dense, ±20% brown silt, ±15% poorly-graded subangular grey and brown hard gravel, green-gray mottling appears on poorly developed	138
32.5				fracture planes, observe slight petroleum odor from liners and borehole	
35.0		6	6	Silt with sand, ±65% loose silt, light brown with grey-green mottling,	
	ML	9	6	moist, ±25% medium to fine subangular to subrounded light brown sand,	131
		17	6	±10% clay, observe moderate petroleum odor from liners and borehole	135
37.5					151
				Groundwater measurement on 18 April 1991, after casing installed	
40.0		9	6	Sand with gravel, ±65% medium subangular to subrounded sand, light	136
	SP	11	6	brown with red, green, and grey mottling, moist, loose, ±25% poorly-	112
		17	6	graded subangular grey hard gravel, ±10% brown silt, observe moderate petroleum odor from liners and borehole	116
42.5				Observe water and mud on augers at ±40 feet	
45.0					

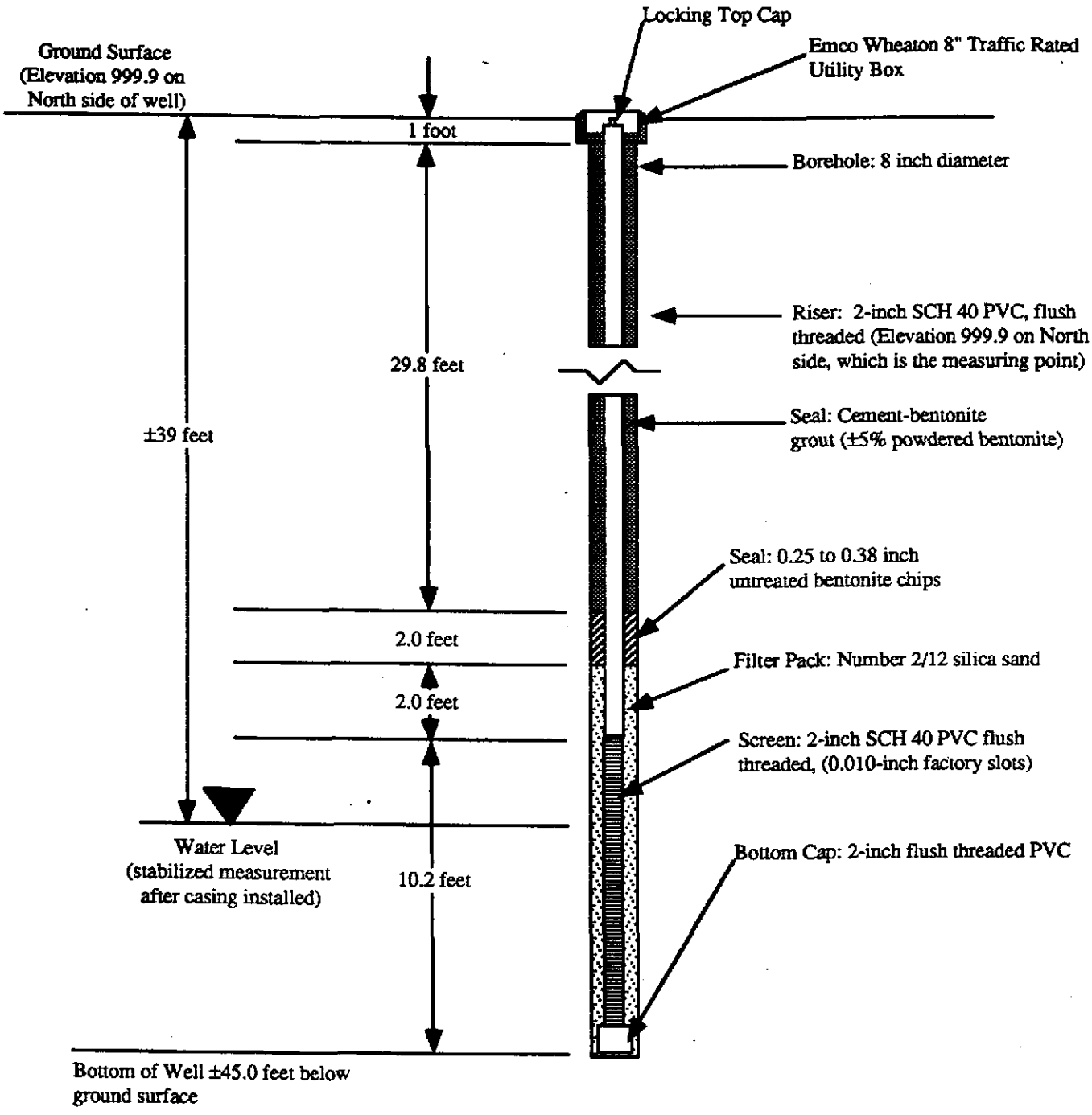
1S/3W 32J5

365433B

Boring Log for M2 (page 3 of 3)

Depth (feet)	USCS	Graphic Log	Sample	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, and Comments	OVM (ppm)
45.0				9	6	Silt with sand, ±75% silt, moist, light brown with olive green mottling,	<1
	ML			16	6	loose to medium dense, ±25% fine sand, light brown, very moist	<1
				32	6		<1
						Boring drilled to ±45 feet	
47.5							
50.0							
52.5							
55.0							
57.5							
60.0							
62.5							
65.0							
67.5							
70.0							

1S/3W 32J5
3654338



M2 Completion Schematic

2801 MacArthur Blvd.
Oakland CA

365433A,B

STREAMBORN

415/528-4234
Fax 528-2613

1S/3W 32J4-5

J. Killingstad
Chief Water Resources Engineering
Alameda County Flood Control and
Water Conservation District, Zone 7
5997 Parkside Drive
Pleasanton CA 94588

28 May 1991

Project No. P26

Permit Number 91144
Well and Piezometer Completion Information
2801 MacArthur Boulevard
Oakland CA

Dear Mr. Killingstad:

Attached are the logs and completion schematics for piezometer P3 and monitoring well M2. Also attached are figures showing the pertinent locations. The piezometer and well were installed under permit number 91144. If you require additional information please call.

Sincerely,

STREAMBORN

Mark W. Buscheck
Geologist

Enclosures (DWR 188, Figure 1, Figure 2, Boring Log Legend and Notes, Boring Log for P3, P3 Completion Schematic, Boring Log for M2, Completion Schematic for M2)

cc: Department of Water Resources, Central District

Mail: P.O. Box 9504, Berkeley CA 94709-0504

Office: 900 SanteFe Avenue, Albany CA 94706

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

1S/3W 32P2

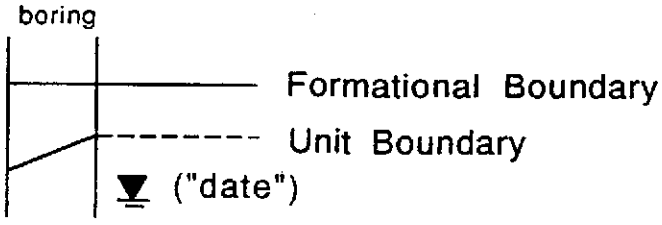
2 of 7

407400

UNIFIED SOIL CLASSIFICATION SYSTEM

	MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS more than half > #200 sieve	GRAVELS more than half coarse fraction is larger than No. 4 sieve	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		well graded gravels, gravel-sand mixtures
			GP		poorly graded gravels, gravel-sand mixtures
		GRAVELS WITH OVER 12% FINES	GM		silty gravels, poorly graded gravel-sand silt mixtures
			GC		clayey gravels, poorly graded gravel-sand clay mixtures
	SANDS more than half coarse fraction is smaller than No. 4 sieve	CLEAN SANDS WITH LITTLE OR NO FINES	SW		well graded sands, gravelly sands
			SP		poorly graded sands, gravelly sands
		SANDS WITH OVER 12% FINES	SM		silty sands, poorly graded sand-silt mixtures
			SC		clayey sands, poorly graded sand-clay mixtures
FINE GRAINED SOILS more than half < #200 sieve	SILTS AND CLAYS liquid limit less than 50		ML		inorg. silts and v.fine sands, rock flour silty or clayey sands, or clayey silts w/sl. plasticity
			CL		inorg. clays of low-med plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		organic clays and organic silty clays of low plasticity
	SILTY AND CLAYS liquid limit greater than 50		MH		inorganic silty, micaceous or diatomacious fine sandy or silty soils, elastic silts
			CH		inorganic clays of high plasticity, fat clays
			OH		organic clays of medium to high plasticity organic silts
	HIGHLY ORGANIC SOILS		Pt		peat and other highly organic soils

LEGEND FOR BORING LOGS



ACC ENVIRONMENTAL CONSULTANTS 1000 ATLANTIC AVENUE, SUITE 110 ALAMEDA, CA 94501		Soil Classification System	
Project No. 6064-2	Date: 1/9/93	DRN: MCK	2964 Fruitvale Ave.

15/3W 32P2

3 QM

407400

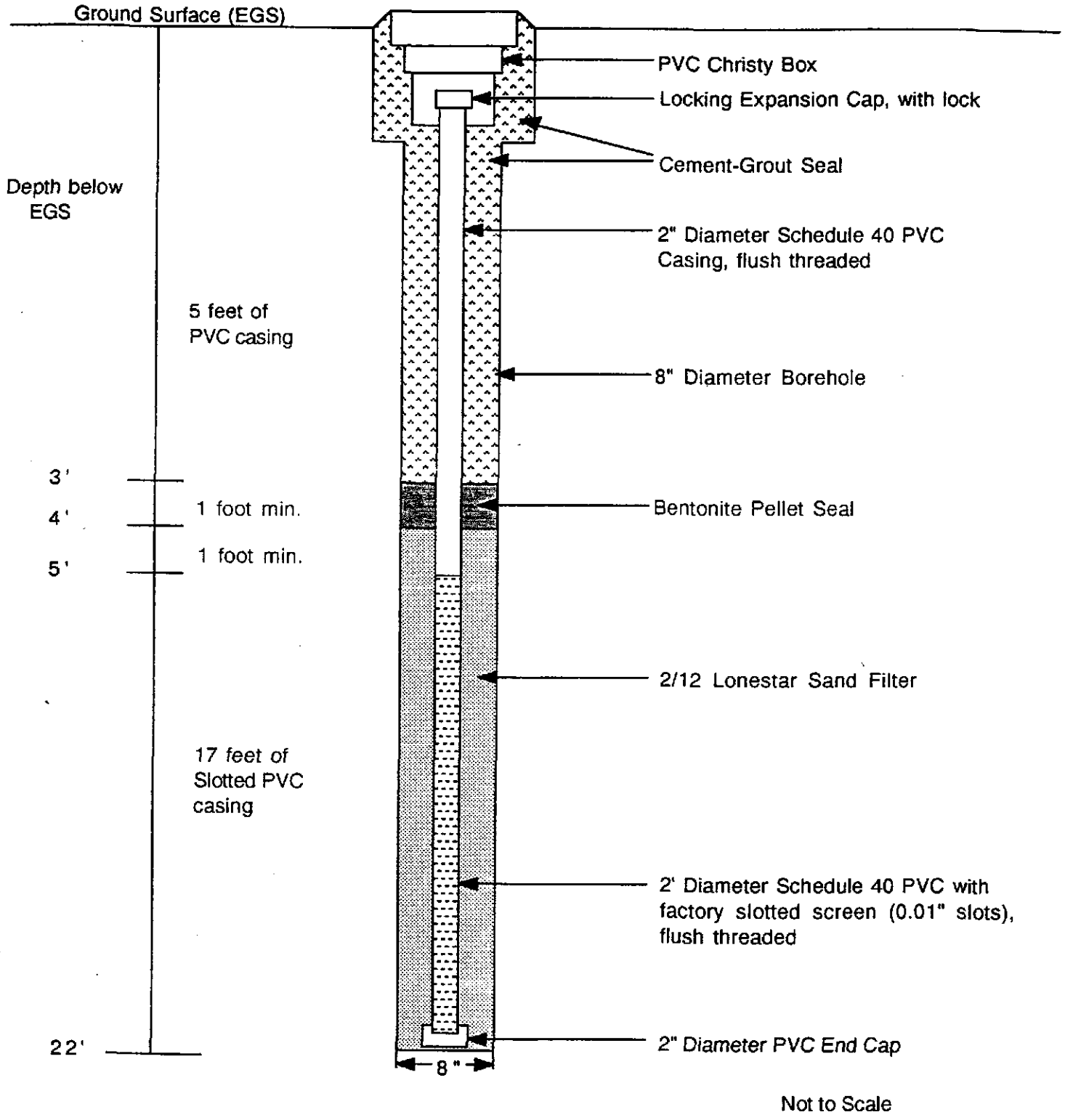
Bayland Drilling B-53 Drill Rig.	MicroTip (ppm)	Blows/6 in.	SAMPLE #	Depth (feet)	Equipment: Hollow Stem Auger Logged By: M. Kaltreider PROJECT: 2964 Fruitvale Avenue Start Date: 01/15/93
Soil color described using Munsell soil color charts Color code				0	Asphalt: 4" lift. Lt. brown gravelly silt (GM) & gravelly clay (GC), med grained,dense (baserock)
				2	Very dark greyish brown/red mottled silty clay (CL), plastic, medium stiff, moist.
(10YR-3/2)	0	3	MW2-5	4	
				6	Hydrocarbon odor in cuttings.
				8	▼ (groundwater 01/15/93)
(10YR-3/2) (Gley - 4)	50	4	MW2-10	10	Very dark greyish brown to dark grey mottled clay (CH), plastic, saturated, medium stiff, strong hydrocarbon odor
				12	
				14	Dark olive gray sandy clay (CL), plastic, medium stiff, saturated.
(5Y-3/2)	10	7	MW2-15	16	
				18	
				20	Brown clayey gravel (GC) with sand, medium dense, saturated.
(10YR-4/3)	0	10	MW2-20	22	Brown gravelly sand (SW), medium dense, saturated.
(10YR-4/3)	0	30		24	BOTTOM OF BORING @ 22 FEET
				26	
				28	

ACC ENVIRONMENTAL CONSULTANTS 1000 ATLANTIC AVEUNUE, SUITE 110 ALAMEDA, CA 94501	JOB NO: 6068-2	BORING MW-2
	DATE: 02/13/93	2964 Fruitvale Avenue

15/3W 32P2

4 of 7

407400



Not to Scale

ACC Environmental Consultants 1000 Atlantic Avenue, Suite 110 Alameda, CA 94501	Job No.: 6068-2	Schematic of Monitoring Well No.: MW-2
	Date: 02/13/93	2964 Fruitvale Avenue

5 7 7 407400 1S/3W 32P2

Geochem ENVIRONMENTAL LABORATORIES

Mobile & In-House Laboratories Certified by State of California
Phone: (408) 955-9988 / FAX: (408) 955-9538

ANALYTICAL REPORT

****

Client: ACC Environmental
1000 Atlantic Ave.
Alameda, CA 94501
Attn: Misty Kaltreider

Date Sampled: 01/15/93
Date Received: 01/18/93
Date Analyzed: 01/19/93
Batch:SD-071 Matrix: Soil
Conc. Unit mg/kg(ppm)

Project: Fruitvale (Proj.#6068-2)

****

"**ND**" means "not detected" at indicated detection limit.
B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
Samples received chilled with a chain of custody record.

SAMPLE I.D.	Total Lead
DETECTION LIMIT	1 ppm
MW-2-10'	ND
MW-3-10'	ND

Reviewed and approved by George Tsai Jan. 20, 1992
George Tsai, Laboratory Director

6 of 7 407400 15/3W 32 P2

Geochem ENVIRONMENTAL LABORATORIES

Mobile & In-House Laboratories Certified by State of California
Phone: (408) 955-9988 / FAX: (408) 955-9538

ANALYTICAL REPORT

****

Client: ACC Environmental
1000 Atlantic Ave.
Alameda, CA 94501
Attn: Misty Kaltreider

Date Sampled: 01/15/93
Date Received: 01/18/93
Date Analyzed: 01/19/93
Batch:SD-071 Matrix: Soil
Conc. Unit ug/kg(ppb)

Project: Fruitvale (Proj.#6068-2)

****

"**ND**" means "not detected" at indicated detection limit.
B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
Samples received chilled with a chain of custody record.

SAMPLE I.D.	8015M/TPH Gasoline	8020 B / T / E / X
DETECTION LIMIT	50ppb	0.5 ppb
MW-2-5'	ND	ND / ND / ND / ND
MW-2-10'	11350	1254.6/ 1112.1 / 1267.5 / 1679.8
MW-3-5'	ND	ND / ND / ND / ND
MW-3-10'	7610	1540.0/ 1774.7 / 1249.0 / 1613.5

Reviewed and approved by George Tsai, JAN. 20, 1993
George Tsai, Laboratory Director

787 407400

Geochem ENVIRONMENTAL LABORATOF

Mobile & In-House Laboratories Certified by State of Ca

Phone: (408) 955-9988 / FAX: (408) 95

ANALYTICAL REPORT

****

Client: ACC Environmental
1000 Atlantic Ave.
Alameda, CA 94501
Attn: Misty Kaltreider

Date Sampled: 01/26/93
Date Received: 01/27/93
Date Analyzed: 01/28/93
Batch:SD-078 Matrix: Water
Conc. Unit ug/kg(ppb)

Project: Fruitvale (Proj.#6068-2) (418.1 EPA Conc. Unit mg/kg(ppm))

****

"**ND**" means "not detected" at indicated detection limit.
B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
Samples received chilled with a chain of custody record.

SAMPLE I.D.	8015M/TPH Gasoline	EPA 418.1	602 B / T / E / X
DETECTION LIMIT	50 ppb	1 ppm	0.5 ppb
MW-1	ND		ND / ND / ND / ND
MW-2	ND		ND / ND / ND / ND
MW-3	1800	28	83.1 / 95.9 / 169.2 / 318.7

Reviewed and approved by George Tsai, Laboratory Director FEB. 29, 1993

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

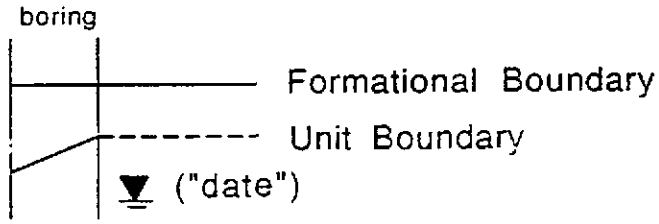
1S/3W 32P3

2 & 8 407401

UNIFIED SOIL CLASSIFICATION SYSTEM

	MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS more than half > #200 sieve	GRAVELS more than half coarse fraction is larger than No. 4 sieve	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		well graded gravels, gravel-sand mixtures
			GP		poorly graded gravels, gravel-sand mixtures
		GRAVELS WITH OVER 12% FINES	GM		silty gravels, poorly graded gravel-sand silt mixtures
			GC		clayey gravels, poorly graded gravel-sand clay mixtures
	SANDS more than half coarse fraction is smaller than No. 4 sieve	CLEAN SANDS WITH LITTLE OR NO FINES	SW		well graded sands, gravelly sands
			SP		poorly graded sands, gravelly sands
		SANDS WITH OVER 12% FINES	SM		silty sands, poorly graded sand-silt mixtures
			SC		clayey sands, poorly graded sand-clay mixtures
FINE GRAINED SOILS more than half < #200 sieve	SILTS AND CLAYS liquid limit less than 50		ML		inorg. silts and v.fine sands, rock flour silty or clayey sands, or clayey silts w/sl. plasticity
			CL		inorg. clays of low-med plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		organic clays and organic silty clays of low plasticity
	SILTY AND CLAYS liquid limit greater than 50		MH		inorganic silty, micaceous or diatomacious fine sandy or silty soils, elastic silts
			CH		inorganic clays of high plasticity, fat clays
			OH		organic clays of medium to high plasticity organic silts
	HIGHLY ORGANIC SOILS		Pt		peat and other highly organic soils

LEGEND FOR BORING LOGS

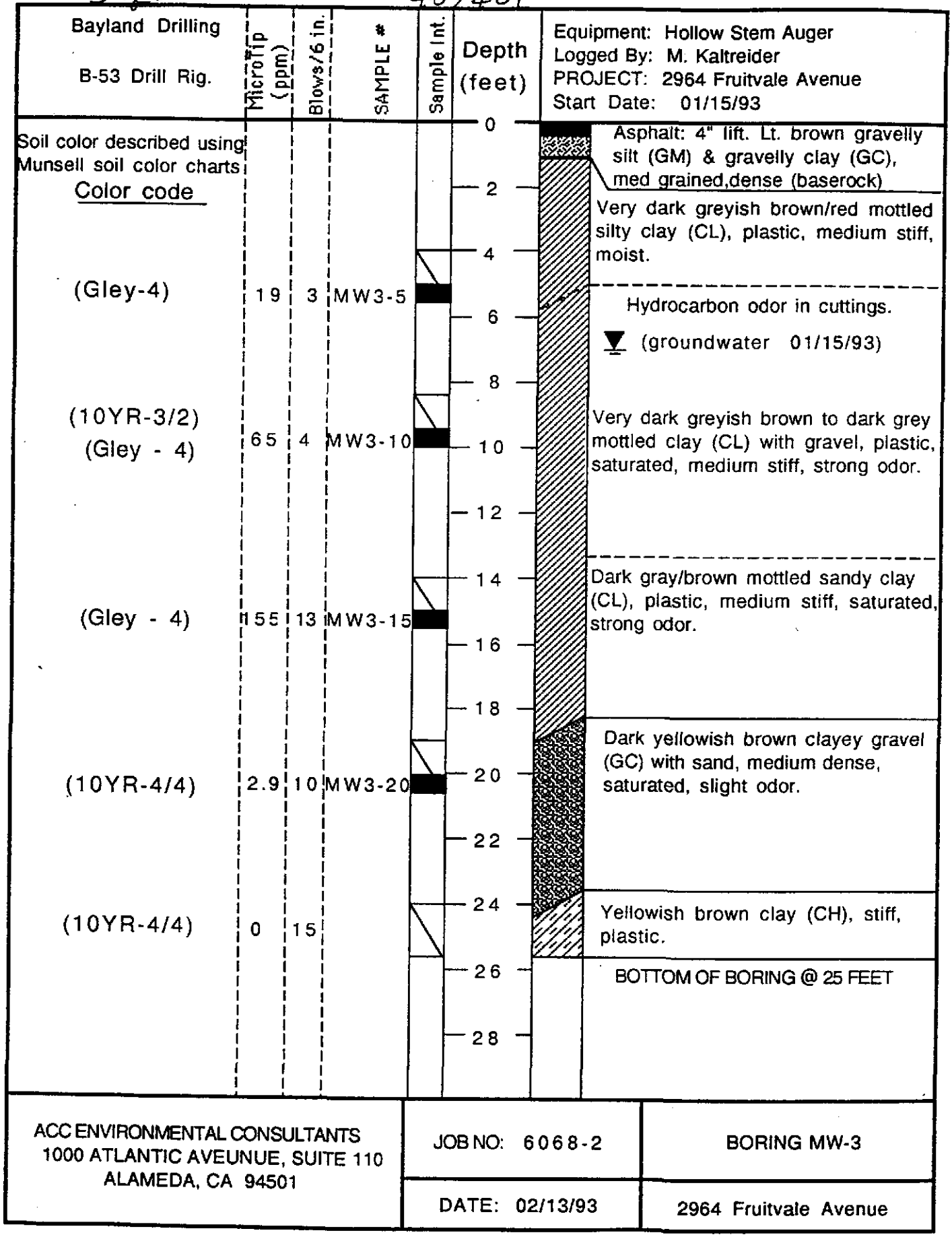


ACC ENVIRONMENTAL CONSULTANTS 1000 ATLANTIC AVENUE, SUITE 110 ALAMEDA, CA 94501		Soil Classification System	
Project No. 6064-2	Date: 1/9/93	DRN: MCK	2964 Fruitvale Ave.

15/3W 32P3

3 7 8

407401

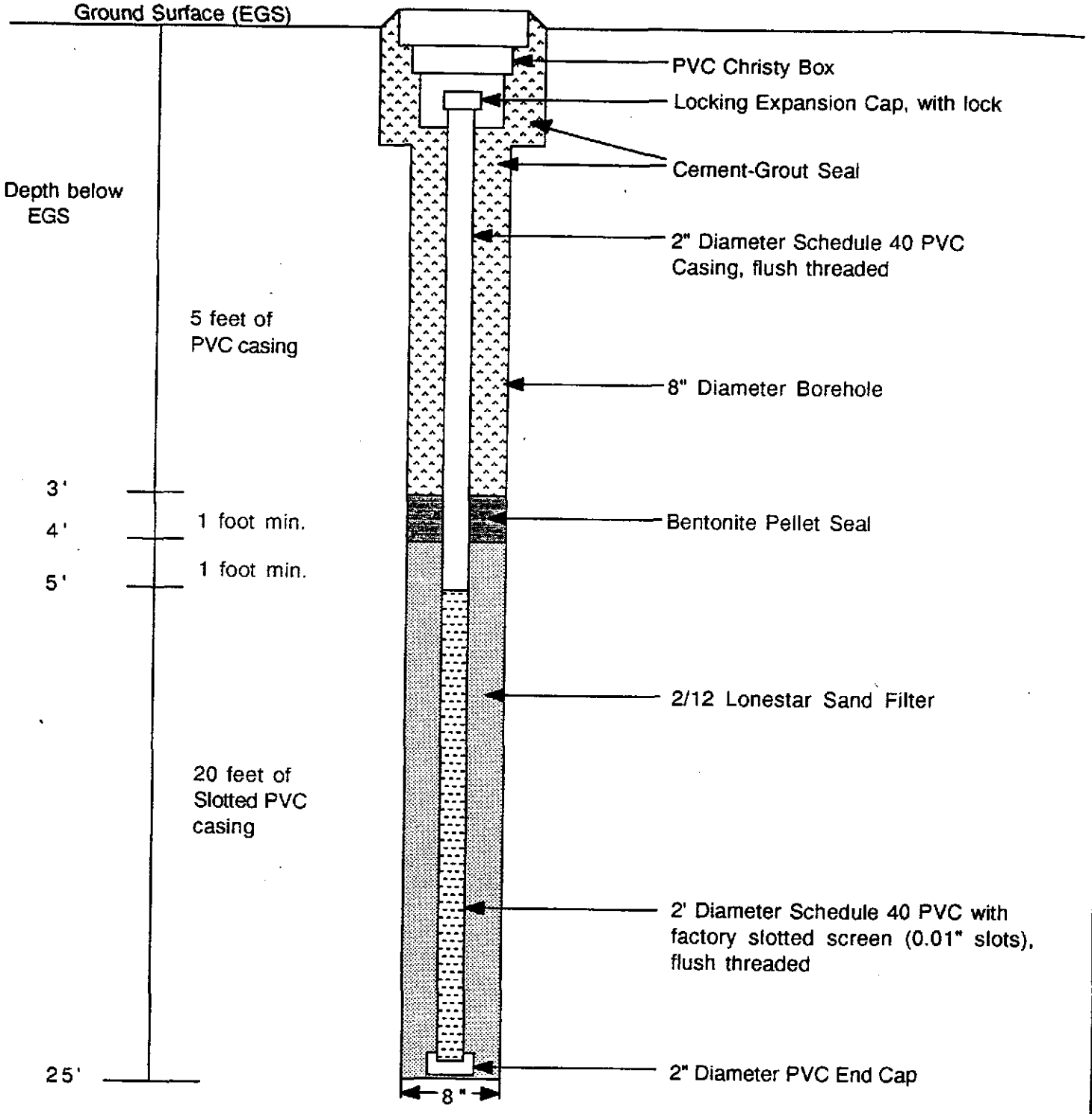


ACC ENVIRONMENTAL CONSULTANTS 1000 ATLANTIC AVEUNUE, SUITE 110 ALAMEDA, CA 94501	JOB NO: 6068-2	BORING MW-3
	DATE: 02/13/93	2964 Fruitvale Avenue

1S/3W 32P3

4 of 8

407401



Not to Scale

ACC Environmental Consultants 1000 Atlantic Avenue, Suite 110 Alameda, CA 94501	Job No.: 6068-2	Schematic of Monitoring Well No.: MW-3
	Date: 02/13/93	2964 Fruitvale Avenue

5 48 407401 1S/3W 32P3.

Geochem ENVIRONMENTAL LABORATORIES

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Phone: (408) 955-9988 / FAX: (408) 955-9538

ANALYTICAL REPORT

****

Client: ACC Environmental
1000 Atlantic Ave.
Alameda, CA 94501
Attn: Misty Kaltreider

Date Sampled: 01/15/93
Date Received: 01/18/93
Date Analyzed: 01/19/93
Batch:SD-071 Matrix: Soil
Conc. Unit mg/kg(ppm)

Project: Fruitvale (Proj.#6068-2)

****

"**ND**" means "not detected" at indicated detection limit.
B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
Samples received chilled with a chain of custody record.

SAMPLE I.D.	Total Lead
DETECTION LIMIT	1 ppm
MW-2-10'	ND
→ MW-3-10'	ND

Reviewed and approved by George Tsai, Jan. 20, 1992
George Tsai, Laboratory Director

6 7 8 407401 1S/3W 32P3

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Date Sampled: 01/15/93
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Date Analyzed: 01/19/93
Batch:SD-071 Matrix: Soil
Conc. Unit ug/kg(ppb)

Project: Fruitvale (Proj.#6068-2)

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B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
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SAMPLE I.D.	8015M/TPH Gasoline	8020 B / T / E / X
DETECTION LIMIT	50ppb	0.5 ppb
MW-2-5'	ND	ND / ND / ND / ND
MW-2-10'	11350	1254.6/ 1112.1 / 1267.5 / 1679.8
MW-3-5'	ND	ND / ND / ND / ND
MW-3-10'	7610	1540.0/ 1774.7 / 1249.0 / 1613.5

Reviewed and approved by George Tsai, JAN. 20, 1993
George Tsai, Laboratory Director

7 of 8 407401 1S/3W 32P3

Geochem ENVIRONMENTAL LABORATORIES

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ANALYTICAL REPORT

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Client: ACC Environmental
1000 Atlantic Ave.
Alameda, CA 94501
Attn: Misty Kaltreider

Date Sampled: 01/15/93
Date Received: 01/18/93
Date Analyzed: 02/18/93
Batch:SD-071 Matrix: Soil
Conc. Unit mg/kg(ppb)

Project: Fruitvale (Proj.#6068-2)

****

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B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
Samples received chilled with a chain of custody record.

SAMPLE I.D.	EPA 418.1
DETECTION LIMIT	1 ppm
MW-3-10'	2449
MW-3-15'	2907

Note: Sample analysis exceeded 2 week holding time.

Reviewed and approved by George Tsai, Laboratory Director FEB 19, 1993

898 407401 1S/3W 32P3

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ANALYTICAL REPORT

****

Client: ACC Environmental
1000 Atlantic Ave.
Alameda, CA 94501
Attn: Misty Kaltreider

Date Sampled: 01/26/93
Date Received: 01/27/93
Date Analyzed: 01/28/93
Batch:SD-078 Matrix: Water
Conc. Unit ug/kg(ppb)

Project: Fruitvale (Proj.#6068-2) (418.1 EPA Conc. Unit mg/kg(ppm))

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SAMPLE I.D.	8015M/TPH Gasoline	EPA 418.1	602 B / T / E / X
DETECTION LIMIT	50 ppb	1 ppm	0.5 ppb
MW-1	ND		ND / ND / ND / ND
MW-2	ND		ND / ND / ND / ND
MW-3	1800	28	83.1 / 95.9 / 169.2 / 318.7

Reviewed and approved by George Tsai, Laboratory Director FEB. 29, 1993

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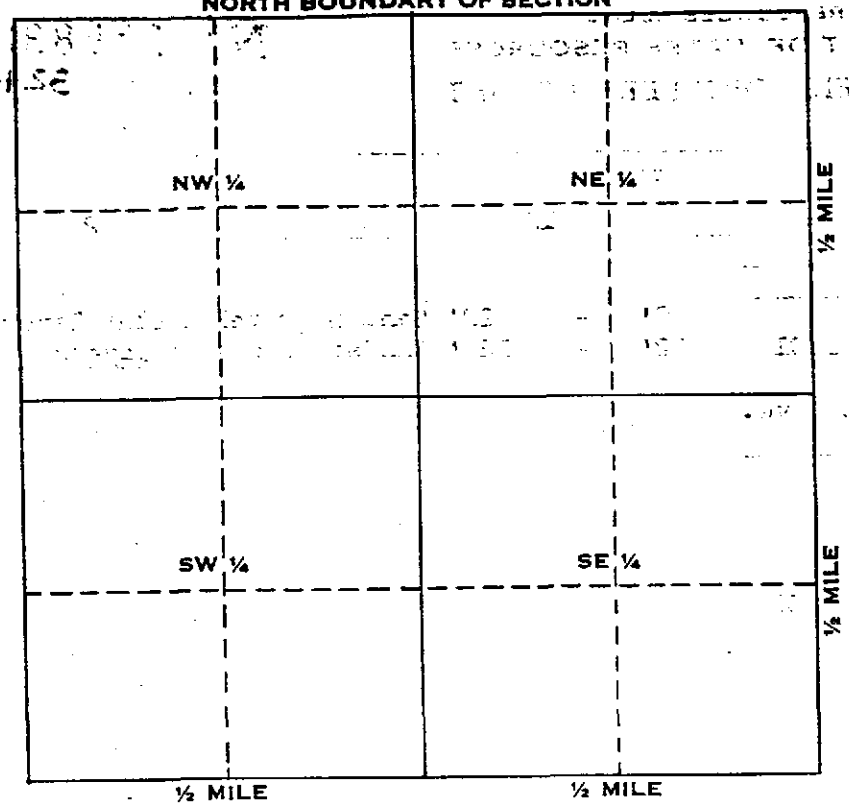
STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

WELL LOCATION SKETCH

15 6888

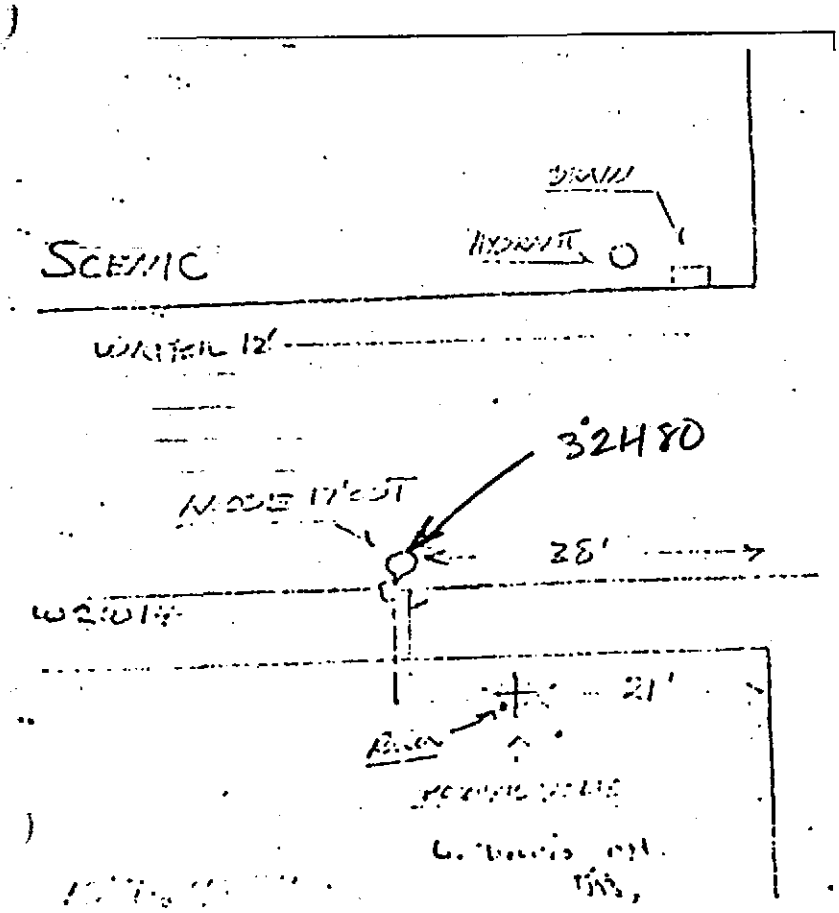


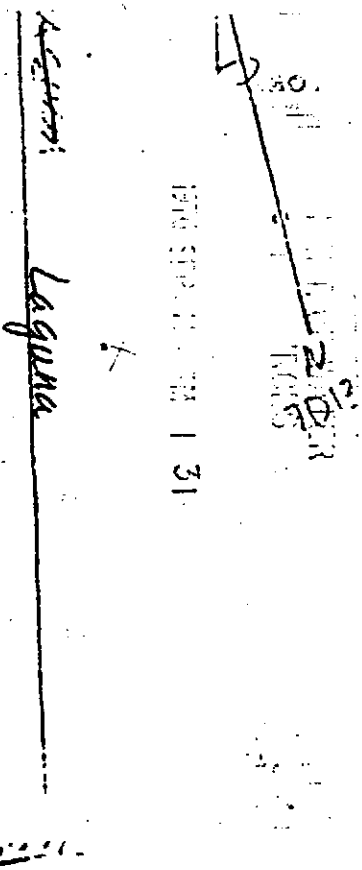
Township 7 N (S)

Range 3 E (W)

Section No. 32H80

A. Location of well in sectionized areas.
Sketch roads, railroads, streams, or other features as necessary.





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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

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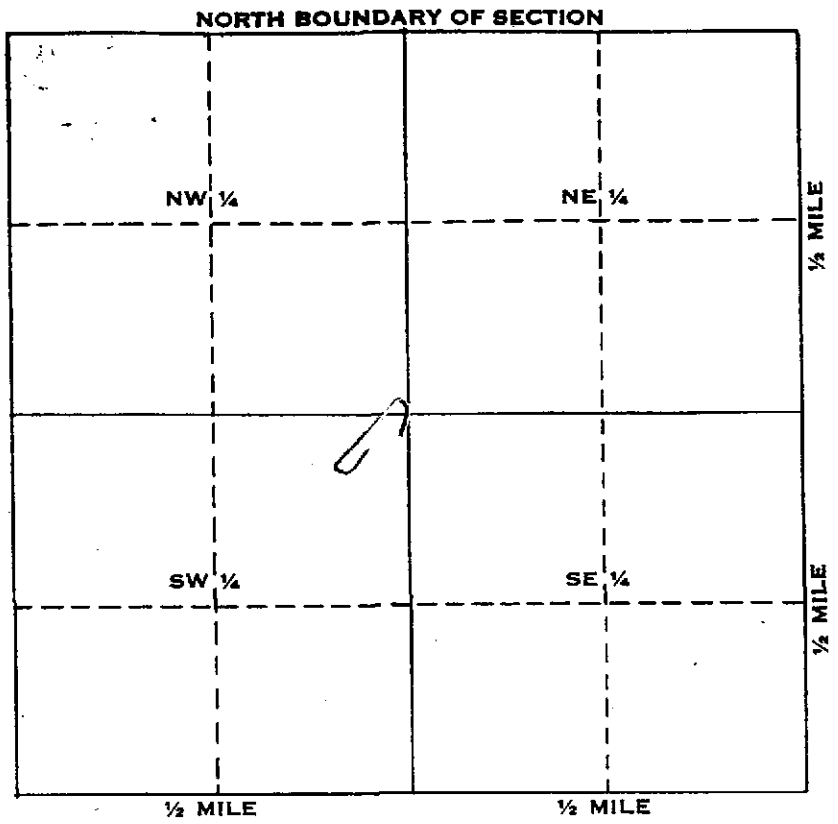
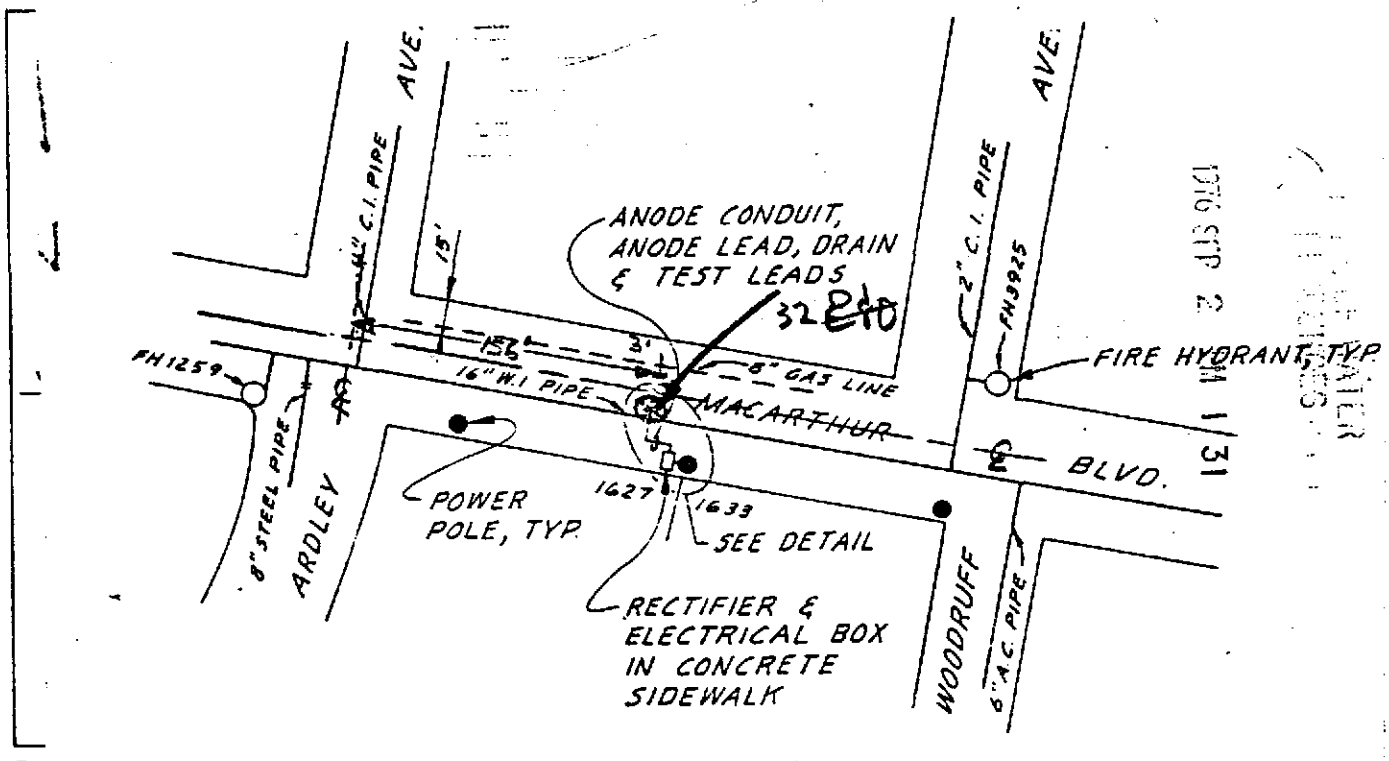


Township 1 N (S)

Range 3 E (W)

Section No. 32 ~~E80~~ D1

A. Location of well in sectionized areas.
Sketch roads, railroads, streams, or other features as necessary.



B.

SITE PLAN
1" = 100'

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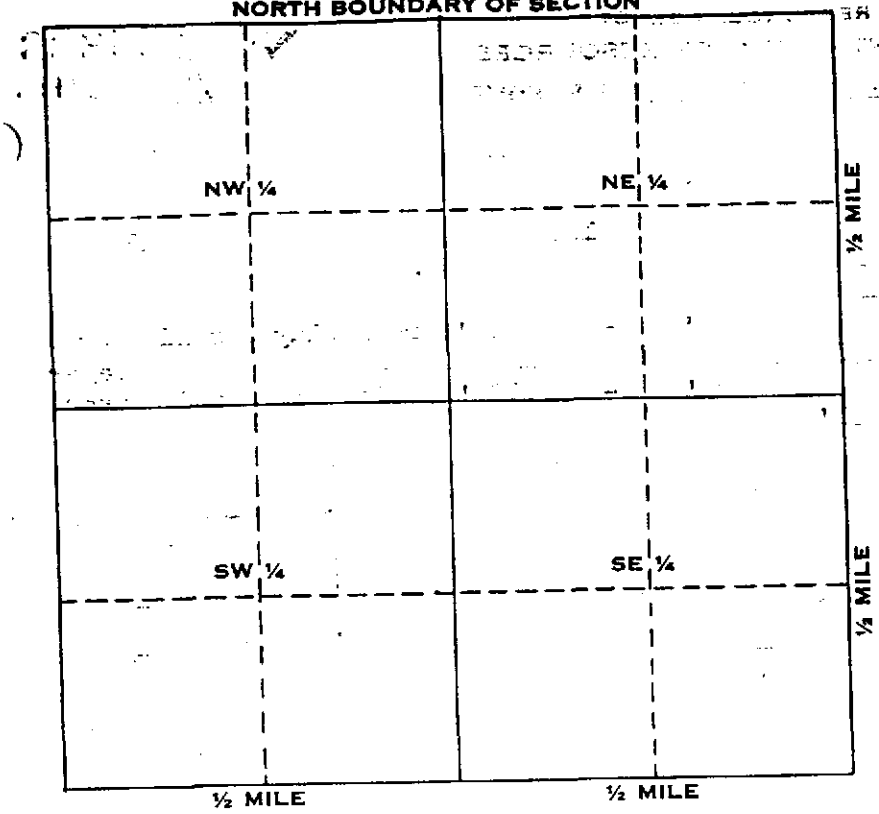
STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

WELL LOCATION SKETCH

156839



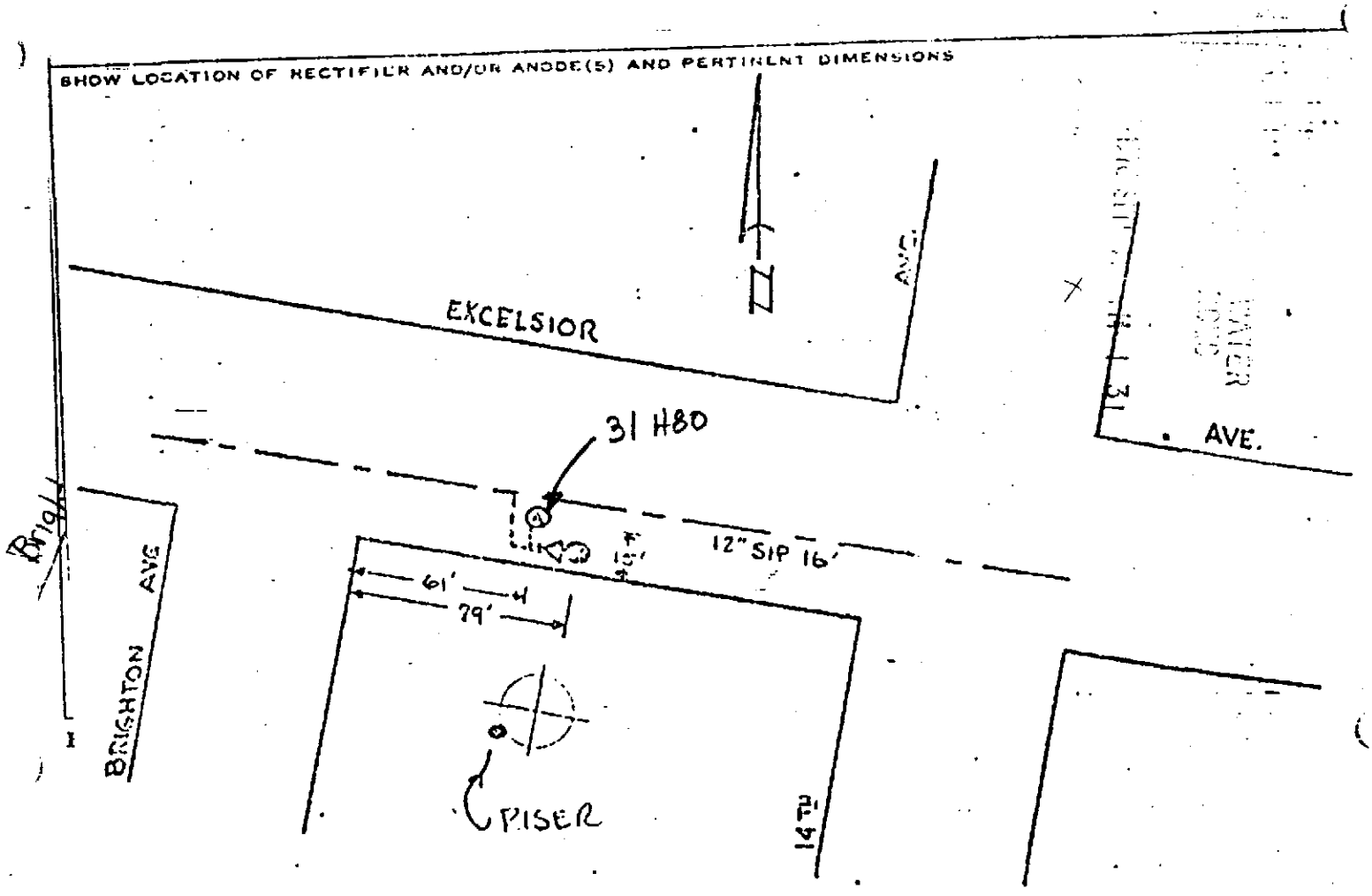
Township 1 N/S

Range 3 E/W

Section No. 31 H 80

A. Location of well in sectionized areas.
Sketch roads, railroads, streams, or other features as necessary.

SHOW LOCATION OF RECTIFIER AND/OR ANODE(S) AND PERTINENT DIMENSIONS



ATTACHMENT B

Site Conceptual Model

SITE CONCEPTUAL MODEL
September 17, 2001
Cambria Environmental Technology, Inc.

Site Address:	2120 Montana Street	**Incident Number:**	98995740
City:	Oakland, CA	**Regulator:**	Alameda County Health Care Services Agency

Item	Evaluation Criteria	Comments/Discussion
1	**Hydrocarbon Source**	
1.1	Identify/Describe Release Source and Volume (if known)	Release source and volume is unknown. Contamination has been detected downgradient of the underground storage tanks (USTs) and in the area of the dispensers.
1.2	Discuss Steps Taken to Stop Release	In November 1997, Paradiso Mechanical of San Leandro, California upgraded fuel-related equipment at the service station. Secondary containment was added to the three existing dispensers and to the turbine sumps above the USTs.
2	**Site Characterization**	
2.1	Current Site Use/Status	The site is an active Shell-branded service station located at the northwest corner of Montana Street and Fruitvale Avenue in Oakland, California. There are three USTs, three dispensers, and a cashier kiosk on the site. Commercial properties lie to the northeast, east, and southeast of the site, and residential properties lie to the northwest. An on-ramp to westbound highway 580 is located adjacent to Montana Street on the southwest side of the site.
2.2	Soil Definition Status	Soil contamination is defined in the upgradient direction by non-detection of TPHg, MTBE, and BTEX in soil samples from MW-3. Soil contamination has not been precisely defined in the cross- or downgradient directions. Maximum concentrations of 59 ppm TPHg, 1.1 ppm MTBE, and 0.76 benzene were detected in soil samples from the area beneath and around the dispensers at depths ranging from 5-15 fbg. Some analyte concentrations attenuate downgradient of the site at MW-2, in Montana Street, where concentrations of 10 ppm TPHg, 5.2 ppm MTBE, and 0.028 ppm benzene were detected in samples ranging from 15.5 feet to the total explored sample depth of 21.0.
2.3	Separate-Phase Hydrocarbon Definition Status	SPH was detected in MW-1 on 7/9/200 at a thickness of 0.31 feet. SPH has not been detected in any other wells.

Item	Evaluation Criteria	Comments/Discussion
2.4	Groundwater Definition Status (BTEX)	Groundwater monitoring began at the site in March 2001, and additional groundwater monitoring is necessary to adequately characterize the lateral extent of the BTEX plume. Not considering an anomalous monitoring event on 5/31/01, no BTEX has been detected in upgradient well MW-3.
2.5	BTEX Plume Stability and Concentration Trends	Additional groundwater monitoring is necessary to establish BTEX plume stability and concentration trends.
2.6	Groundwater Definition Status (MTBE)	Groundwater monitoring began at the site in March 2001, and additional groundwater monitoring is necessary to adequately characterize the vertical and lateral extent of the MTBE plume. MTBE has been detected in all three site monitoring wells.
2.7	MTBE Plume Stability and Concentration Trends	Additional groundwater monitoring is necessary to establish MTBE plume stability and concentration trends.
2.8	Groundwater Flow Direction, Depth Trends and Gradient Trends	Groundwater flow at the site has ranged from west to west-southwest at a gradient of about .025 ft/ft since groundwater monitoring began during the first quarter of 2001. Depth to water in site monitoring wells has ranged from 11.40 to 13.17 feet below grade (fbg).
2.9	Stratigraphy and Hydrogeology	Subsurface sediment consists silty sand, and, and clayey sand, with some sandy silt, to the maximum explored depth of 28.0 fbg.
2.10	Preferential Pathways Analysis	Identified utilities in the area include water, electrical and gas lines, as well as sanitary sewer and storm drain lines. Depths to electrical and gas lines were not determined. The exact depths to water mains were not available, but according to EBMUD are typically approximately 8 fbg to the top of the pipe. City of Oakland engineering maps indicated that the sanitary sewer INES in the vicinity are typically buried approximately 3 to 8 fbg, and storm drain in the vicinity are typically buried approximately 2 to 10 fbg. Historically, depths to-groundwater at the site have ranged from 11.4 to 13.2 fbg. Based on this information, utility lines identified are more shallow than the typical groundwater surface, and therefore are not likely to affect groundwater flow.
2.11	Other Pertinent Issues	As soil contamination was not detected shallower than 15.5 feet in this area, it is probably the result of contact with contaminated groundwater.
3	**Remediation Status**	

Item	Evaluation Criteria	Comments/Discussion
3.1	Remedial Actions Taken	The fuel-related equipment at the service station was upgraded in November 1997, including the addition of secondary containment to the dispensers and the turbines sumps above the USTs. Weekly groundwater extraction from well MW-1 and a tank backfill well onsite began in August 2001 and is ongoing.
3.2	Area Remediated	Remediation at the site has concentrated on the tank pit and well MW-1.
3.3	Remediation Effectiveness	Remediation effectiveness will be evaluated based on extracted groundwater volumes, SPH thicknesses and groundwater concentration trends.
4	**Well and Sensitive Receptor Survey**	
4.1	Designated Beneficial Groundwater Use	The San Francisco Bay Region RWQCB Basin Plan identifies the following existing beneficial uses for groundwater in this region: Municipal and domestic water supply, Industrial process water supply, Industrial service water supply, and Agricultural water supply.
4.2	Shallow Groundwater Use	No pumping wells that draw from shallow groundwater were identified within a half-mile radius of the site
4.3	Deep Groundwater Use	No pumping wells that draw from deep groundwater were identified within a half-mile radius of the site.
4.4	Well Survey Results	A September 2001 well survey conducted by Cambria identified three cathodic protection wells and seven groundwater monitoring wells within 1/2-mile radius of the site. No water-producing wells were identified within 1/2-mile radius of the site.
4.5	Likelihood of Impact to Wells	Impact to wells is unlikely considering the low estimated permeability of the subsurface soils, and the distance to downgradient wells.
4.6	Likelihood of Impact to Surface Water	Based on a review of the Oakland East, California USGS topographic quadrangle, the Central Reservoir and Sausal Creek are the only surface water bodies noted within a ½-mile radius of the site. The Central Reservoir is located approximately 1,600 feet west/southwest of the site, and impact is unlikely due to the distance. Sausal Creek is located approximately 240 feet west/northwest of the site west of the site at its closest point. Based on a review of City of Oakland Engineering maps, Sausal Creek is diverted into a 10 foot by 10 foot underground culvert under Interstate 580 approximately 420 feet west-northwest of the site, and surfaces approximately 730 feet southwest of the site. The flow line depth of the culvert is approximately 6.5 fbg. Based on this information, impact to Sausal Creek is unlikely.
5	**Risk Assessment**	

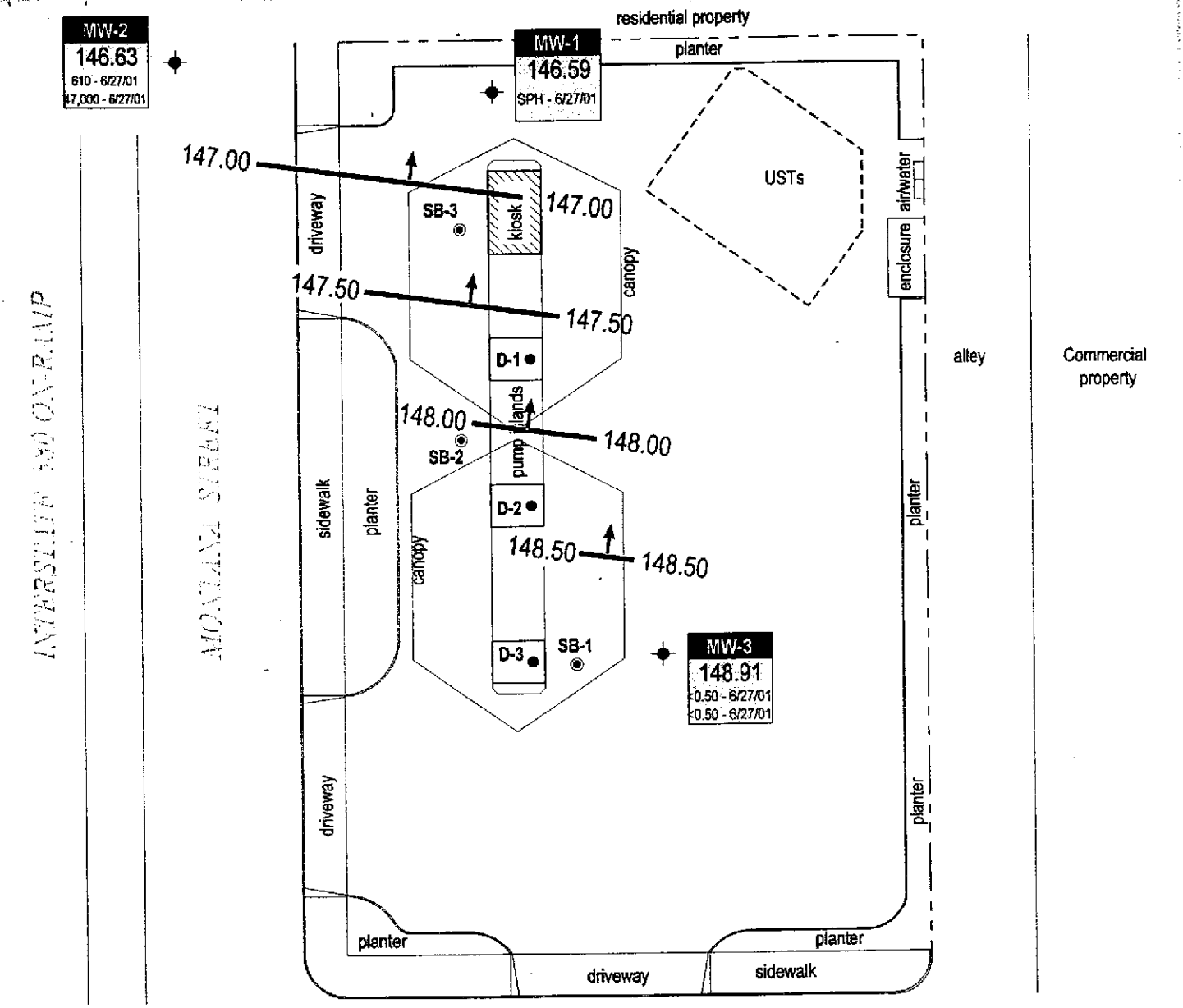
Item	Evaluation Criteria	Comments/Discussion
5.1	Site Conceptual Exposure Model (current and future uses)	Onsite land use is commercial. There is an operating Shell-branded service station with an enclosed cashier's kiosk onsite. Though additional groundwater monitoring is necessary to determine plume size and location, preliminary sampling results indicate that the plume is generally located under the southwestern portion of the site. The cashier's kiosk may be over the plume. Offsite land use immediately to the west (downgradient) is residential. Though the extent of the MTBE and BTEX offsite as yet undetermined, there may be residential structures over the plume.
5.2	Exposure Pathways	Soil and/or groundwater volatilization to outdoor and/or indoor air, commercial exposure.
5.3	Risk Assessment Status	No formal risk assessment has been performed.
5.4	Identified Human Exceedances	No exceedances have been identified or evaluated.
5.5	Identified Ecological Exceedances	No exceedances have been identified or evaluated.
6	**Additional Recommended Data or Tasks**	
6.1		

Attached:
Quarterly groundwater monitoring map and table, 2Q01
Soil sample location map and soil analytical tables
Well and boring logs
2001 well survey map and table
Conduit map

\\SERVER\SHELL\Oakland 2120 Montana\Reports\2120SCM801.xls

Environmental Documents Available to Cambria Environmental		
Date	Title/Subject	Company
02/03/98	Dispenser Soil Sampling Report	Cambria Environmental
04/16/99	Investigation Work Plan	Cambria Environmental
05/27/99	Investigation Work Plan Addendum	Cambria Environmental
06/07/00	Subsurface Investigation Report and Work Plan for Installation of Monitoring Wells	Cambria Environmental
05/22/01	Gorundwater Monitoring Well Installation Report	Cambria Environmental
	Quarterly Monitoring Reports for 1Q and 2Q 2001	Cambria Environmental

07/23/01



EXPLANATION

- MW-1 ✦ Monitoring well location
- SB-1 ◉ Cambria soil boring location (10/99)
- D-1 ● Cambria soil sampling location (11/97)
- SPH — Separate-phase hydrocarbons present, well not sampled
- → Groundwater flow direction
- XX.XX — Groundwater elevation contour, in feet above mean sea level (msl), approximately located, dashed where inferred

Well
ELEV
Benzene
MTBE

- Well designation
- Groundwater elevation, in feet above msl
- Benzene and MTBE concentrations are in parts per billion and are analyzed by EPA Method 8260.

0 15 30
Scale (ft)

FIGURE
1

G:\OAKLAND2120MONTANA\FIGURES\ON01-MP.DWG

Shell-branded Service Station
2120 Montana Street
Oakland, California
Incident #98995740

CAMBRIA

Groundwater Elevation Contour Map

May 31, 2001

WELL CONCENTRATIONS
Shell-branded Service Station
2120 Montana Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)
MW-1	03/19/3001	NA	NA	NA	NA	NA	NA	NA	159.59	12.14	147.45	NA
MW-1	03/23/2001	16,600	753	1,720	407	2,330	NA	27,500	159.59	12.25	147.34	NA
MW-1	**05/31/2001**	**<50a**	**<0.50a**	**<0.50a**	**<0.50a**	**<0.50a**	**NA**	**<5.0a**	**159.59**	**13.00**	**146.59**	**NA**
MW-1	**06/27/2001**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**159.59**	**13.00b**	**NA**	**NA**
MW-1	**07/09/2001**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**159.59**	**13.17**	**146.67**	**0.31**
MW-2	03/19/3001	NA	NA	NA	NA	NA	NA	NA	158.03	11.60	146.43	NA
MW-2	03/23/2001	4,450	280	41.0	62.1	63.0	NA	16,600	158.03	11.76	146.27	NA
MW-2	**05/31/2001**	**<20,000a**	**820a**	**<200a**	**<200a**	**<200a**	**NA**	**63,000a**	**158.03**	**11.40**	**146.63**	**NA**
MW-2	**06/27/2001**	**<50,000**	**610**	**4.0**	**13**	**9.2**	**NA**	**47,000**	**158.03**	**12.65**	**145.38**	**NA**
MW-3	03/19/3001	NA	NA	NA	NA	NA	NA	NA	161.13	11.42	149.71	NA
MW-3	03/23/2001	<50.0	<0.500	<0.500	<0.500	<0.500	NA	1.26	161.13	11.42	149.71	NA
MW-3	**05/31/2001**	**<20,000a**	**1,000a**	**920a**	**490a**	**2,000a**	**NA**	**54,000a**	**161.13**	**12.22**	**148.91**	**NA**
MW-3	**06/27/2001**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**NA**	**<0.50**	**161.13**	**12.32**	**148.81**	**NA**

WELL CONCENTRATIONS
Shell-branded Service Station
2120 Montana Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)

Abbreviations:

TPPH = Total petroleum hydrocarbons as gasoline by modified EPA Method 8260B; prior to May 31, 2001 analyzed by EPA Method 8015

BTEX = benzene, toluene, ethylbenzene, xylenes by EPA Method 8260B; prior to May 31, 2001, analyzed by EPA Method 8020

MTBE = methyl-tertiary-butyl ether

TOC = Top of Casing Elevation

GW = Groundwater

ug/L = parts per billion

msl = Mean sea level

ft = Feet

<n = Below detection limit

Notes:

a = Resampled on June 27, 2001, due to anomolous results

b = Separate phase hydrocarbons encountered during purge; groundwater elevation may not be accurate.

Survey data provided by Cambria Environmental Technology, May 2001.

When separate phase hydrocarbons are present, ground water elevation is adjusted using the relation:

corrected ground water elevation = Top-of-casing elevation - depth to water + (0.8 x hydrocarbon thickness).

Table 1. Soil Analytical Results - Shell-branded Service Station - 2120 Montana Ave., Oakland, California, Incident # 98995740

Sample ID	Depth (in fbg)	Date Sampled	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			← (Concentrations reported in mg/kg) →					
MW-1-5.5	5.5	2/20/01	<1.0	0.12	<0.0050	<0.0050	<0.0050	<0.0050
MW-1-10.0	10	2/20/01	4.7	2.4	0.066	<0.0050	0.12	0.14
MW-1-15.5	15.5	2/20/01	1.0	5.0	0.014	0.041	0.024	0.098
MW-1-20.5	20.5	2/20/01	1.5	2.0	0.023	0.16	0.037	0.17
MW-1-24.0	24	2/20/01	4.4	0.51	0.024	0.14	0.050	0.27
MW-2-5.5	5.5	2/21/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-2-10.5	10.5	2/21/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-2-15.5	15.5	2/21/01	<1.0	5.2	<0.0050	<0.0050	<0.0050	<0.0050
MW-2-21.0	21	2/21/01	10	1.3	0.028	0.012	0.080	0.021
MW-3-5.5	5.5	2/21/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-3-10.5	10.5	2/21/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-3-15.5	15.5	2/21/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-3-20.5	20.5	2/21/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Abbreviations and Notes:

TPHg = Total purgable hydrocarbons as gasoline.
MTBE = Methyl tertiary butyl ether.
All samples analyzed by EPA Method 8260
fbg = feet below grade
mg/kg = milgrams per kilogram
<n = Below detection limits for n milligrams per kilograms.

G:\Oakland 2120 Montana\Reports\2120 Montana Oakland soiltbl 4

Table 1. Soil Analytical Data - Shell-branded Service Station - 2120 Montana Ave., Oakland, California, Incident # 98995740

Sample ID	Depth (in fbg)	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
		← (Concentrations reported in ppm) →					
October 27, 1999 Samples:							
SB-1-5	5	54	<0.50	<0.050	<0.050	0.091	0.099
SB-1-10	10	12	<0.05	<0.0050	<0.0050	0.0093	0.030
SB-2-5	5	<1.0	<0.05	<0.0050	<0.0050	<0.0050	<0.0050
SB-2-10	10	2.0	0.27 (0.24)	0.0050	0.0063	<0.0050	<0.0050
SB-2-15	15	14	<0.05	0.019	0.032	0.064	0.072
SB-2-20	20	<1.0	<0.05	<0.0050	<0.0050	<0.0050	<0.0050
SB-3-5	5	<1.0	<0.05	<0.0050	<0.0050	<0.0050	<0.0050
SB-3-10	10	<1.0	0.11	<0.0050	<0.0050	<0.0050	<0.0050
SB-3-15	15	17	0.19	0.013	0.018	0.054	0.16

Abbreviations and Notes:

TPHg = Total purgable hydrocarbons as gasoline by modified EPA Method 8015.
Benzene, ethylbenzene, toluene, xylenes by EPA Method 8020.
MTBE = Methyl tertiary butyl ether by EPA Method 8020. Parenthesis indicate confirmation analysis by EPA Method 8260.
ppm = parts per million
fbg = feet below grade
<n = Below detection limits for n milligrams per kilograms.

Table 1. Dispenser Sample Analytic Data - Petroleum Hydrocarbons - Shell Service Station - WIC# 204-5508-0208, 2120 Montana, Oakland, California

Sample ID	TPPH	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
	← (Concentrations reported in milligrams per kilogram) →					
November 11, 1997 Samples:						
D-1	1.8	0.16	<0.0050	<0.0050	<0.0050	0.0059
D-2	9.5	0.37	0.024	0.016	<0.0050	0.088
D-3	59	1.1	0.76	0.14	<0.050	0.095
D-(3,2,1) Composite*	---	---	0.32	0.045	<0.012	0.040

Abbreviations and Notes:

TPPH = Total purgeable petroleum hydrocarbons as gasoline by modified EPA Method 8015.

MTBE = Methyl tert-butyl ether by EPA Method 8020.

Benzene, ethylbenzene, toluene, xylenes by EPA Method 8020.

mg/kg = Milligrams per kilogram

<x = Below detection limit of x mg/kg

--- = Not analyzed

* = This composite soil sample was analyzed for TCLP semivolatiles by EPA Method 8270 and TCLP volatiles by EPA Method 8240. No analytes were detected.

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BORING/WELL

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-1
JOB/SITE NAME	2120 Montana Street, Oakland	**DRILLING STARTED**	20-Feb-01
LOCATION	2120 Montana Street, Oakland	**DRILLING COMPLETED**	20-Feb-01
PROJECT NUMBER	242-0733	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	160.16
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	159.59 ft
BORING DIAMETER	8"	**SCREENED INTERVAL**	13 to 28 ft bgs
LOGGED BY	J. Loetterle	**DEPTH TO WATER (First Encountered)**	19.0 ft (20-Feb-01)
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	11.5 ft (20-Feb-01)

REMARKS Hand augered to 5'. Located at north end of station, 45' from the curb, and 10' from fence.

PID (ppm)	TPHd (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
								CONCRETE	0.7	
								FILL; dark brown; damp; 5% clay, 10% silt, 80% fine to coarse sand; no plasticity.		
			MW-1 5.5		5	ML		**Sandy SILT** (ML); reddish brown; medium stiffness; damp; 10% clay, 50% silt, 40% fine sand; low plasticity; contains rootlets.	5.0	
			MW-1 10.0		10	SM		**Silty SAND** (SM); grey/reddish brown; loose; damp; 10% clay, 30% silt, 60% fine sand; low plasticity; contains organic fragments. ▼	10.0	Bentonite Seal Monterey Sand #2/12
			MW-1 15.5		15	SP		**SAND** (SP); reddish brown; very loose; wet; 10% clay, 10% silt, 80% fine sand; low plasticity. ▽	15.0	
			MW-1 20.5		20	SC		**Clayey SAND** (SC); grey; very loose; wet; 15% clay, 5% silt, 80% fine to medium sand; medium plasticity.	20.0	2"-diam., 0.010" Slotted Schedule 40 PVC
			MW-1 24.0		25			@ 25 fbg - grey/brown; contains faint petroleum odor.	28.0	Bottom of Boring @ 28 ft

WELL LOG (PID/TPHD) G:\OA8300-1\GINT\GINT.GPJ DEFAULT.GDT 5/17/01

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BORING/WELL LOG

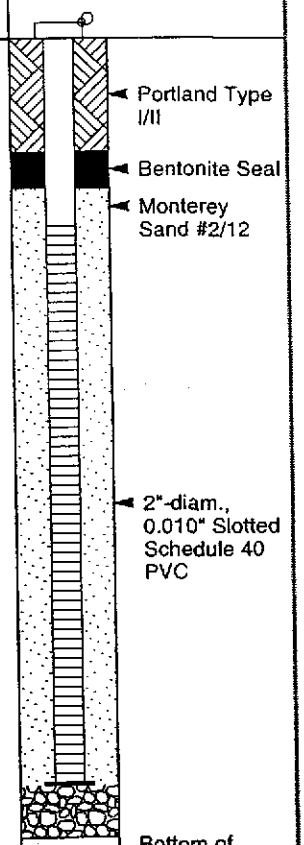
CLIENT NAME Equiva Services LLC
JOB/SITE NAME 2120 Montana Street, Oakland
LOCATION 2120 Montana Street, Oakland
PROJECT NUMBER 242-0733
DRILLER Gregg Drilling
DRILLING METHOD Hollow-stem auger
BORING DIAMETER 8"
LOGGED BY J. Loetterle
REVIEWED BY S. Bork, RG# 5626

BORING/WELL NAME MW-2
DRILLING STARTED 21-Feb-01
DRILLING COMPLETED 21-Feb-01
WELL DEVELOPMENT DATE (YIELD) NA
GROUND SURFACE ELEVATION 158.29
TOP OF CASING ELEVATION 158.03 ft
SCREENED INTERVAL 5 to 20 ft bgs
DEPTH TO WATER (First Encountered) 10.0 ft (21-Feb-01)
DEPTH TO WATER (Static) NA

REMARKS Hand augered to 5'. Located in the middle of the west bound lane of Montana Street, approximately 5' east of the property line.

PID (ppm)	TPHd (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
								CONCRETE	0.7
								FILL; dark brown; damp; 5% clay, 10% silt, 80% fine to coarse sand; no plasticity.	4.0
			MW-2 5.5		5	SM		**Silty SAND** (SM); light brown; damp; 5% clay 20% silt, 75% fine to medium sand; no plasticity.	
								▽	10.0
			MW-2 10.5		10	ML		**Sandy SILT** (ML); reddish brown; medium stiffness; damp; 10% clay, 50% silt, 40% fine sand; low plasticity; contains rootlets.	15.0
			MW-2 15.5		15	SM		**Silty SAND** (SM); grey/reddish brown; loose; damp; 10% clay, 30% silt, 60% fine sand; low plasticity; contains organic fragments.	20.0
			MW-2 21.0		20	SC		**Clayey SAND** (SC); grey; very loose; wet; 15% clay, 5% silt, 80% fine to medium sand; medium plasticity.	21.5

WELL DIAGRAM



WELL LOG (PID/TPHD) G:\OA8300-1\GINT\GINT.GPJ DEFAULT.GDT 5/17/01

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BORING/WELL

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-3
JOB/SITE NAME	2120 Montana Street, Oakland	**DRILLING STARTED**	21-Feb-01
LOCATION	2120 Montana Street, Oakland	**DRILLING COMPLETED**	21-Feb-01
PROJECT NUMBER	242-0733	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	161.61
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	161.13 ft
BORING DIAMETER	8"	**SCREENED INTERVAL**	5 to 20 ft bgs
LOGGED BY	J. Loetterle	**DEPTH TO WATER (First Encountered)**	16.6 ft (21-Feb-01)
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	NA

REMARKS Hand augered to 5'. Located at the east end of the station, approximately 18' north of the eastern dispenser.

PID (ppm)	TPHd (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
					0			**CONCRETE**	0.7
								FILL: dark brown; damp; 20% clay, 30% silt, 50% sand; medium plasticity.	2.0
						SC		**Clayey SAND** (SC); light brown; damp; loose; 15% clay, 15% silt, 60% fine sand, 10% fine to coarse gravel. @ 3 fbg - brown; 20% clay, 10% silt, 60% fine sand, 10% fine to coarse gravel.	4.0
			MW-3 5.5		5	SM		**Silty SAND** (SM); brown; damp; loose; 10% clay, 30% silt, 60% fine sand; medium plasticity; contains organic fragments.	
			MW-3 10.5		10	SC		**Clayey SAND** (SC); olive brown; damp; medium dense; 20% clay, 15% silt, 65% fine to coarse, subrounded sand; medium plasticity.	10.0
			MW-3 15.5		15			@ 15 fbg - reddish brown; loose; moist; 20% clay, 10% silt, 70% fine to medium, subrounded sand; medium plasticity. ▽	
			MW-3 20.5		20			@ 20 fbg - grey; wet.	21.5

WELL DIAGRAM: Portland Type I/II; Bentonite Seal; Monterey Sand #2/12; 2"-diam., 0.010" Slotted Schedule 40 PVC; Bottom of Boring @ 21.5 ft

WELL LOG (PID/TPHD) G:\OA8300-1\GINTYGINT.GPJ DEFAULT.GDT 5/17/01

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-1
JOB/SITE NAME	2120 Montana Street, Oakland	**DRILLING STARTED**	27-Oct-99
LOCATION	2120 Montana Street, Oakland	**DRILLING COMPLETED**	27-Oct-99
PROJECT NUMBER	242-0733	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	M. Gaffney	**DEPTH TO WATER (First Encountered)**	12.5 ft (27-Oct-99) ▽
REVIEWED BY	A. Le May, RG	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand Augered to 5 feet		

PID (ppm)	TPHd (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
								CONCRETE	0.5	Portland Type I/II
								Silty SAND; (SM); brown; dry; 5% clay, 25% silt, 65% sand, 5% gravel; high estimated permeability.		
			SB-1 5.0		5	SM		@ 5'-gray; dry; 10% silt 80% sand, 10% gravel; low plasticity.		
			SB-1 10.0		10	SP		**SAND**; Gray; dry; 10% silt, 80% sand, 10% gravel; high estimated permeability. ▽	10.0	
					15			@ 15'- orange; 10% silt, 90% solidified coarse grained sand; medium estimated permeability.	16.0	Bottom of Boring @ 16 ft

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BORING/WELL

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-2
JOB/SITE NAME	2120 Montana Street, Oakland	**DRILLING STARTED**	27-Oct-99
LOCATION	2120 Montana Street, Oakland	**DRILLING COMPLETED**	27-Oct-99
PROJECT NUMBER	242-0733	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	M. Gaffney	**DEPTH TO WATER (First Encountered)**	16.5 ft (27-Oct-99)
REVIEWED BY	A. Le May, RG	**DEPTH TO WATER (Static)**	NA
REMARKS	Hand Augered to 5 feet		

PID (ppm)	TPHd (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
								CONCRETE	0.5	Portland Type I/II
			SB-2 5.0		5			**Silty SAND**: gray green; dry; 5% clay, 25% silt, 65% sand, 5% gravel; medium plasticity; high estimated permeability.		
			SB-2 8.0		10	SM		@ 5'-gray; 30% silt, 65% sand, 5% gravel; high estimated permeability.		
								@ 12'-gray green; moist; 30% silt, 70% sand; medium estimated permeability.		
			SB-2 16		15			@ 15'-brown; medium estimated permeability.		
								@ 16.5'- wet; medium estimated permeability.		
			SB-2 20		20				20.0	Bottom of Boring @ 20 ft

WELL LOG (PID/TPHD) G:\OA8300-1\GINTGINT.GPJ DEFAULT.GDT 6/17/01

Table 1. Well Survey Results - Shell-branded Service Station, 2120 Montana Street Oakland California - Incident # 98995740

Location	DWR Well ID	Owner's Well ID	Well Address	Installation Date	Owner	Use	Well Status	Depth (ft bgs)	Screened Interval (ft bgs)
1	01S03W32J1	M1	2801 Mac Arthur Blvd.	October 20, 1990	Califrance Corp.	Mon	Active	44.5	34.5-44.5
2	01S03W32J2	P1	2801 Mac Arthur Blvd.	October 19, 1990	Califrance Corp.	Mon	Active	50	39-50
3	01S03W32J3	P2	2801 Mac Arthur Blvd.	October 19, 1990	Califrance Corp.	Mon	Active	42.5	32.5-42.5
4	01S03W32J4	P3	2801 Mac Arthur Blvd.	March 18, 1991	Califrance Corp.	Mon	Active	45	34.8-45.0
5	01S03W32J5	M2	2801 Mac Arthur Blvd.	March 18, 1991	Califrance Corp.	Mon	Active	45	34.8-45.0
6	01S03W32P2	MW-2	2964 Fruitvale Ave.	January 15, 1993	Ms. Frances Beddig	Mon	Active	22	5-22 fbg
7	01S03W32P3	MW-3	2964 Fruitvale Ave.	January 15, 1993	Ms. Frances Beddig	Mon	Active	25	5-25 fbg
8	01S03W32H80	--	Scenic Ave. at Laguna Ave,	December 11, 1975	Pacific Gas and Electric	Cath	Active	95	NA
9	01S03W32D1	--	MacArthur Blvd. between Ardley Ave. and Woodruff Ave.	February 3, 1976	East Bay Utility District	Cath	Active	53	NA
10	01S03W31H1	--	Excelsior Ave. between Brighton and Woodruff	December 17, 1975	Pacific Gas and Electric	Cath	Active	120	NA

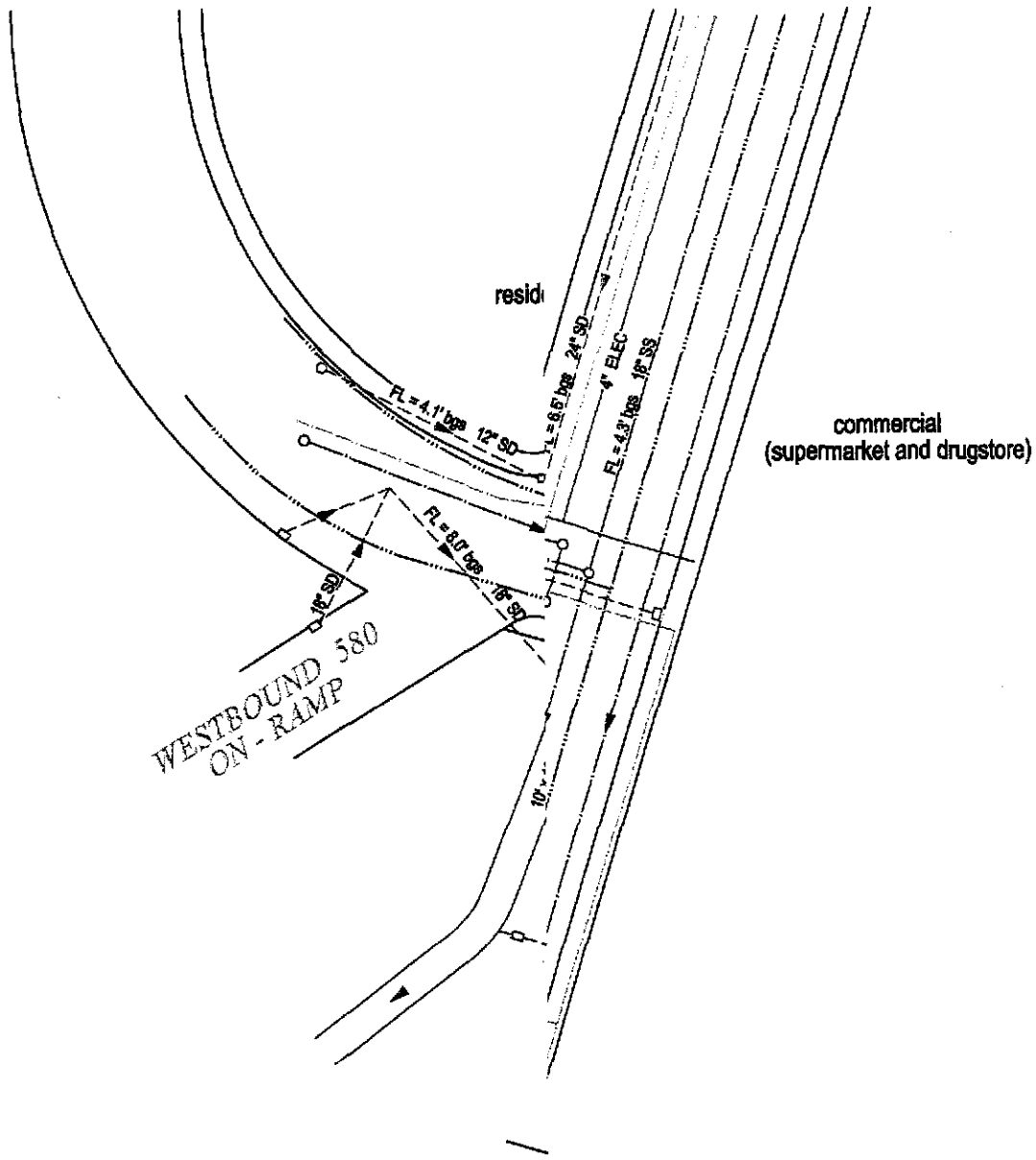
Table 1. Well Survey Results - Shell-branded Service Station, 2120 Montana Street Oakland California - Incident # 98995740

Well Location Provided by the Department of Water Resources

Notes and Abbreviations:

Location = Number refers to well label on Figure 1.
DWR Well ID = California State well identification number as recorded by the Department of Water Resources in Sacramento, California.
Mon = Monitoring Well
Cath = Cathodic Protection well
fbg = feet below grade
NA = not applicable

Underground Utility Locations



EXPLANATION

- MW-1 ✦ Chevron monitoring well
- FH ◊ Fire Hydrant
- MH ○ Manhole
- 8.28' bgs Utility depth below ground surface
- ► Flow direction indicator
- Storm Drain line
- Water line
- Sanitary Sewer line
- Electrical conduit
- Gas main

FIGURE

2

Shell-branded Service Station

2120 Montana Street
Oakland, California
Incident # 98995746

CAMBRIA

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