

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

July 11, 1997
StID # 3890

REMEDIAL ACTION COMPLETION CERTIFICATION

Mr. Paul Supple
ARCO Products Co.
P.O. Box 6549
Moraga, CA 94570

RE: ARCO Service Station 2107, 3310 Park Blvd., Oakland CA 94610

Dear Mr. Supple:

This letter confirms the completion of site investigation and remedial action for the three 10,000 gallon gasoline and the one 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
Dave Deaner, SWRCB Cleanup Fund
Mr. L. Griffin, City of Oakland, OES, 505 14th St., Suite 702
Oakland CA 94612

RACC3310

01-0103
 CALIFORNIA REGIONAL WATER
 ENVIRONMENTAL PROTECTION
 OCT 30 1996
 QUALITY CONTROL BOARD
 95 NOV 15 PM 3:

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

Date: October 28, 1996

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: Haz. Materials Spec.

II. CASE INFORMATION

Site facility name: ARCO #2107
 Site facility address: 3310 Park Blvd., Oakland, CA 94610
 RB LUSTIS Case No: N/A Local Case No./LOP Case No.: 3890
 URF filing date: 5/10/90 SWEEPS No: N/A

Responsible Parties: Addresses: Phone Numbers:
 Michael Wheland, c/o ARCO Products, P. O. Box 5811, San Mateo, CA 94402
 (415) 571-2400

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	10000	gasoline	removed	1/12/1987
2	10000	gasoline	removed	1/12/1987
3	10000	gasoline	removed	1/12/1987
4	550	waste oil	removed	1/12/1987

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: unknown
 Site characterization complete? YES
 Date approved by oversight agency: November 17, 1993
 Monitoring Wells installed? YES Number: eleven (11)
 Proper screened interval? YES
 Highest GW depth below ground surface: 5.31' on 3/2/95 Lowest depth:
 9.32' on 9/6/94
 Flow direction: generally to the northwest
 Most sensitive current use: undetermined
 Are drinking water wells affected? NO 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 (include units)</u>	<u>Action (Treatment or Disposal w/destination)</u>	<u>Date</u>
Tank	3-10000gal	disposed/unknown	1/12/87
Tank	1-550gal	disposed/unknown	1/12/87
Piping	unknown		
Free Product	unknown		
Soil	70 cubic yards	disposed/Redwood Landfill	4/1992
Groundwater	85,000 gallons	disposed/H & H Environmental	2/1992
Groundwater Barrels	19,450 gallons	disposed/Gibson Oil	3-4/1992

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

<u>Contaminant</u>	<u>Soil (ppm)</u>		<u>Water (ppb)</u>	
	<u>Before¹</u>	<u>After²</u>	<u>Before³</u>	<u>After⁴</u>
TPH (Gas)	<10	1,700	22,000	200
TPH (Diesel)	140	2500	4800	250
Benzene	0.79	0.18	1500	1.5
Toluene	5.8	0.10	820	0.51
Ethyl benzene	2.5	25	310	<0.5
Xylenes	14	130	1800	<0.5
Oil & Grease	NA	130	<5000	NA
Heavy metals	NA	*	NA	NA
Other - organic lead	NA	NA	200	NA

* Laboratory analysis of soil samples collected from boring B7, detected the heavy metals cadmium, chromium, lead and zinc, at apparent geogenic concentrations of 0.565, 18.3, 9.95 and 49.8 mg/kg, respectively.

NA=Not analyzed

¹ "Before" concentrations were detected in sample J-1, collected from beneath the waste-oil UST, with the exception of TPHg. Also detected in sample J-1: acetone 2.4 mg/kg; 2-butanone 0.065 mg/kg; tetrachloroethene 0.010 mg/kg; and ethylbenzene 2.5 mg/kg. Non-detectable concentrations of TPHg were found in the four samples apparently collected from the sidewalls of the gasoline UST excavation.

² "After" concentrations were detected in sample S-9-B14, collected from boring B14 on 10/20/92 at a depth of 9' bgs, with the exception of benzene, O&G and toluene. Benzene and O&G concentrations were detected in sample S-8-B11, collected from boring B11, at a depth of 8 feet bgs. Toluene concentrations were detected in sample S-5-B8, collected from boring B-8, at a depth of 5 feet bgs.

³ "Before" TPHg, TPHd and BTEX concentrations were detected in groundwater samples collected from MW-5 on 7/16/90, 6/30/92, 7/24/91, 7/24/91, 10/31/91 and 10/25/90, respectively.

⁴ "After" TPHg, TPHd concentrations were detected from water sample collected from well MW-3 on 11/20/95. Benzene concentration was detected from water sample collected from MW-2 on 11/20/95. Toluene concentration was detected from water sample collected from MW-5 on 11/20/95.

Comments (Depth of Remediation, etc.):

On January 12, 1987, an underground waste-oil tank and three underground gasoline storage tanks were excavated and removed from the site by Golden West Builders. SCS Engineers collected a soil sample from the base of the waste-oil tank and were analyzed for BTX. Six water samples from water in the bottom of the gasoline tank pit excavation: two samples were analyzed for total hydrocarbons and BTX, and two for organic lead. SCS Engineers reported "free product in and on the water in the tank pit at the time of sampling". Analysis of the soil sample taken from the waste-oil tank pit was found to contain elevated levels of benzene (0.79 ppm), toluene (5.8 ppm), and total xylenes (14.0 ppm) in addition to 2.4 ppm of acetone, 0.065 ppm of 2-butanone, 0.10 ppm of tetrachloroethene and 2.5 ppm of ethyl benzene. Analysis of two of the four water samples from the gasoline tank pit revealed maximum concentrations of total volatile hydrocarbons (TVH) and BTX at 0.148, 0.0075, 0.0115 and 0.0057 mg/L, respectively. Results of the four soil samples apparently collected from the corners of the gasoline tank pit excavation revealed non-detectable concentrations of petroleum hydrocarbons.

On May 19, 1989, Applied GeoSystems performed a site reconnaissance to evaluate the presence of wells at the referenced site. Two well were discovered, both apparently constructed within the gasoline tank pit backfill. An obvious odor was found emanating from both wells, 1/8-inch floating product was present in well MW-1, and a moderate sheen in well MW-2. The total depth of well MW-1 measured 11.35 feet and water was measured 2.69 feet below the top of the casing. The total depth of well MW-2 measured 8.52 feet and water was measured 1.57 feet below the top of the casing.

On April 4 and 5 1990, four soil borings (B-3 through B-6) were drilled and two monitoring wells (MW-3 and MW-6) were installed at the site by Applied GeoSystems. Ground water was encountered in the borings between approximately 1 foot and 19 feet below ground surface (bgs). Laboratory analysis of soil samples collected from borings B-3, B-3a, and B-6 revealed non-detectable concentrations of TPHg and BTEX, with the exception of 0.057 ppm total xylenes in sample taken at a depth of 10 feet bgs in soil sample B-3. No apparent soil sample was analyzed from boring B-5.

On July 2, 1990, Applied GeoSystems drilled two soil borings (B-7 and B-8) and installed two additional monitoring wells (MW-4 and MW-5). Ground water was encountered in the borings at depths of approximately 10 to 13 feet bgs. The ground water data interpreted from the July 19, August 23, and August 28, 1990 measurements indicate ground water gradients of 0.008 to 0.011 ft/ft to the west-northwest. Laboratory analysis of water sample collected on 7/19/90 for wells MW-3 through MW-6 are as follows:

Well	TPHg	TPHd	B	T	E	X	TOG
MW-3	4,200	NA	430	8.7	27	8.5	NA
MW-4	1,500	300	100	8.3	4.7	12	<5000
MW-5	22,000	NA	500	97	120	1,300	NA
MW-6	<20	NA	<0.5	<0.5	<0.5	<0.5	NA

Results in micrograms per liter (ug/l) = parts per billion (ppb)

Two offsite borings were drilled on August 22 and 23, 1991. Borings B-12 and B-13 were drilled offsite and converted to groundwater monitoring wells MW-7 and MW-8. Groundwater monitoring wells MW-7 and MW-8 were constructed to evaluate the lateral down-gradient extent of gasoline hydrocarbons in the groundwater. Groundwater gradient evaluated at the site was based on groundwater elevations obtained from wells MW-4

through MW-8 was measured at 0.02 ft/ft to the northwest. Analysis of the laboratory water sample from MW-7 showed 130 ug/L-TPHd, 0.73 ug/L-B and 1.1 ug/L-T. Analysis of the water sample from MW-8 were non-detectable for TPHg, TPHd and BTEX fractions.

Removal of underground piping and sampling of the soil beneath the removed product lines took place on February 13, 1992. This piping was removed in order to upgrade to double-walled fiberglass. Samples were collected at depths of 3.5 to 4' bgs. A total of about 85,000 gallons of water was transported to H & H Environmental Services for disposal and 17, 547 gallons of water was transported to Gibson Oil and Refining for disposal. Approximately 70 cubic yards of stockpiled soil from the piping excavations was transported to Redwood Landfill for disposal.

Laboratory analysis of soil samples taken from beneath the piping runs are as follows:

Sample	TPHg	B	T	E	X	Lead
L1-3.5'	1.3	0.066	0.013	0.032	0.068	ND
L2-4'	1,000	2.3	2.9	11	46	ND
L3-4'	12	0.33	0.16	0.18	0.20	8.5
L4-4'	170	0.11	1.8	1.4	10	ND

Concentrations reported in mg/kg (ppm)

A subsurface investigation was performed by RESNA during June and October 1992. The investigation included drilling one onsite soil boring (B-14) and three offsite soil borings (B-15, B-16 and B-17). A one 6-inch diameter groundwater recovery well (RW-1) was installed in boring B-14, and two 4-inch diameter groundwater monitoring wells (MW-9 and MW-10) were installed in borings B-15 and B-16, respectively. Offsite borings B-15 through B-17 were drilled north and northwest of the site to further delineate the extent of petroleum hydrocarbons offsite in soil in the downgradient and crossgradient directions from the former UST locations. Recovery well RW-1 was installed to further delineate the extent of petroleum hydrocarbons in groundwater and for groundwater remediation. Boring B-17 was to be converted to groundwater monitoring well MW-11, but was grouted and abandoned due to the existence of multiple utility lines in the vicinity of the boring.

Groundwater flow was measured to be in a northwest direction with a gradient of approximately 0.09 ft/ft as interpreted from the July, August, September, October and November 1992 sampling events.

A total of ten (10) soil samples were collected from borings B-14 through B-16 were analyzed for TPHg and BTEX fractions. Laboratory results of soil samples collected from onsite boring B-14 contained concentrations of TPHg ranging from 2.5 ppm to 1700 ppm; concentrations of TPHd ranging from non-detectable (less than 1.0 ppm) to 2500 ppm; concentrations of benzene ranging from non-detectable (less than 0.005 ppm) to 0.043 ppm; concentrations of ethyl benzene ranging from 0.12 to 25 ppm; concentrations of total xylenes ranging from 0.26 to 130 ppm; Non-detectable concentrations of TPHg, TPHd and BTEX were found in soil samples analyzed from borings B-15 and B-16.

Groundwater samples collected from the newly installed monitoring wells MW-9 and MW-10 were found to contain non-detectable concentrations of TPHg, TPHd, TOG and BTEX fractions. However, laboratory analysis of the groundwater sample collected from recovery well RW-1 indicated elevated concentrations of TPHg-7600 ppb, TPHd-3100 ppb, benzene-99 ppb, toluene-30 ppb, ethyl benzene-440 ppb and total xylenes-1300 ppb. The laboratory reports that the sample reported to contain 3100 ppb of TPHd was attributed to a

boiling point hydrocarbon mixture, probably due to weathered gasoline, and the chromatogram reportedly did not match the typical diesel fingerprint.

Operation of the groundwater extraction system began on January 25, 1993. This groundwater extraction system utilizes electric pumps in wells RW-1, MW-1 and MW-2, an aeration tank and two 55-gallon granular activated carbon drums arranged in series to treat the influent groundwater stream prior to being discharged in the sanitary sewer system. System was shut down on 5/9/95 due to low concentrations/removal rates.

See Section VII, Additional Comments, etc...

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? **YES**
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? **YES**
Does corrective action protect public health for current land use? **YES**
Site management requirements: **None**

Should corrective action be reviewed if land use changes? **YES**
Monitoring wells Decommissioned: **None**
Number Decommissioned: **N/A** Number Retained:
List enforcement actions taken:
List enforcement actions rescinded:

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Dale H. Klettke Title: Hazardous Materials Specialist

Signature: *Dale Klettke* Date: 10/28/96

Reviewed by

Name: Barney Chan Title: Hazardous Materials Specialist

Signature: *Barney Chan* Date: 10/3/96

Name: Thomas Peacock Title: Supervising HazMat Specialist

Signature: *Thomas Peacock* Date: 10-10-96

VI. RWQCB NOTIFICATION

Date Submitted to RB:

RB Response: *Approved*

RWQCB Staff Name: Kevin Graves

Title: AWRCE

Signature: *Kevin Graves*

Date: 7/14/96

VII. ADDITIONAL COMMENTS, DATA, ETC.

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.

Approximately 1,000 cubic yards of soil have been excavated and removed beneath the former underground storage tank complex, product islands and product lines. The site groundwater extraction system pumped a total of 612,957 gallons of groundwater with only 0.98 gallon of gasoline and 0.06 gallon of benzene being removed during the time of groundwater extraction system operation.

- 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 in the vicinity of soil borings B11 and B14. Site soils are sufficiently defined vertically and laterally.

- 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, MW-4 and MW-5. Wells MW-3 and MW-5 are down-gradient from the former gasoline USTs and service islands, respectively. Well MW-4 is down-gradient of the former waste oil UST. Since 8/27/93, maximum concentrations of TPHd, TPHg and BTEX detected in wells MW-1 through MW-10 are 420, 310, 21, 57, 5.7 and 38 ug/L (ppb), respectively. Laboratory analysis of groundwater samples collected from down-gradient monitoring wells (MW-8, MW-9 and MW-10), located across Park Boulevard, have revealed non-detectable concentrations of petroleum hydrocarbons, with the exception of well MW-8. For the 10/31/91 monitoring event, the groundwater sample collected from well MW-8, revealed levels of BTEX at concentrations of 1.2, <0.30, 0.48, and 0.95 ug/L, respectively.

- d) No water wells, 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 (July 1990). The concentrations historically detected in wells MW-3, MW-4 and MW-5 should not impact the quality of groundwater down gradient of the site.

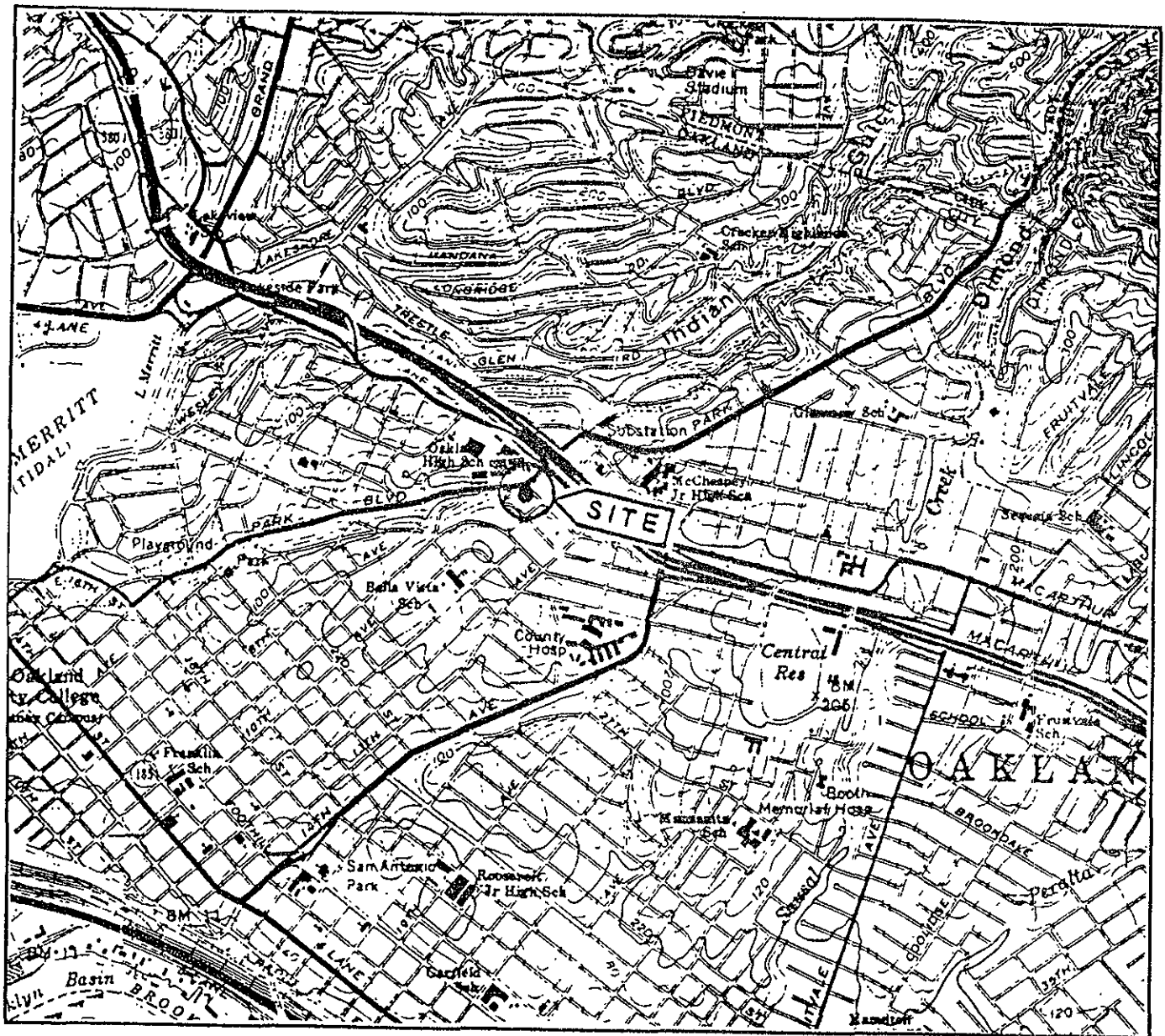
- e) The site presents no significant risk to human health or the environment.

Benzene concentrations in soil sample J-1, collected from beneath the waste oil UST, are in exceedance of the ASTM RBCA CA-modified Tier 1 RBSL value (0.49 ppm) for a commercial/industrial receptor scenario for a target level of 1E-04 (1 in 10,000 excess cancer risk) for the

exposure pathway "Soil-Vapor Intrusion from Soil to Buildings". However, benzene concentrations (0.18 mg/kg) detected in soil sample S-8-B11, collected from boring B11 at a depth of 8 feet bgs, only exceed the same receptor scenario, for a target level of 1E-05 (1 in 100,000 excess cancer risk). Boring B11 was located directly adjacent to the station building, where the risk for worker exposure by this pathway is present.

In addition, benzene concentrations in soil sample J-1 (0.79 mg/kg) and sample S-8-11 (0.18 mg/kg) exceed the Tier 1 RBSL value (0.13 ppm) for a commercial/industrial receptor for a target level of 1E-06 (1 in 1,000,000 excess cancer risk) for the exposure pathway "Soil-Volatilization to Outdoor Air". However, since the area is currently capped (asphalt paved) with the station building built on a concrete slab, the risk of exposure due to soil volatilization to indoor/outdoor air is substantially reduced.

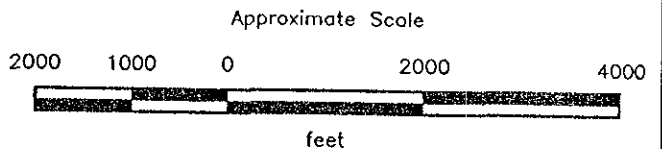
Since 8/27/93, maximum benzene concentrations detected in groundwater samples collected from the three (3) on-site monitoring wells was 21 ppb (MW-1 on 8/10/94). Although benzene has been detected at levels above MCLs, Tier 1 RBSLs (0.021 ppm) are not exceeded for a commercial/industrial receptor, at 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 considered a source of drinking water.



Base: U.S. Geological Survey
 7.5-Minute Quadrangles
 Oakland West/East, California.
 Photorevised 1980

LEGEND

○ = Site Location

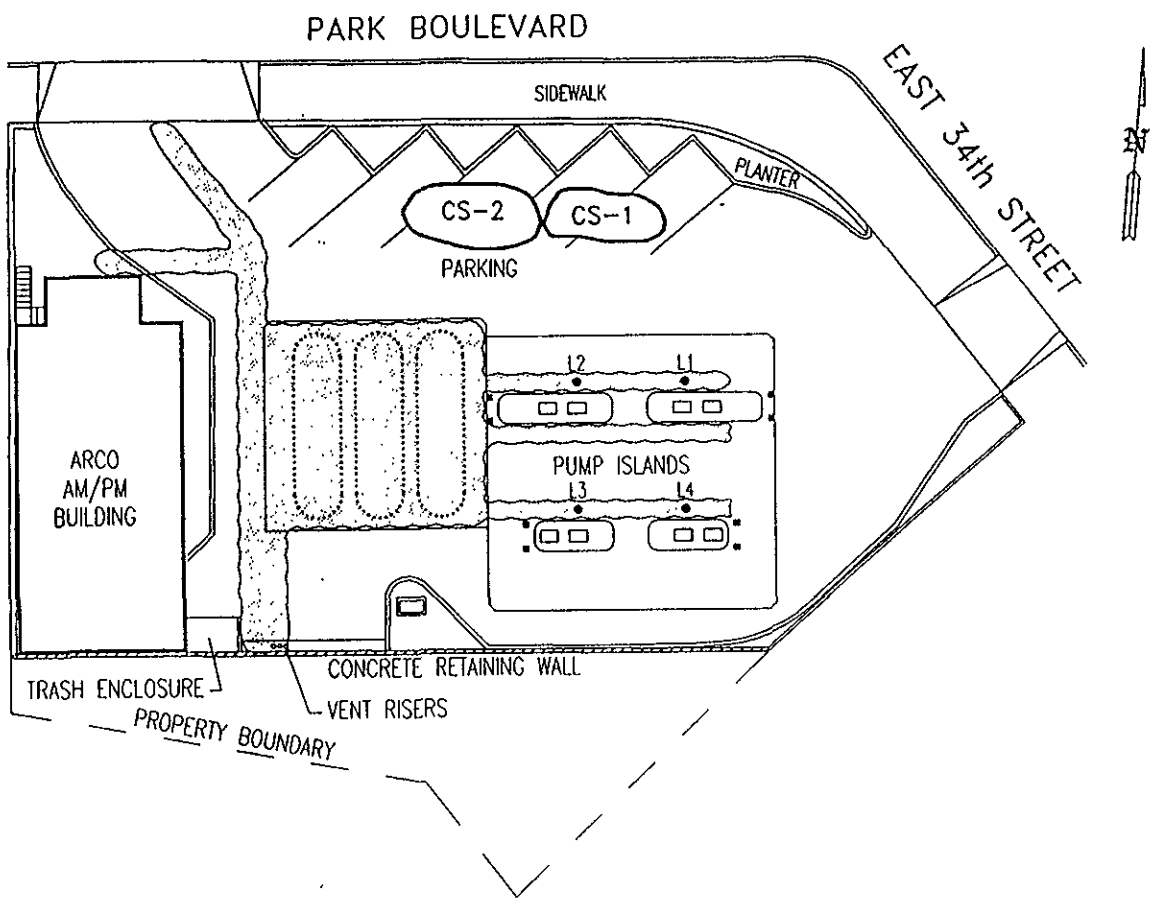


RESNA
 Working to Restore Nature

PROJECT 69021.10

SITE VICINITY MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
1

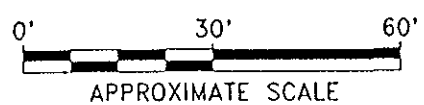


EXPLANATION:

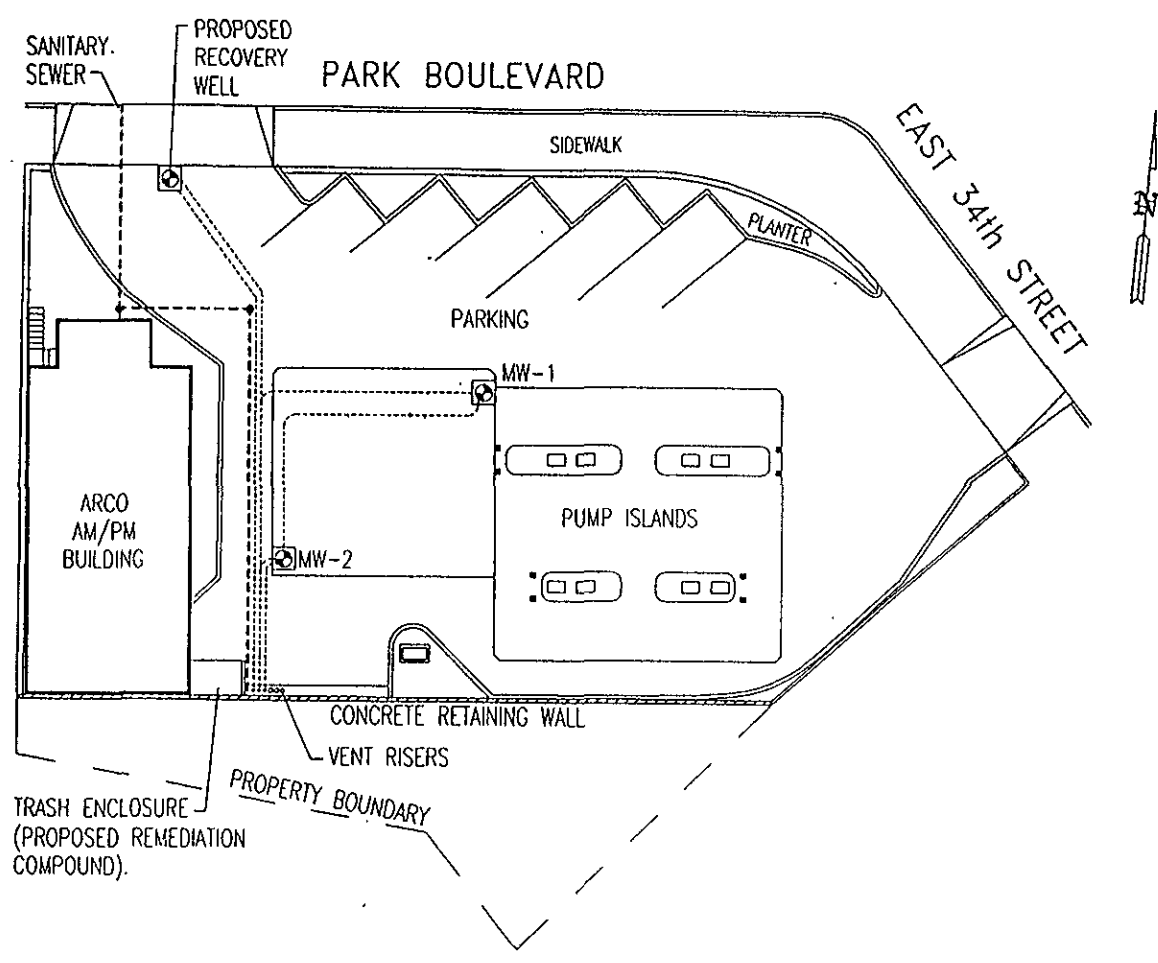
- EXIST. UNDERGROUND STORAGE TANKS
- EXCAVATED AREA.
- SOIL SAMPLE LOCATION AND DESIGNATION.
- SOIL STOCKPILE LOCATION.

SOURCE:

MAP MODIFIED FROM BLUEPRINT PROVIDED BY ROBERT H. LEE & ASSOCIATES, ARCHITECTURE-PLANNING-& ENGINEERING.



<p>ROUX ASSOCIATES, INC. ENVIRONMENTAL CONSULTING & MANAGEMENT</p>	COMPILED BY: P.S.	PREPARED FOR: ARCO PRODUCTS COMPANY	FIGURE
	PREPARED BY: R.P.		
	PROJECT MNGR. P.S.	TITLE:	LOCATION OF PRODUCT LINE TRENCH SOIL SAMPLES AND SOIL STOCKPILES
	DATE: 02/92		
	SCALE: AS SHOWN		
	PROJECT NO. A136W01		
	FILE NAME: AR2107XX	ARCO FACILITY NO. 2107	
			3

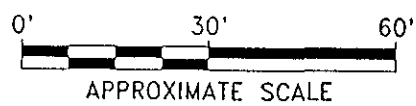


LEGEND:

- - - - - EXISTING UNDERGROUND STORAGE TANK.
- - - - - 4 INCH CAST IRON SEWER PIPING.
- - - - - 4 INCH PVC PIPING.
- - - - - GROUND WATER MONITORING WELL LOCATION.
- - - - - CLEAN OUT.
- - - - - VAULT BOX.

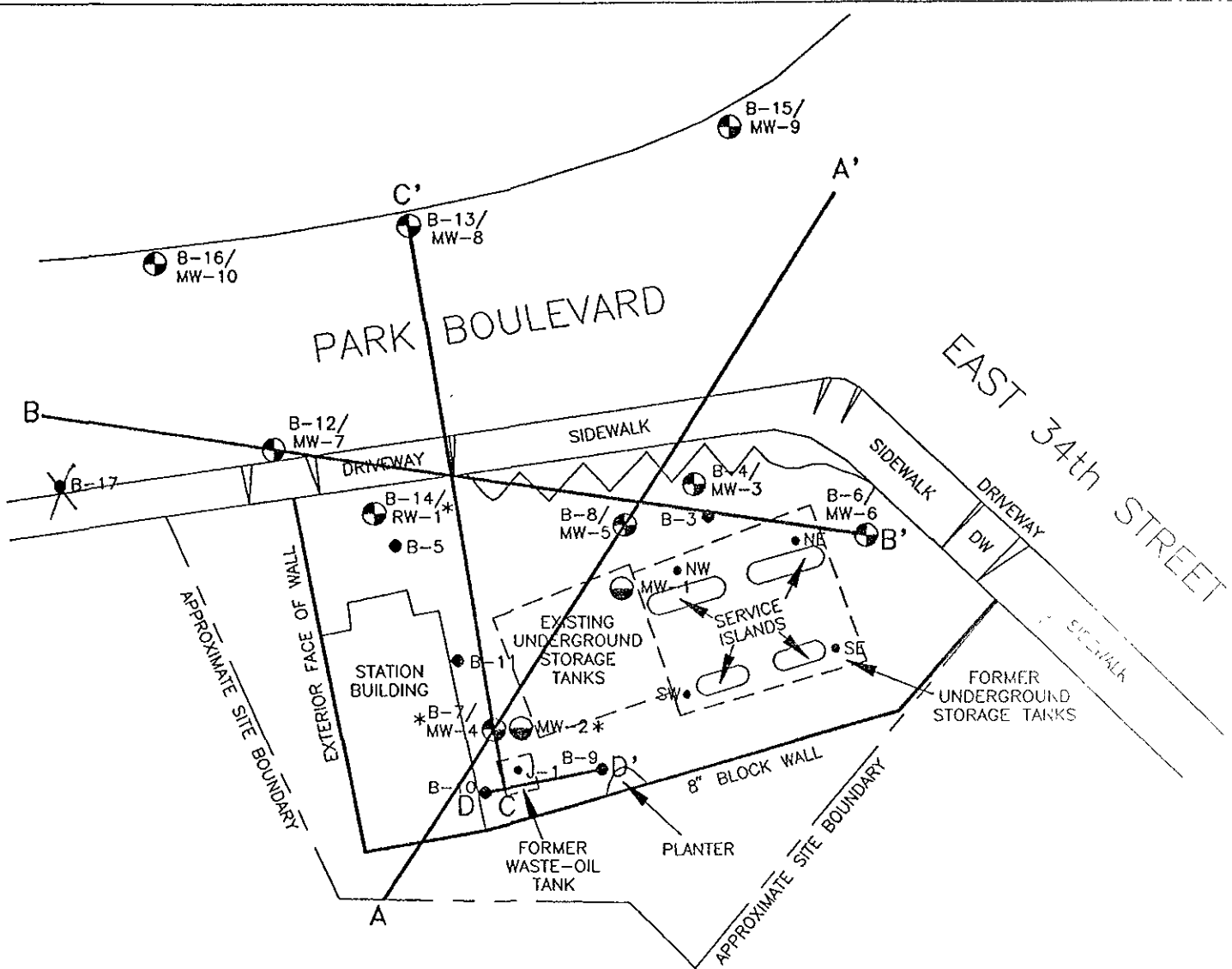
SOURCE:

MODIFIED FROM BLUEPRINT PROVIDED BY
 FORT H. LEE & ASSOCIATES, ARCHITECTURE--PLANNING--& ENGINEERING



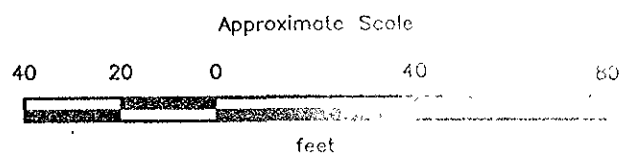
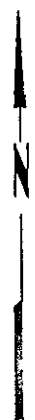
COMPILED BY: L.D.	PREPARED FOR: ARCO PRODUCTS COMPANY	FIGURE: 4
PREPARED BY: R.P.		
PROJECT MNGR: P.S.	TITLE: LOCATION OF VAULT BOXES AND WELL REMEDIATION PIPING	
DATE: 04/92		
SCALE: AS SHOWN		
PROJECT NO: A136W01	ARCO FACILITY NO 2107	
FILE NAME: AR2107XY		





EXPLANATION

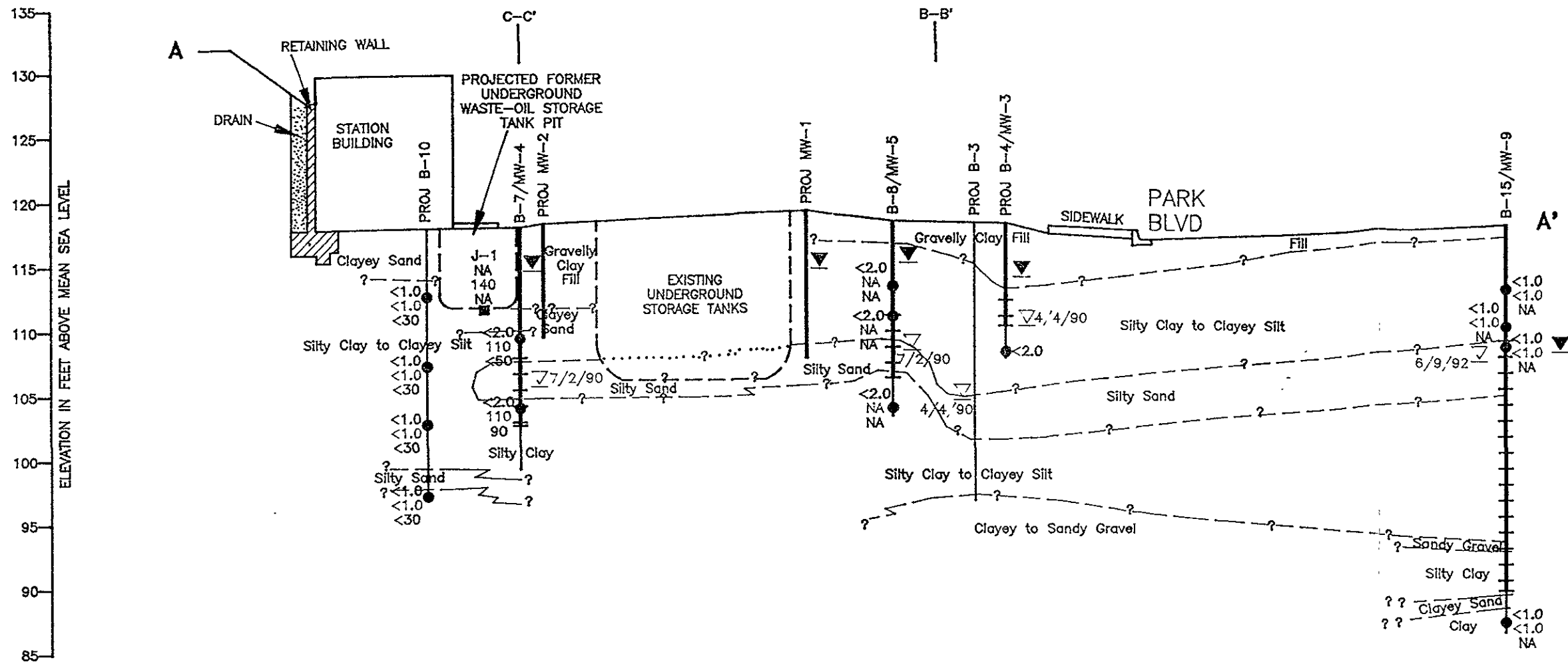
- B-11 ● = Soil boring (RESNA, 04/90, 05/91, and 06/92, and 10/92)
- B-16/
MW-10 ⊕ = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- B-16/
RW-1 ⊕ = Groundwater recovery well (RESNA, 10/92)
- MW-2 ⊕ = Tank pit observation well (S.C.S. Engineers, 01/87)
- J-1 ● = Soil sample (S.C.S. Engineers, 01/87)
- * = Well was not surveyed, location is approximate
- D—D' = Geologic cross section



SOURCE: Modified from plan supplied by John L. Koch, Land Surveyor, 01/27/1992

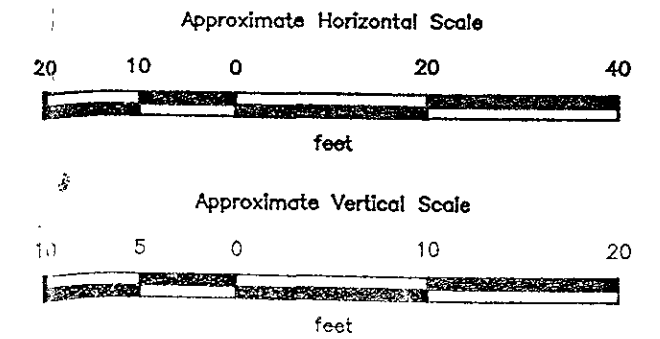
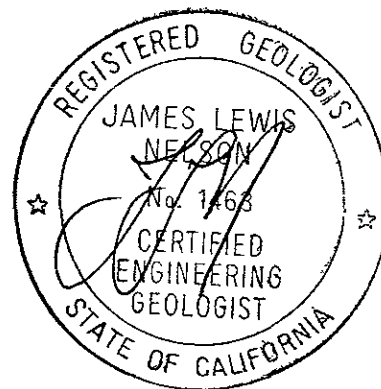


GENERALIZED SITE PLAN
ARCO Station 2107
3310 Park Boulevard
Oakland, California



EXPLANATION

- J-1 ■ = Former underground waste-oil storage tank pit soil sample
- <2.0
110
90 = Laboratory analyzed soil sample showing concentration of TPHg (red), TPHD (green), and TOG (black) in parts per million
- = Well casing
- = Well screen
- = Boring
- ▽ = Initial water level in boring
- ▽ = Static water level in well (11/11/92)
- NA = Not analyzed

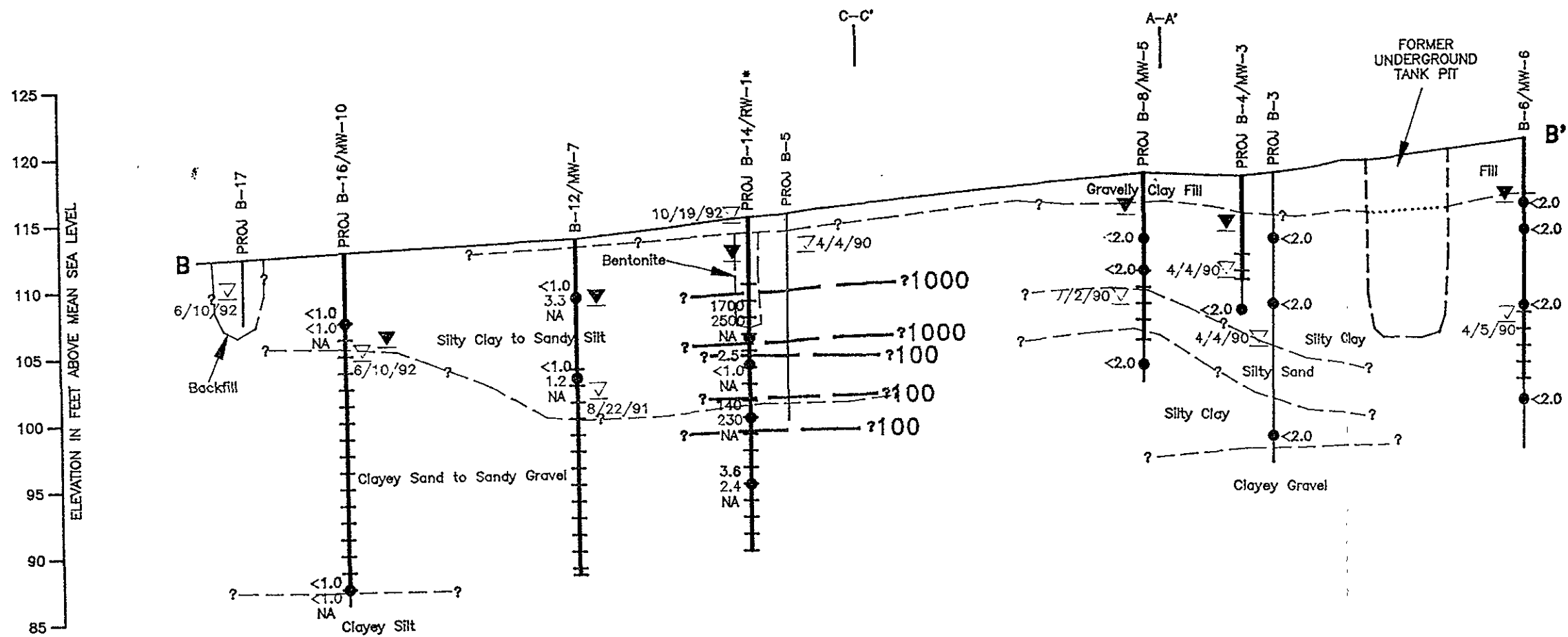


PROJECT 69021.10 6902110A

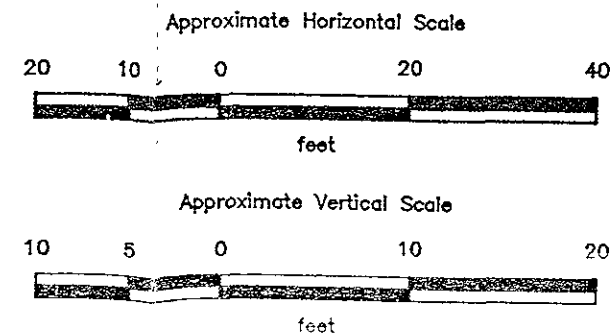
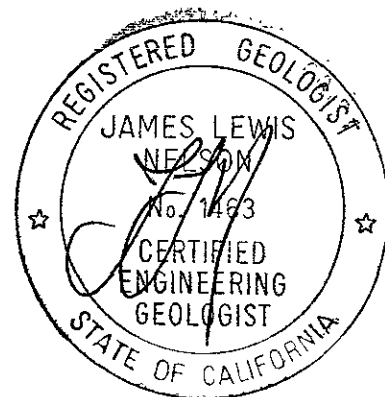
GEOLOGIC CROSS SECTION A-A'
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE

11



- EXPLANATION**
- 1700
2500
NA = Laboratory analyzed soil sample showing concentration of TPHg (red), TPHd (green), and TOG (black) in parts per million
 - = Well casing
 - = Well screen
 - = Boring
 - ∇ = Initial water level in boring
 - ∇ = Static water level in well (11/11/92)
 - NA = Not analyzed
 - * = This well was not surveyed. Elevation and location are approximate.



RESNA
Working to Restore Nature

PROJECT

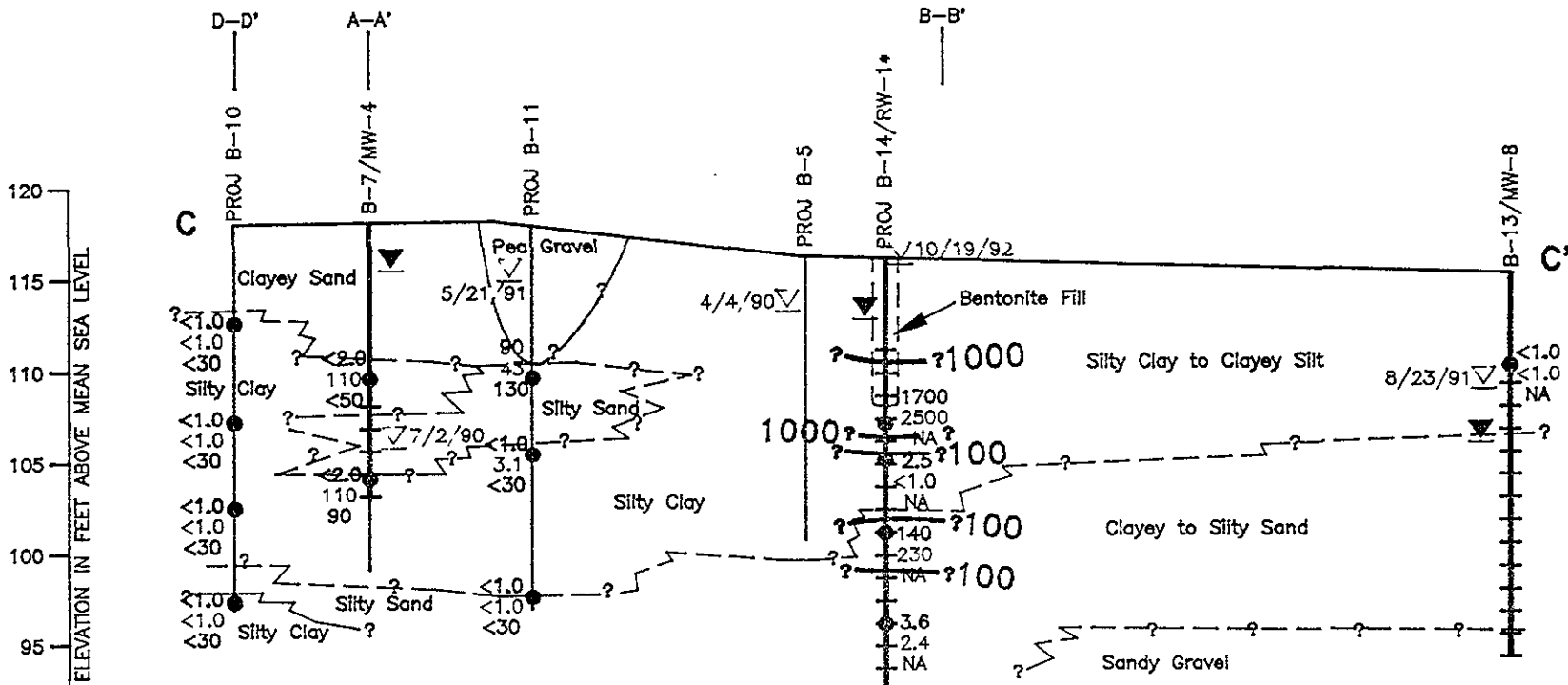
69021.10

6902110B

GEOLOGIC CROSS SECTION B-B'
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE

12



EXPLANATION

1000 — = Line of equal concentration of TPHg in soil in parts per million (ppm)

90
130
130 — = Laboratory analyzed soil sample showing concentration of TPHg (red), TPHd (green), and TOG (black) in ppm

— = Well casing

— = Well screen

— = Boring

∇ = Initial water level in boring

∇ = Static water level in well (11/11/92)

NA = Not analyzed

* = Well was not surveyed. Elevation and location approximate.

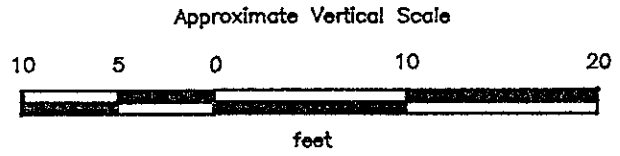
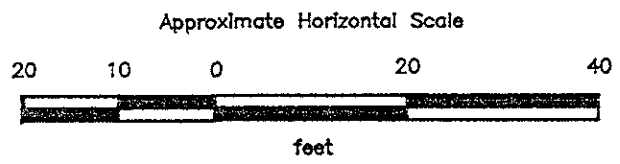
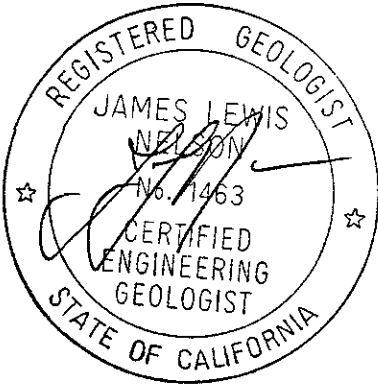
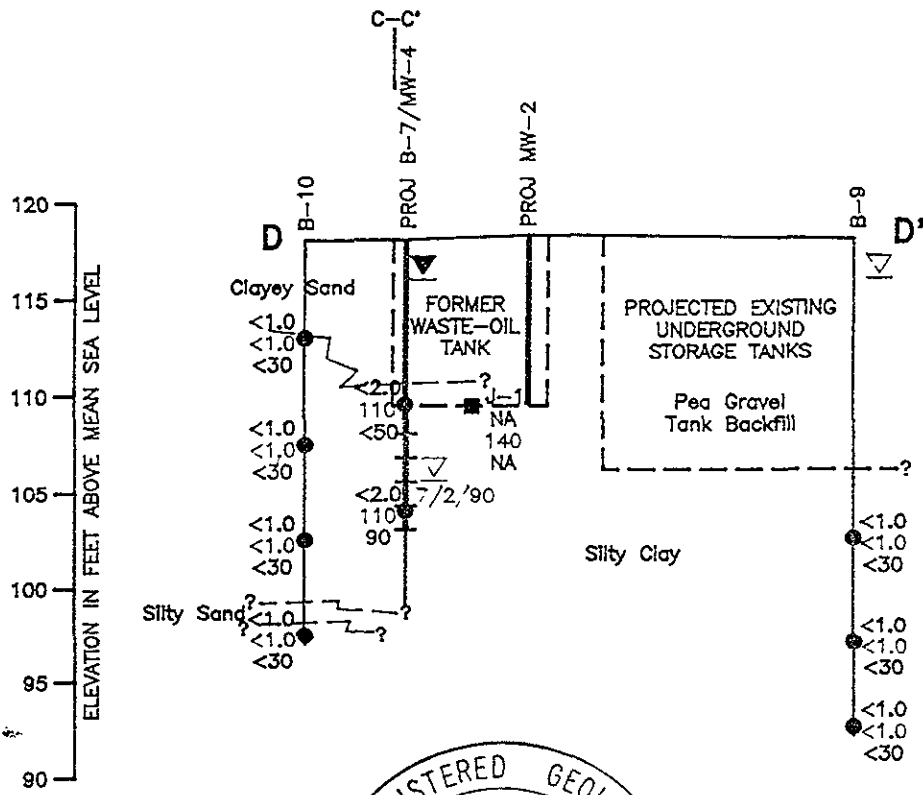


PLATE
13

GEOLOGIC CROSS SECTION C-C'
ARCO Station 2107
3310 Park Boulevard
Oakland, California



PROJECT 69021.10 6902110C



EXPLANATION

- = Laboratory analyzed soil sample showing concentration of TPHg (red), TPHd (green), and TOG (black) in parts per million
- = Well casing
- = Well screen
- = Boring
- = Initial water level in boring
- = Static water level in well (11/11/92)

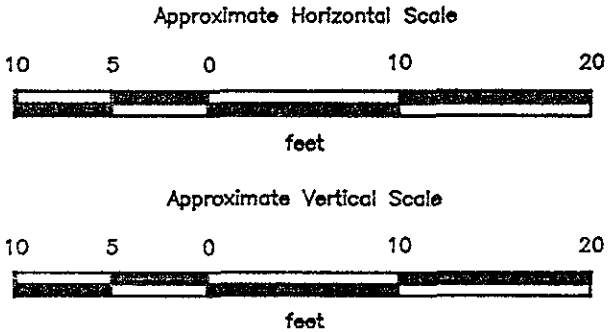
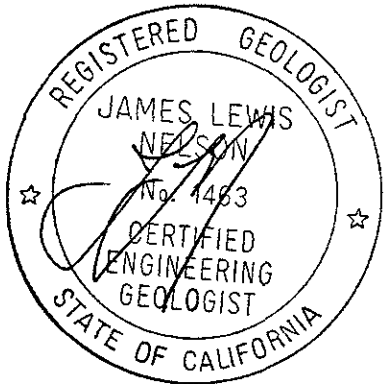


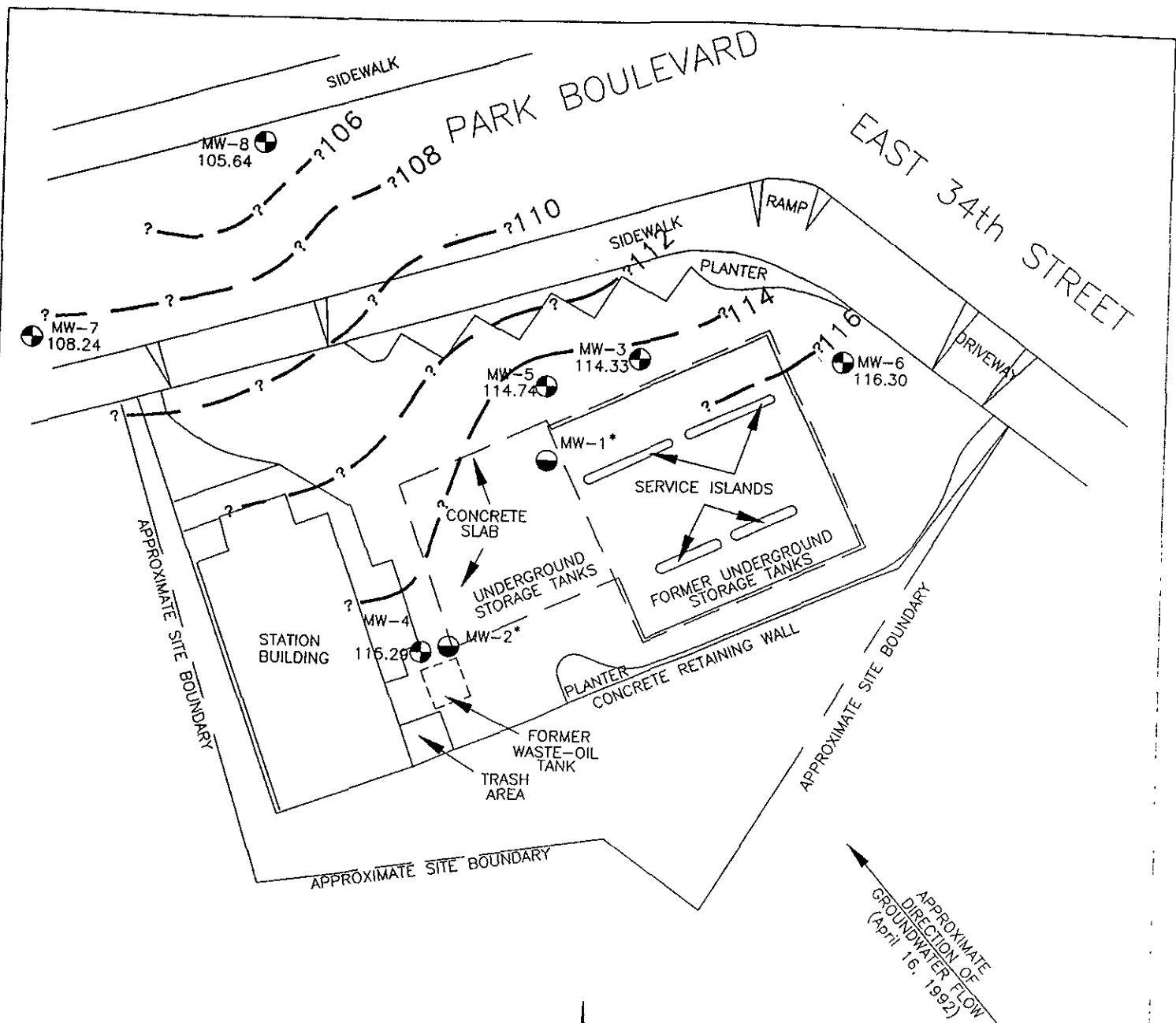
PLATE
14

GEOLOGIC CROSS SECTION D-D'
ARCO Station 2107
3310 Park Boulevard
Oakland, California





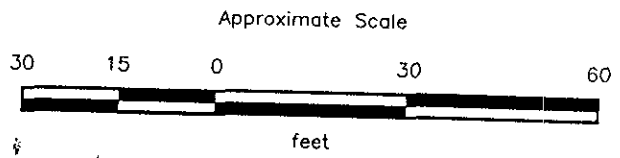
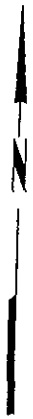
PROJECT 69021.10

6902110D



EXPLANATION

- 116 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 116.30 = Elevation of groundwater in feet above MSL, April 16, 1992
- * = Not used for groundwater gradient interpretation
- MW-8  = Monitoring well (RESNA, 04/90, 07/90, and 08/91)
- MW-2  = Tank pit observation well (S.C.S. Engineers, 01/87)



APPROXIMATE DIRECTION OF GROUNDWATER FLOW (April 16, 1992)

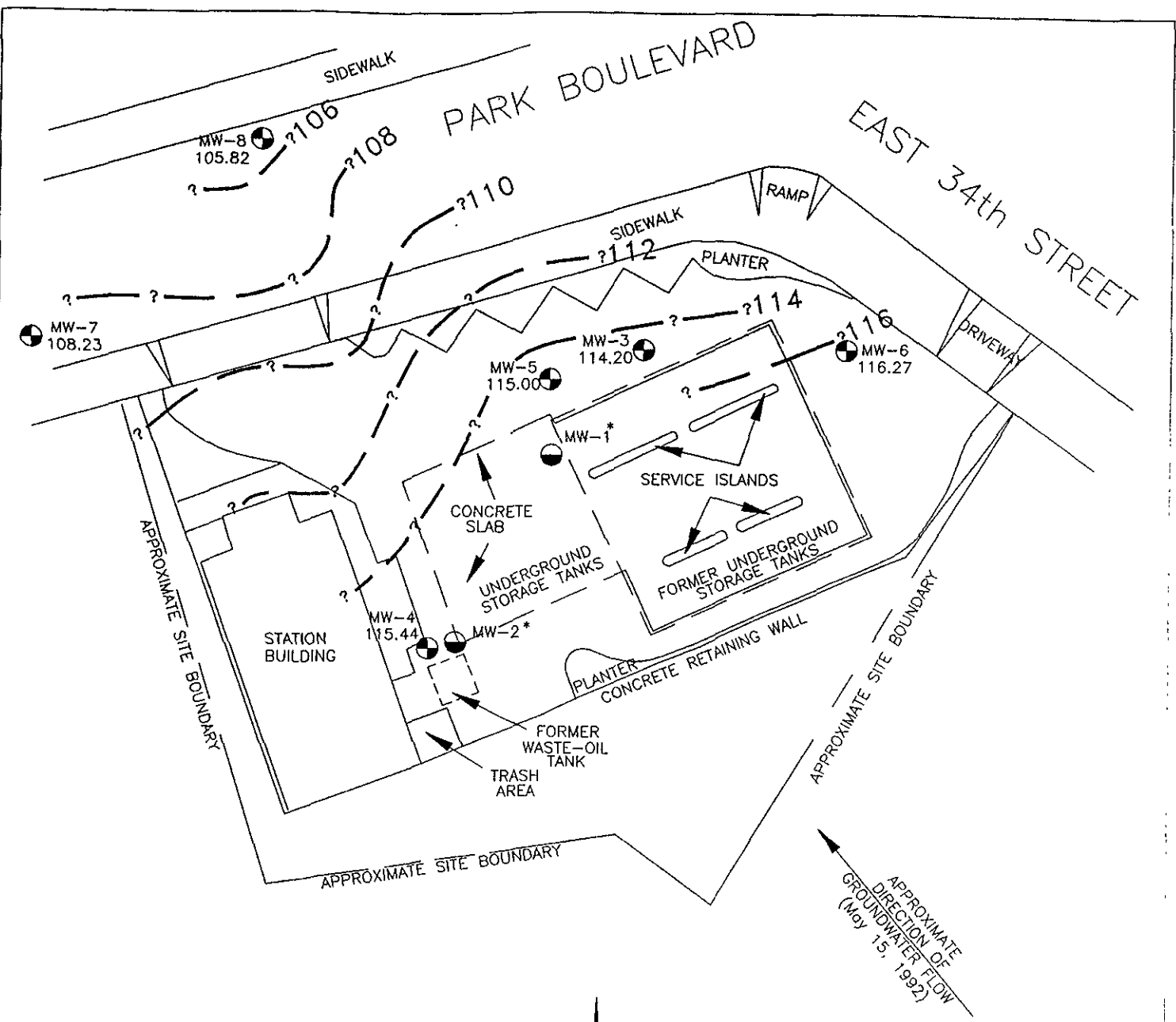
Source: Surveyed by Ron Archer, Civil Engineer, Inc., dated July 20, 1990, and by John Koch dated, August 28, 1991.





GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

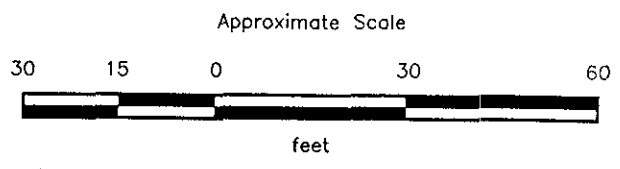
PLATE
3

PROJECT 69021.06



EXPLANATION

- 116 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 116.27 = Elevation of groundwater in feet above MSL, May 15, 1992
- * = Not used for groundwater gradient interpretation
- MW-8  = Monitoring well (RESNA, 04/90, 07/90, and 08/91)
- MW-2  = Tank pit observation well (S.C.S. Engineers, 01/87)



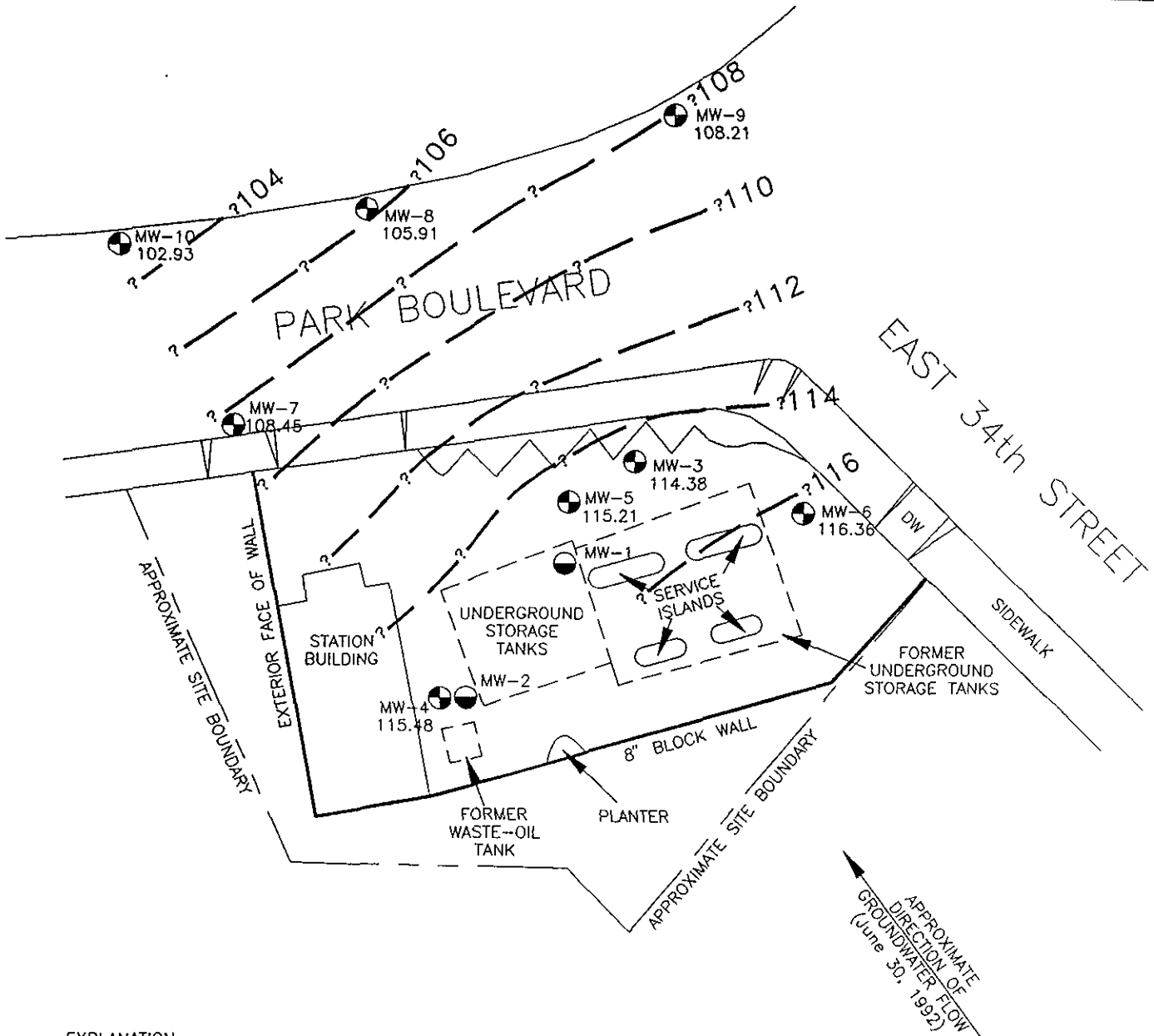
Source: Surveyed by Ron Archer, Civil Engineer, Inc., dated July 20, 1990, and by John Koch dated, August 28, 1991.





GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

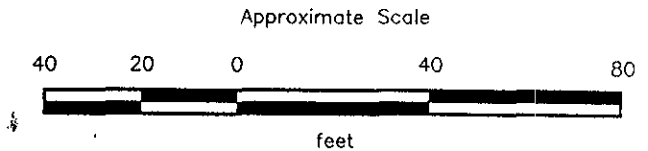
PLATE
4

PROJECT 69021.06



EXPLANATION

- 116 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 116.36 = Elevation of groundwater in feet above MSL, June 30, 1992
- * = Not used for groundwater gradient interpretation
- MW-10  = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2  = Tank pit observation well (S.C.C. Engineers, 01/87)



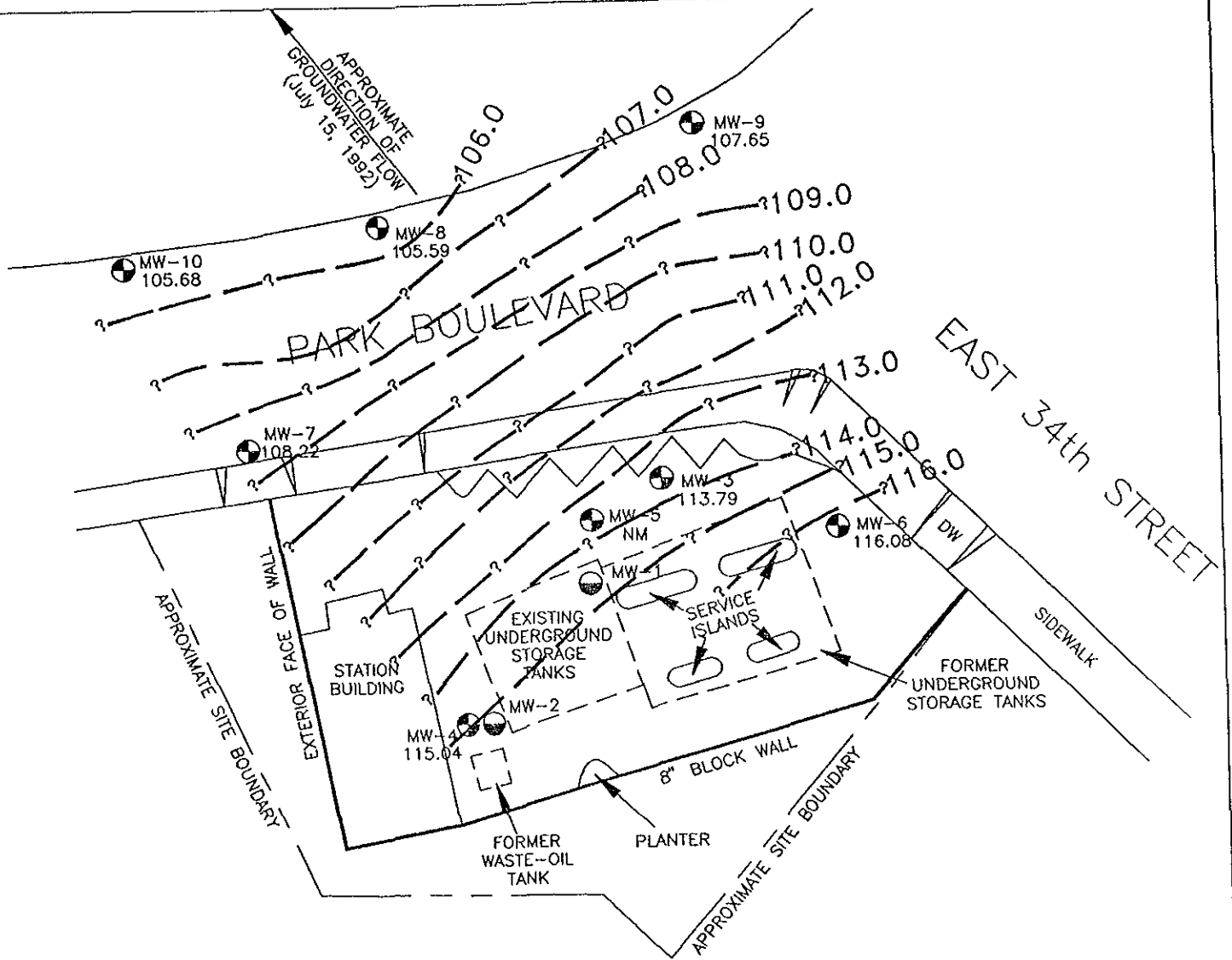
SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

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PROJECT 69021.06

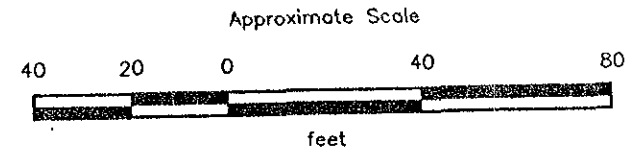
GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
5



EXPLANATION

- 116.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 116.08 = Elevation of groundwater in feet above MSL, July 15, 1992
- NM = Not measured
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)



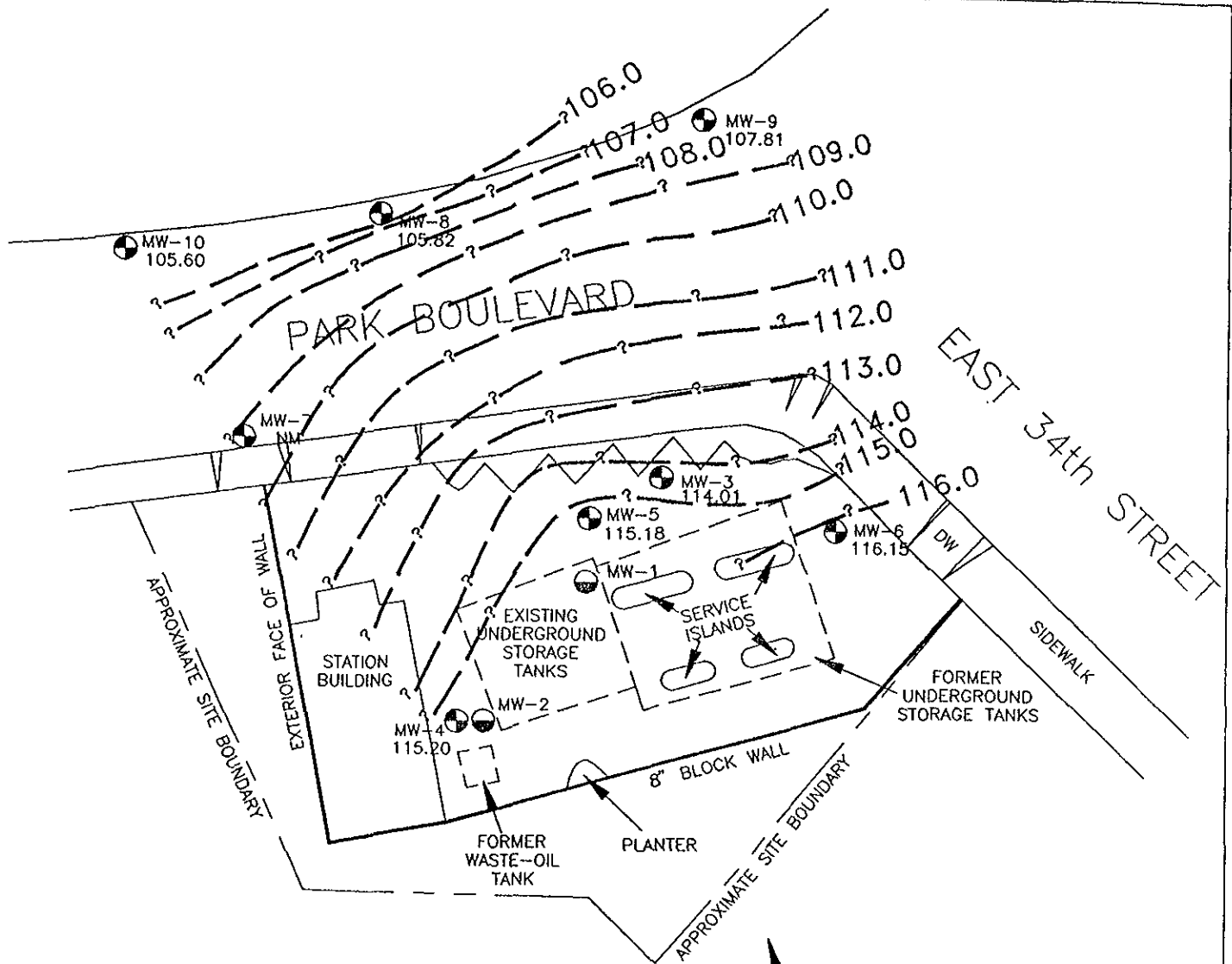
SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

RESNA
Working to Restore Nature

GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
15

PROJECT 69021.10 902110Q3



EXPLANATION

-116.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

116.15 = Elevation of groundwater in feet above MSL, August 25, 1992

NM = Not measured

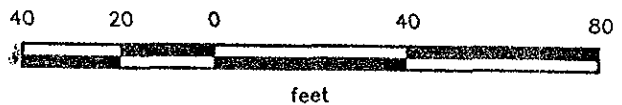
MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)

MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)

APPROXIMATE DIRECTION OF FLOW GROUNDWATER (August 25, 1992)



Approximate Scale



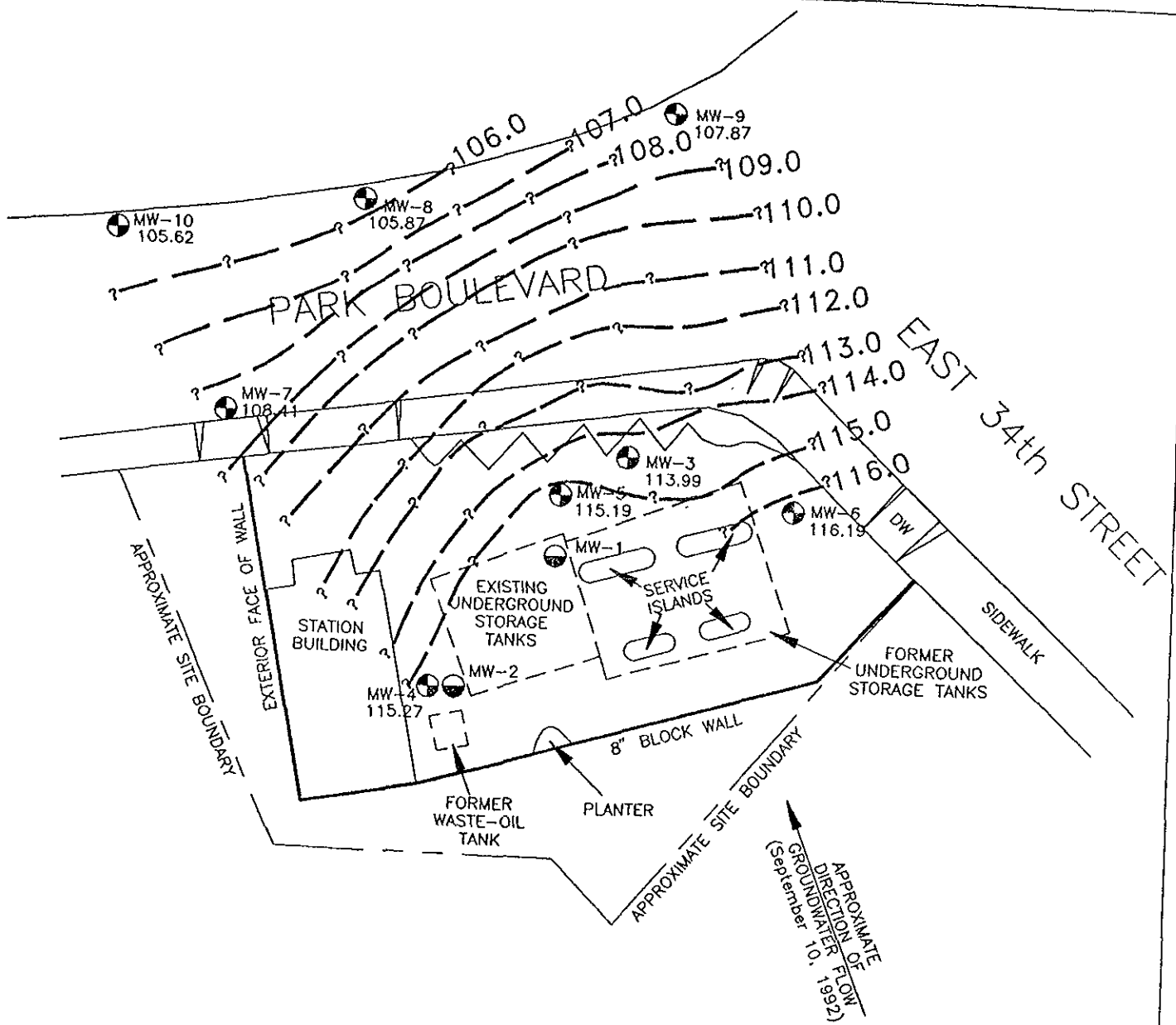
SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

RESNA
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GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

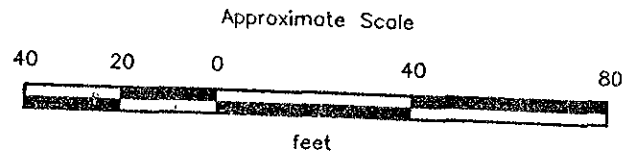
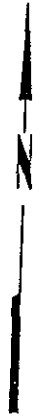
PLATE
16

PROJECT 69021.10 90211003



EXPLANATION

- 116.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 116.19 = Elevation of groundwater in feet above MSL, September 10, 1992
- NM = Not measured
- 10 ● = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- 2 ● = Tank pit observation well (S.C.S. Engineers, 01/87)



APPROXIMATE DIRECTION OF GROUNDWATER FLOW (September 10, 1992)

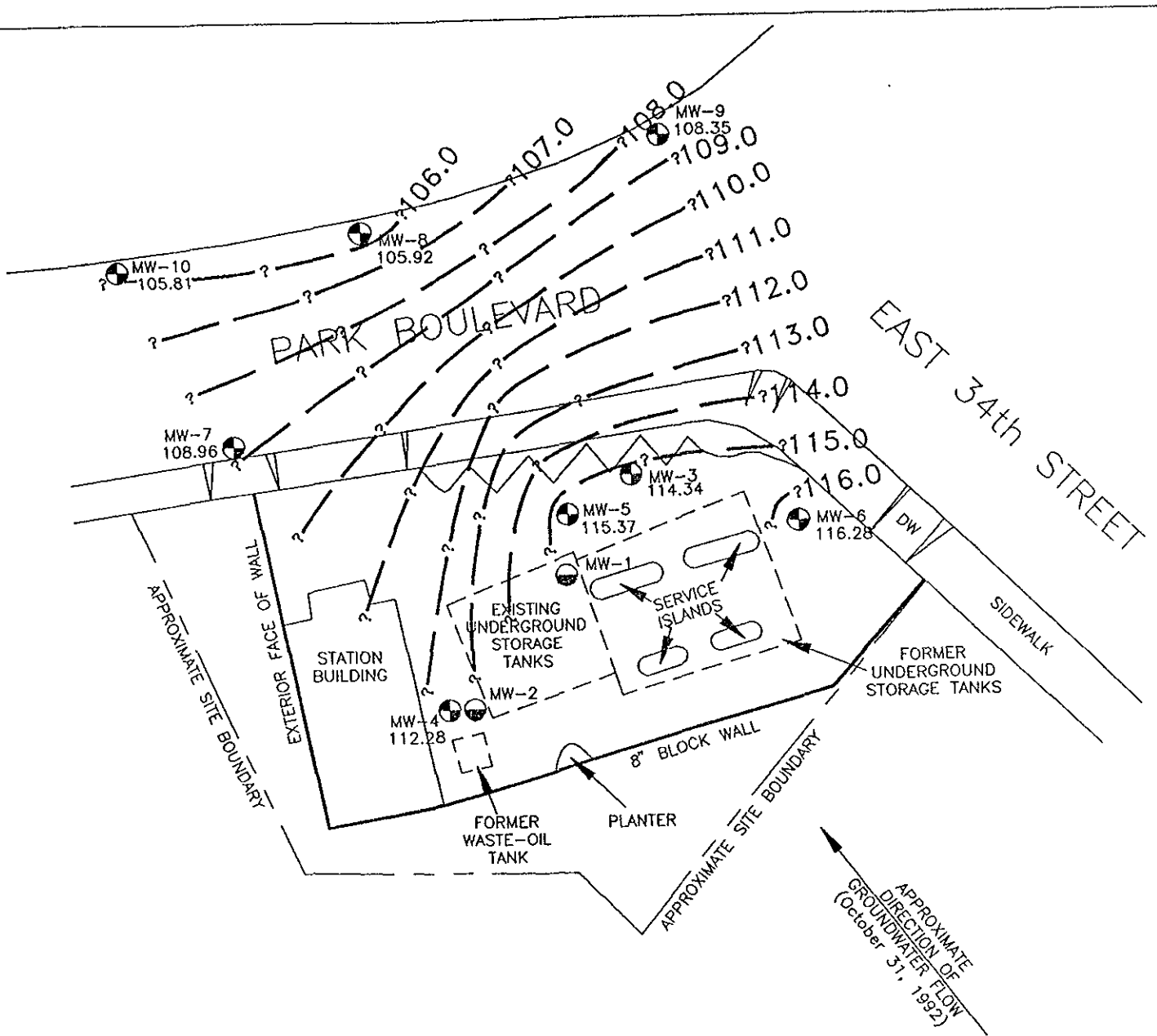
SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

RESNA
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GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
17

JECT 69021.10 902110Q3



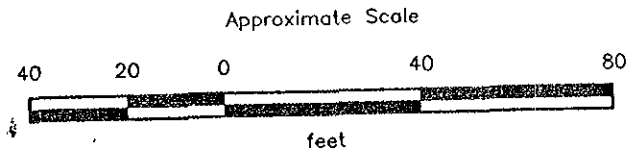
EXPLANATION

-116.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

116.28 = Elevation of groundwater in feet above MSL, October 31, 1992

MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)

MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)



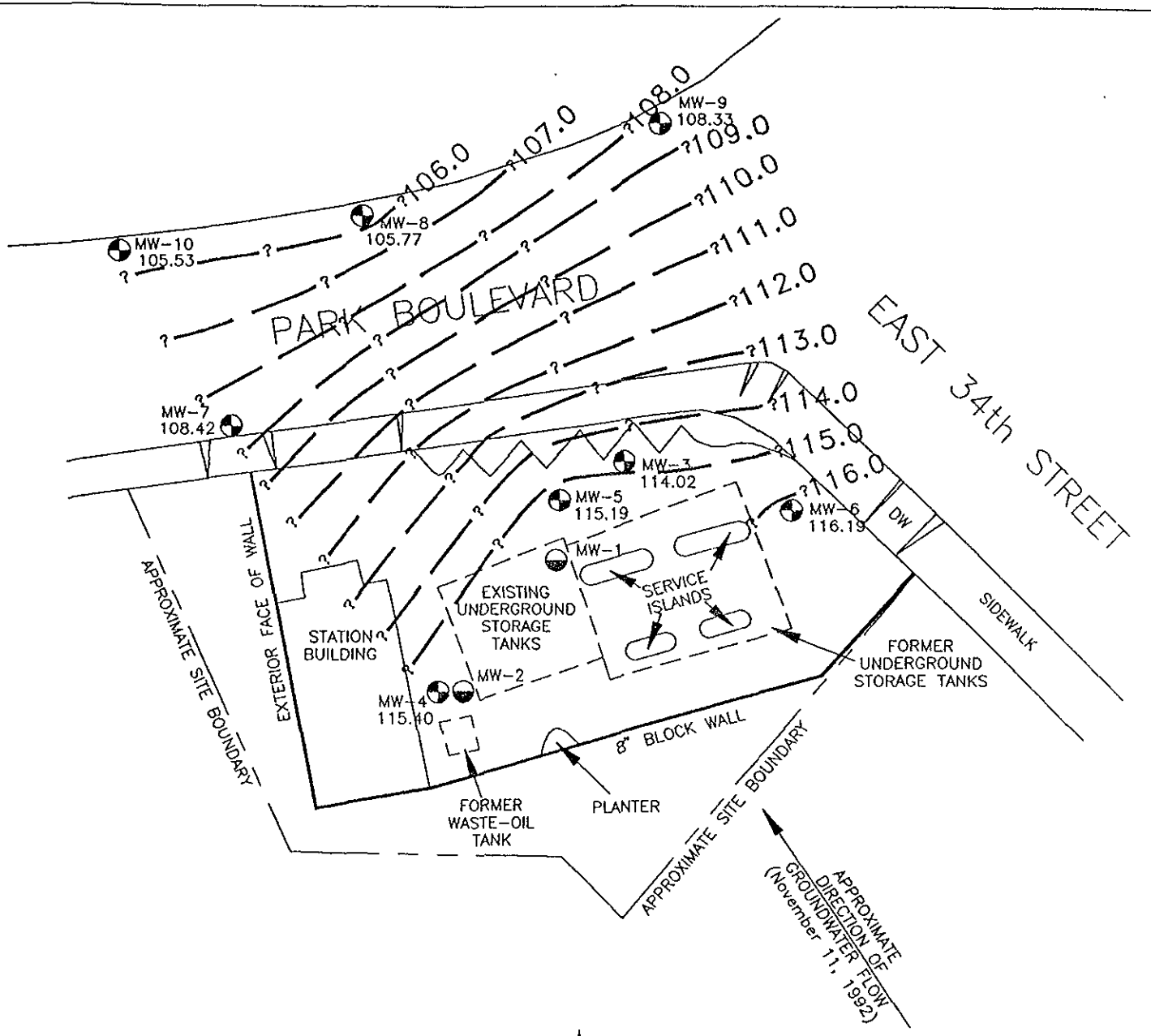
SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

RESNA
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PROJECT 69021.10 90211004

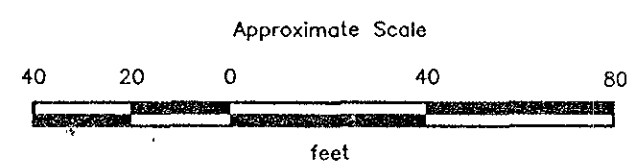
GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
18



EXPLANATION

- 116.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 116.19 = Elevation of groundwater in feet above MSL, November 11, 1992
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)



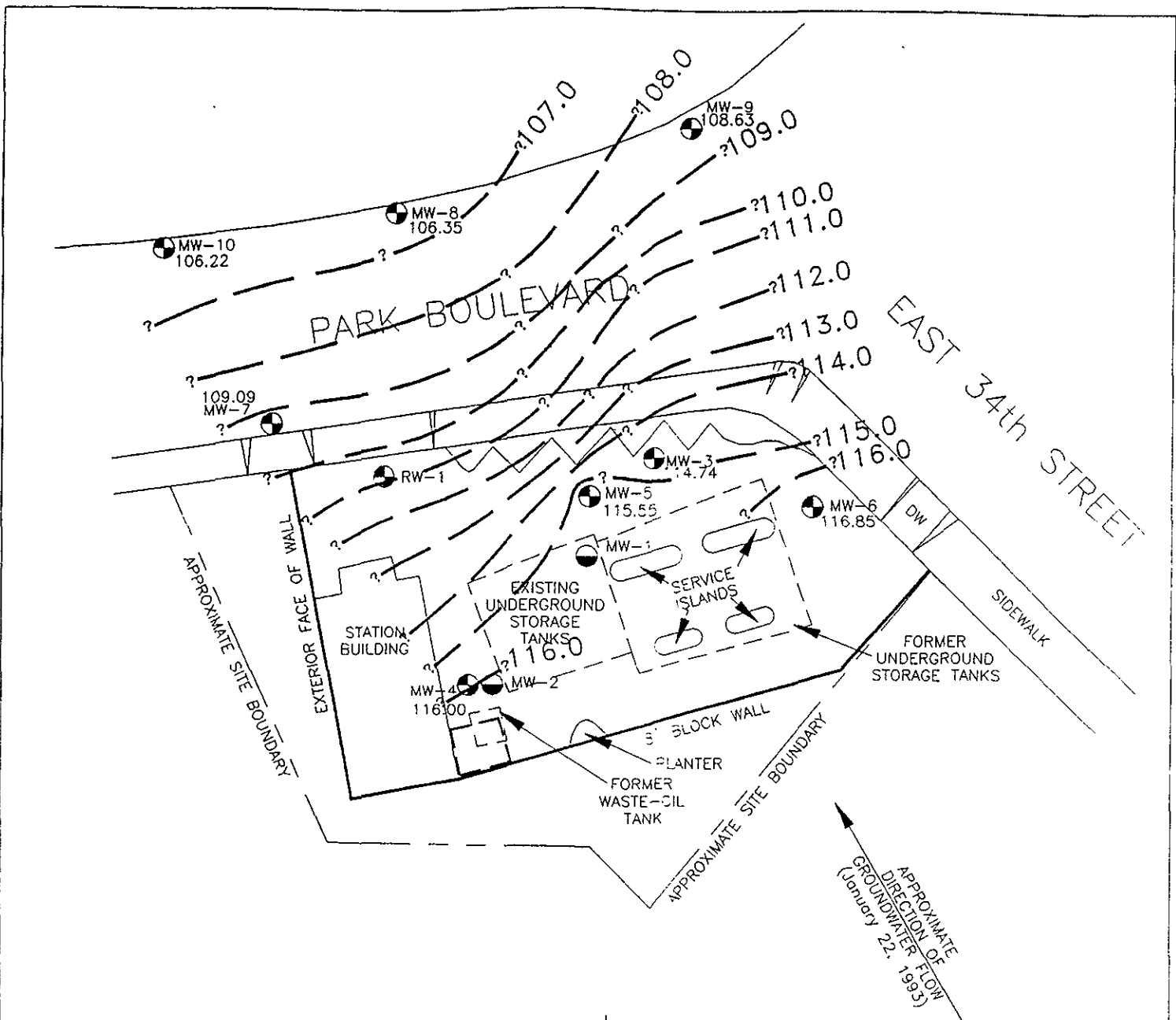
SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.



GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

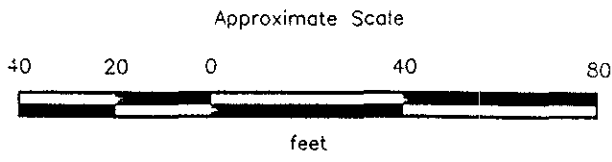
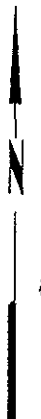
PLATE
19

PROJECT **69021.10** 90211004



EXPLANATION

- 116.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 116.85 = Elevation of groundwater in feet above MSL, January 22, 1993
- RW-1 = Groundwater recovery well (RESNA, 10/92)
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)
- = Approximate location of remediation compound



SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

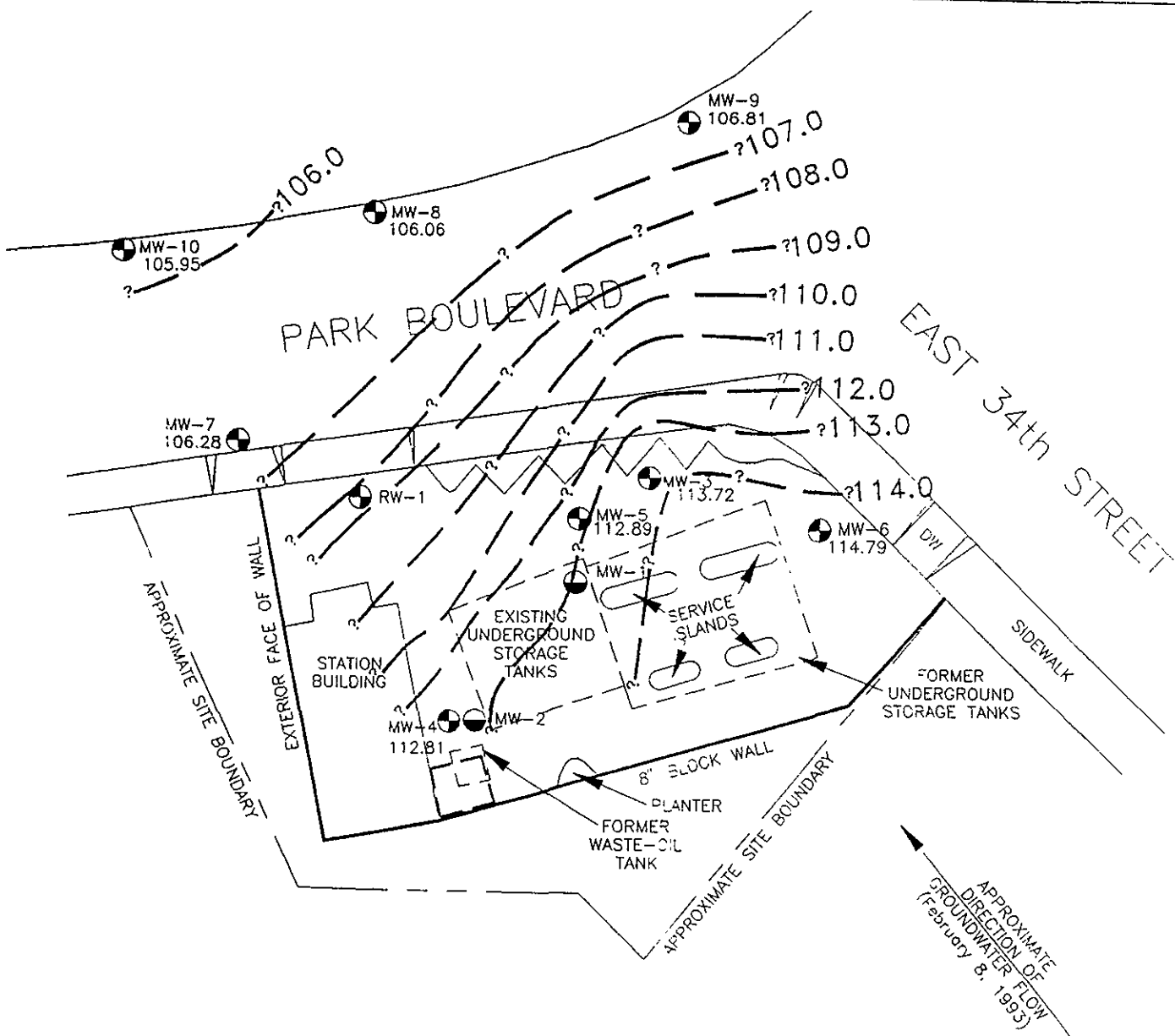


GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
3

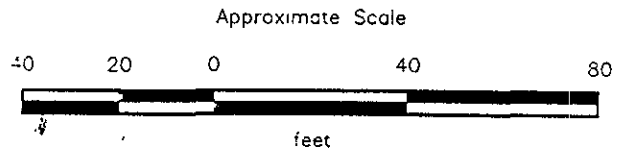
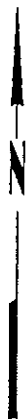
PROJECT 69021.17

90211701



EXPLANATION

- 114.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 114.79 = Elevation of groundwater in feet above MSL, February 8, 1993
- RW-1 = Groundwater recovery well (RESNA, 10/92)
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)
- [] = Approximate location of remediation compound

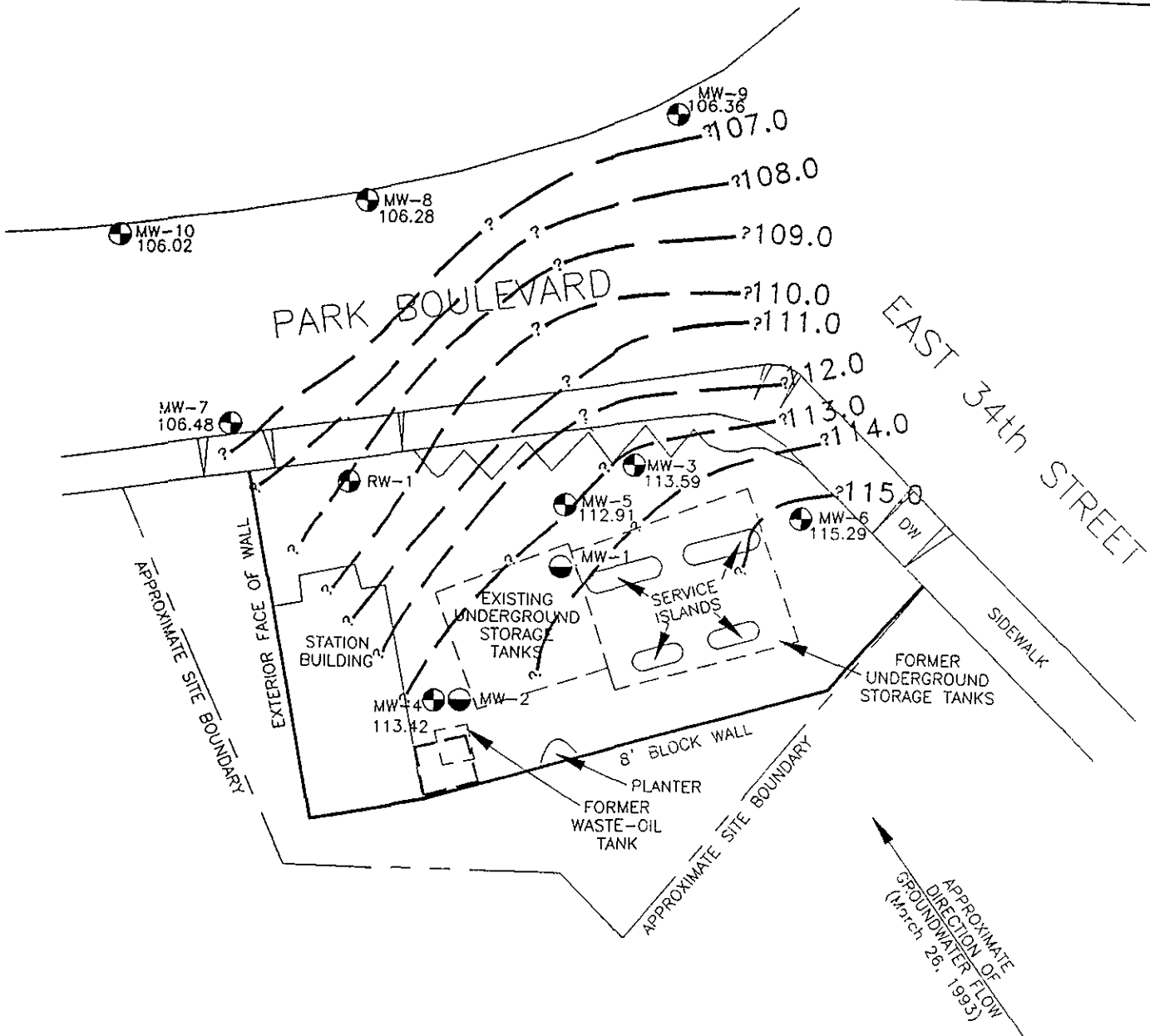


SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.



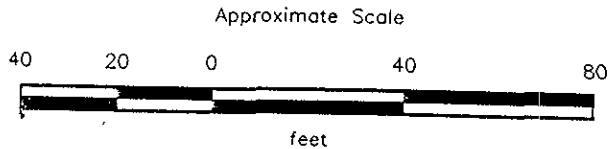
GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
4



EXPLANATION

- 115.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 115.29 = Elevation of groundwater in feet above MSL, March 26, 1993
- RW-1 = Groundwater recovery well (RESNA, 10/92)
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)
- [] = Approximate location of remediation compound



SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

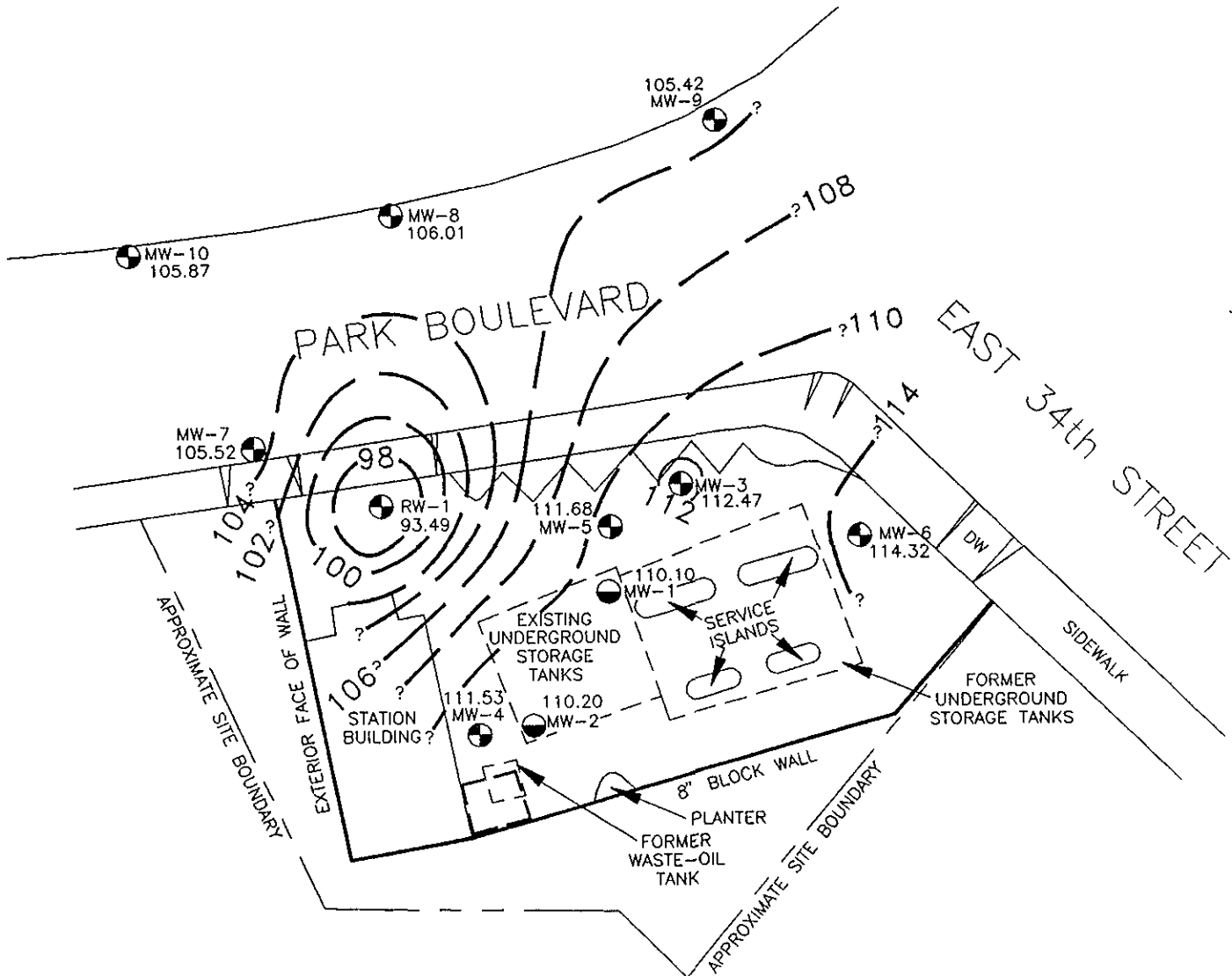
RESNA
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GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
5

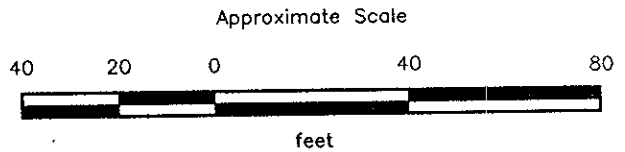
PROJECT 69021.17

90211701



EXPLANATION

- 114.0 — = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 114.32 = Elevation of groundwater in feet above MSL, April 28, 1993
- RW-1 ● = Groundwater recovery well (RESNA, 10/92)
- MW-10 ● = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 ● = Tank pit observation well (S.C.S. Engineers, 01/87)
- = Approximate location of remediation compound



SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

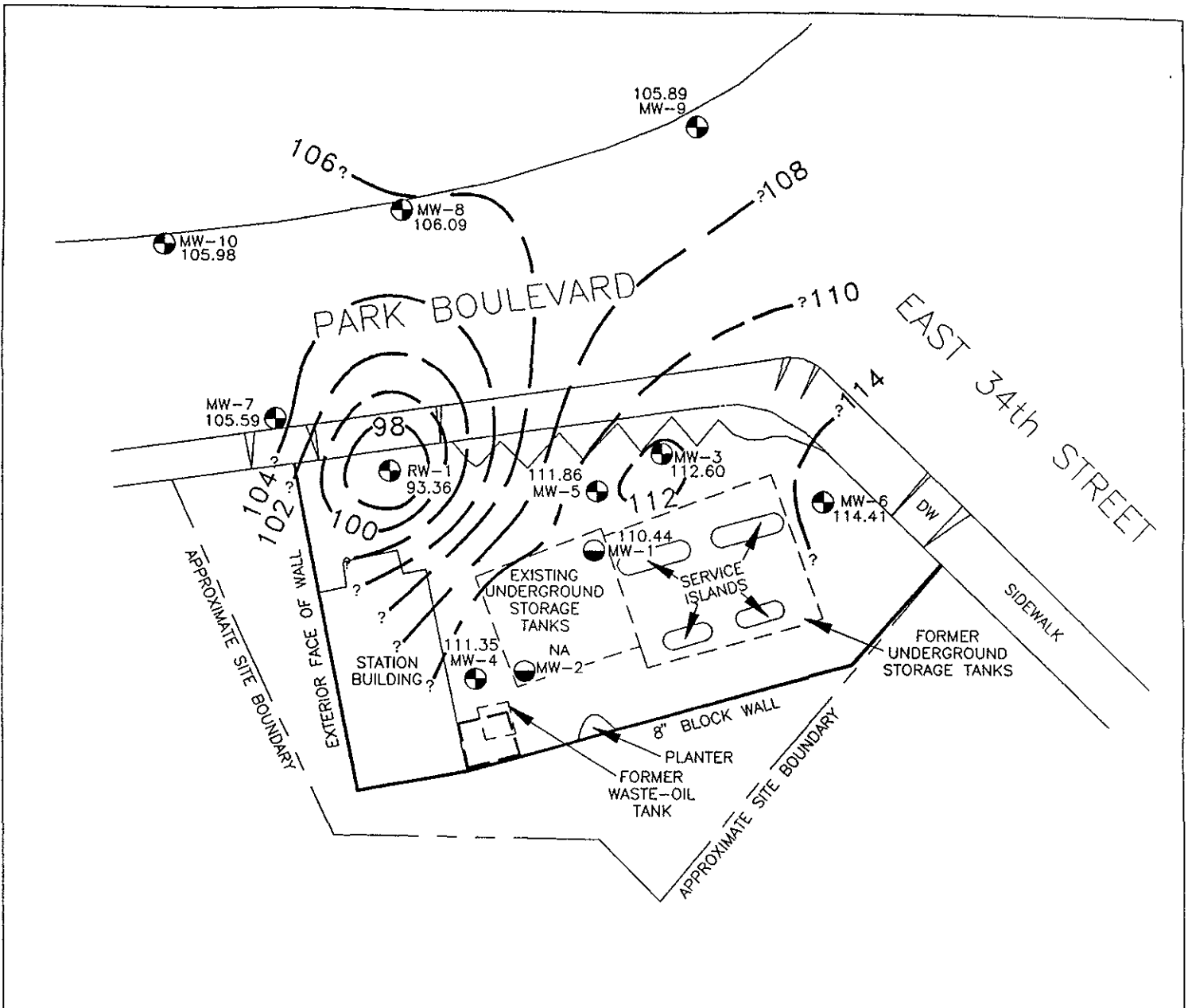


GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
3

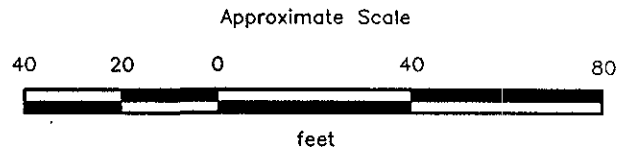
PROJECT 69021.17

90211702



EXPLANATION

- 114 — = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 114.41 = Elevation of groundwater in feet above MSL, May 10, 1993
- NA = Well not accessible
- RW-1 ⊕ = Groundwater recovery well (RESNA, 10/92)
- MW-10 ⊕ = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 ⊕ = Tank pit observation well (S.C.S. Engineers, 01/87)
- = Approximate location of remediation compound



SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

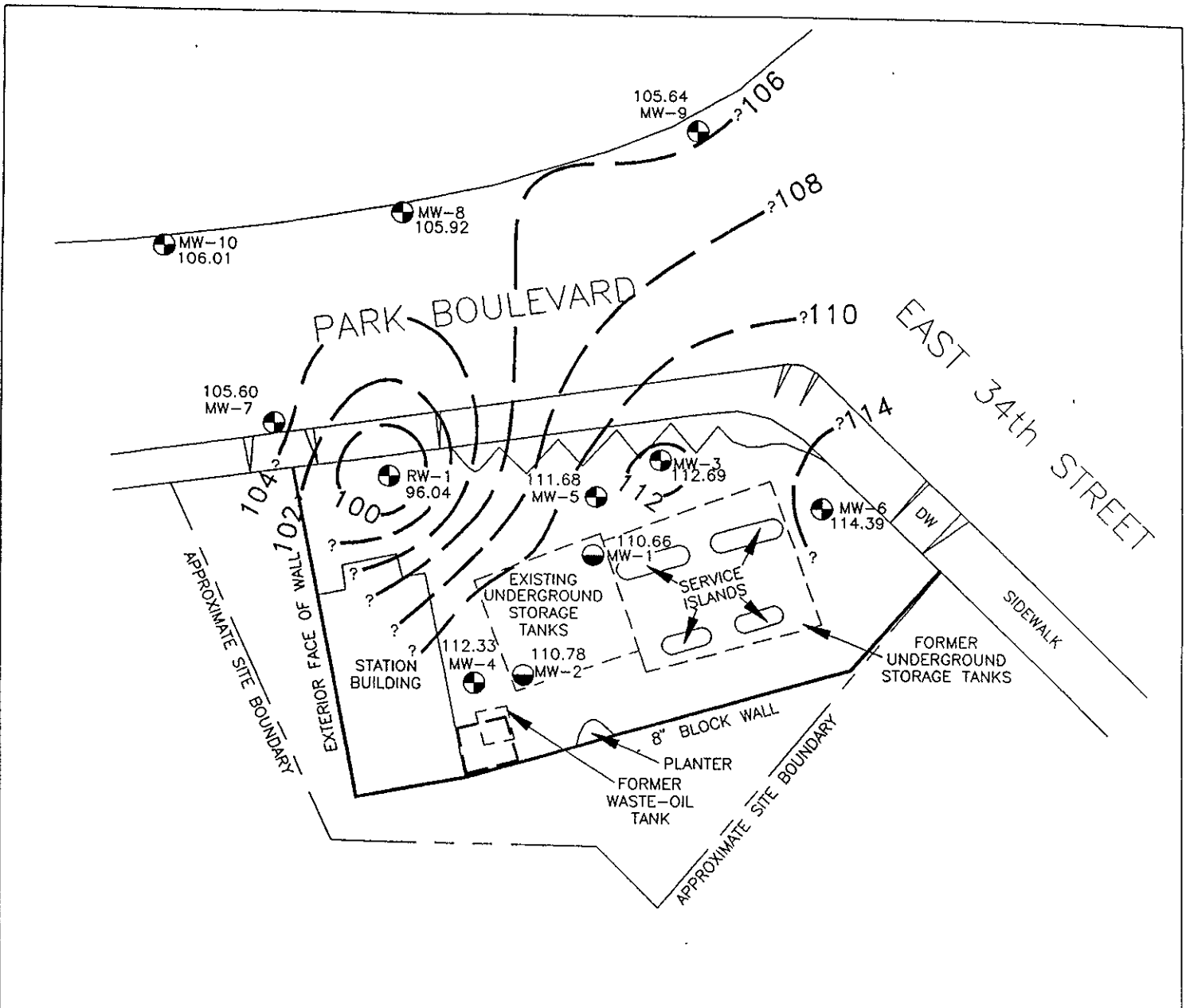


GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
4

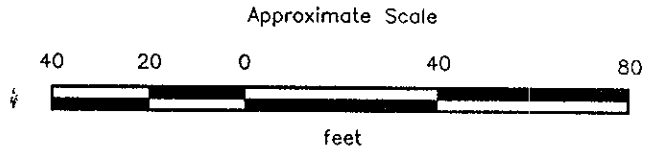
PROJECT 69021.17

90211702



EXPLANATION

- - - 114 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 114.39 = Elevation of groundwater in feet above MSL, June 16, 1993
- RW-1 = Groundwater recovery well (RESNA, 10/92)
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)
- [] = Approximate location of remediation compound



SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

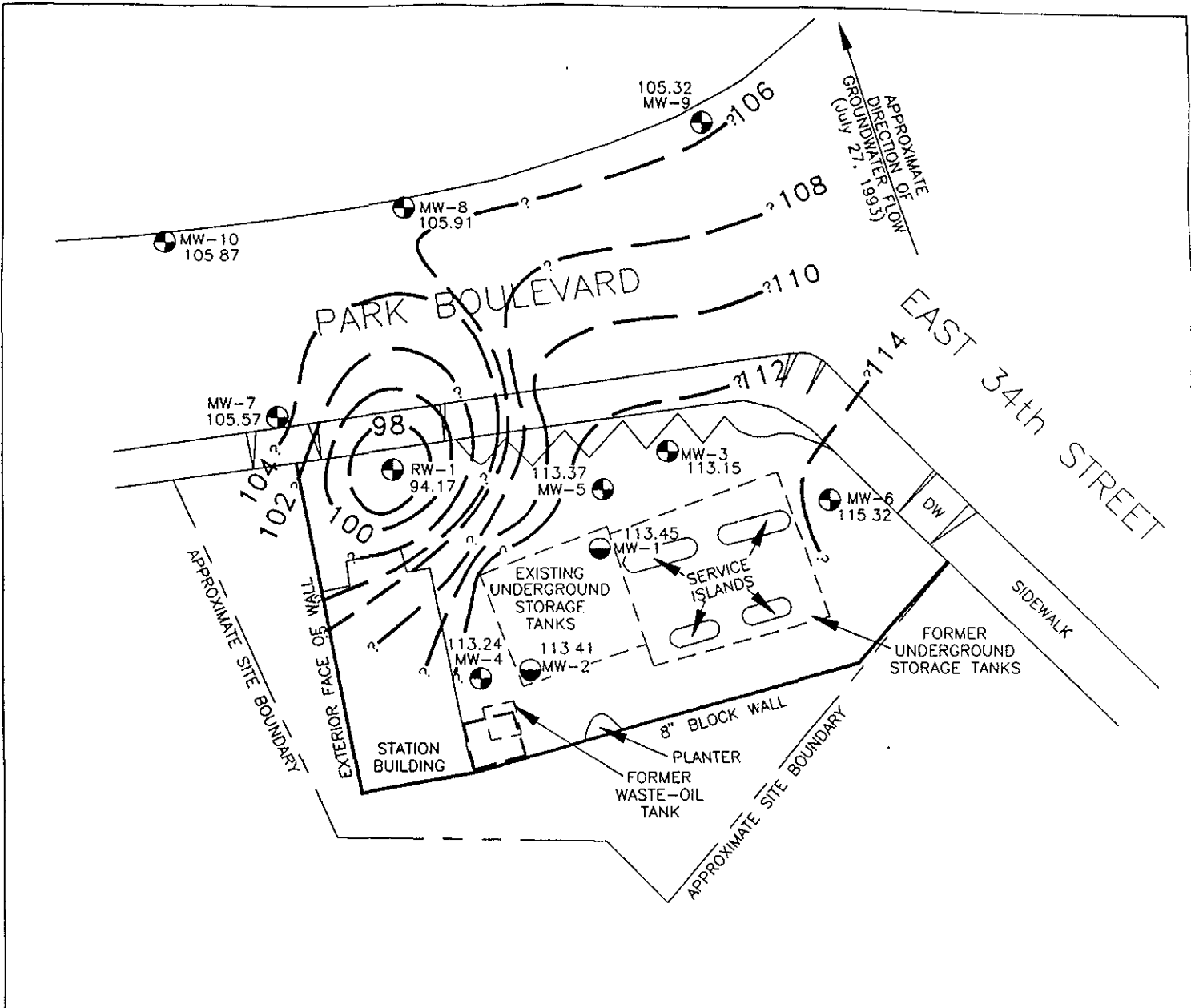


GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
5

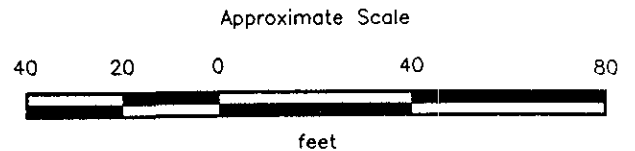
PROJECT 69021.17

90211702



EXPLANATION

- 114.0 — = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 115.32 = Elevation of groundwater in feet above MSL, July 27, 1993
- RW-1 = Groundwater recovery well (RESNA, 10/92)
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)
- = Approximate location of remediation compound



SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.

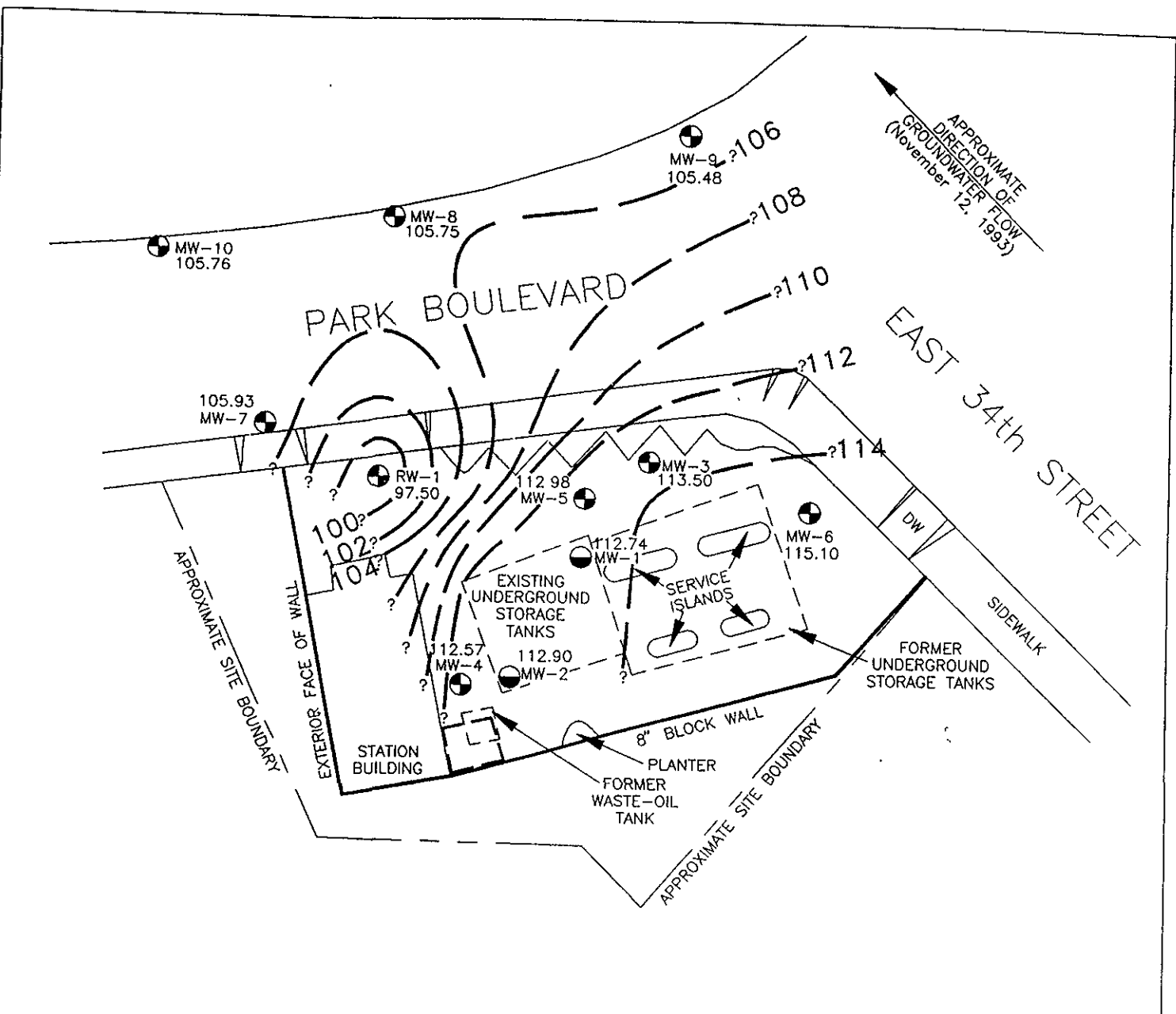


GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE
3

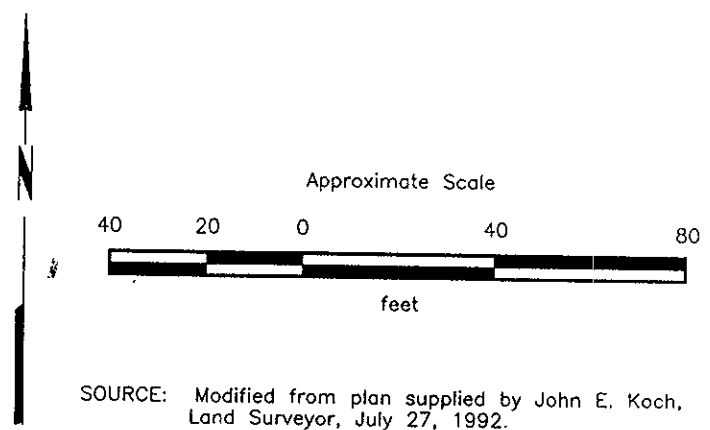
PROJECT 69021.17

90211703



EXPLANATION

- RW-1 = Groundwater recovery and extraction well (RESNA, 10/92)
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)
- = Approximate location of remediation compound
- 114 — = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 115.10 = Elevation of groundwater in feet above MSL, November 12, 1993



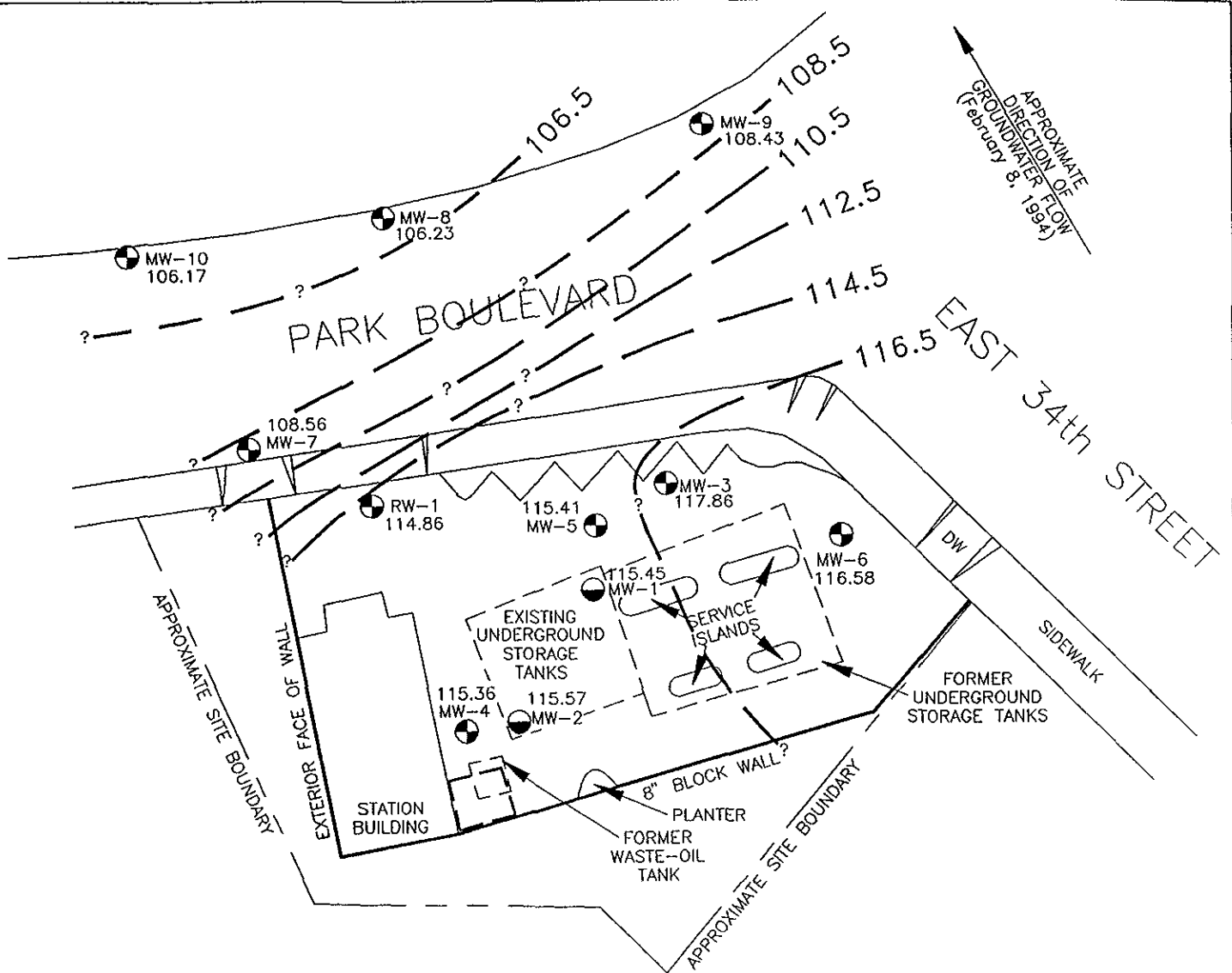
SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.



GROUNDWATER GRADIENT MAP
ARCO Station 2107
3310 Park Boulevard
Oakland, California

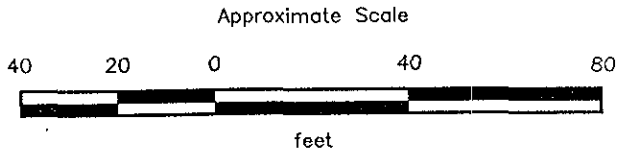
PLATE

3



EXPLANATION

- RW-1 = Groundwater recovery and extraction well (RESNA, 10/92)
- MW-10 = Groundwater monitoring well (RESNA, 04/90, 07/90, 08/91, and 06/92)
- MW-2 = Tank pit observation well (S.C.S. Engineers, 01/87)
- = Approximate location of remediation compound
- 116.5 — = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 117.86 = Elevation of groundwater in feet above MSL, February 8, 1994

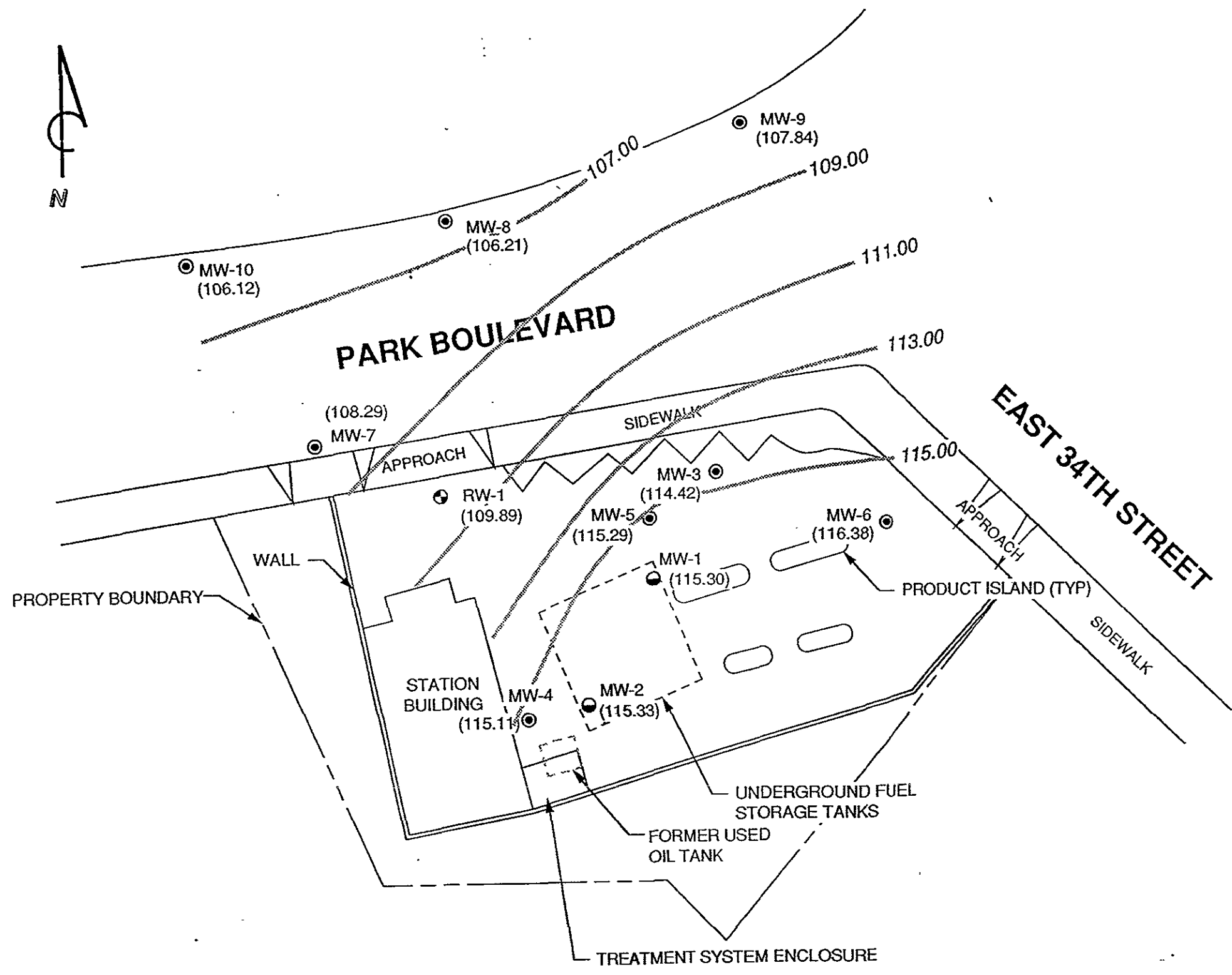


SOURCE: Modified from plan supplied by John E. Koch, Land Surveyor, July 27, 1992.



GROUNDWATER GRADIENT MAP
 ARCO Station 2107
 3310 Park Boulevard
 Oakland, California

PLATE
 3



LEGEND

- MW-5 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- RW-1 ● GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION
- MW-1 ● TANK PIT OBSERVATION WELL LOCATION AND DESIGNATION
- (114.42) GROUNDWATER ELEVATION IN FEET - MSL, 8-10-94
- 115.0 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 8-10-94

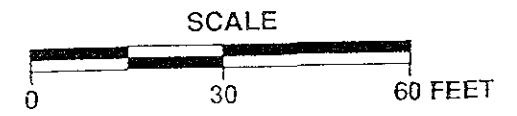


APPROXIMATE DIRECTION
OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.1



PACIFIC
ENVIRONMENTAL
GROUP, INC.

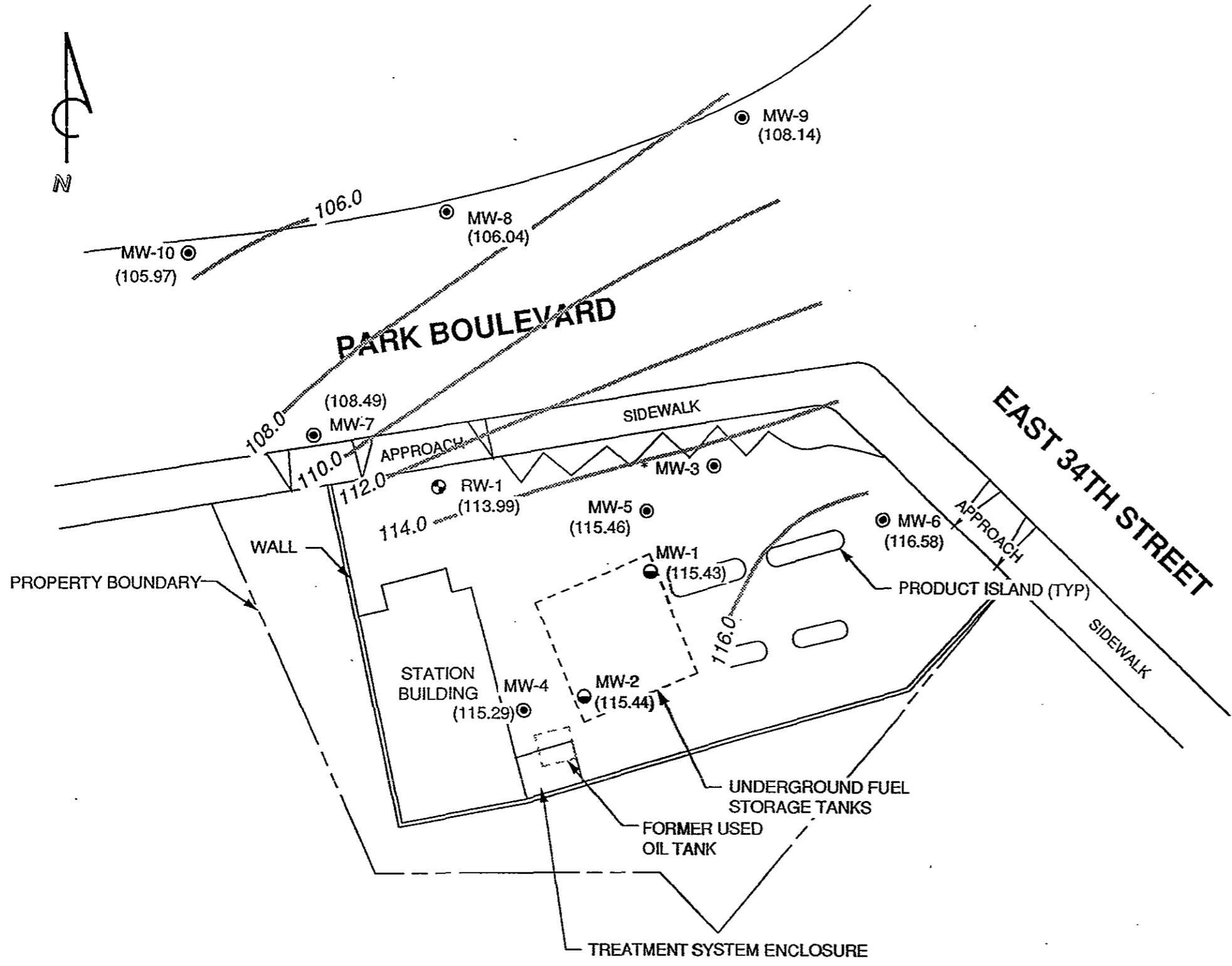


ARCO SERVICE STATION 2107
3310 Park Boulevard at East 34th Street
Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE:
1

PROJECT:
330-105.5A



LEGEND

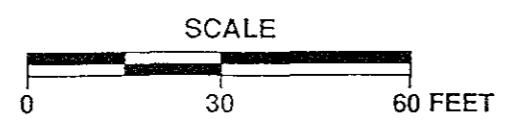
- MW-5 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- RW-1 ● GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION
- MW-1 ● TANK PIT OBSERVATION WELL LOCATION AND DESIGNATION
- (115.43) GROUNDWATER ELEVATION IN FEET - MSL, 11-21-94
- 116.0 — GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 11-21-94
- * WELL INACCESSIBLE



APPROXIMATE DIRECTION OF GROUNDWATER FLOW
 APPROXIMATE GRADIENT = 0.08



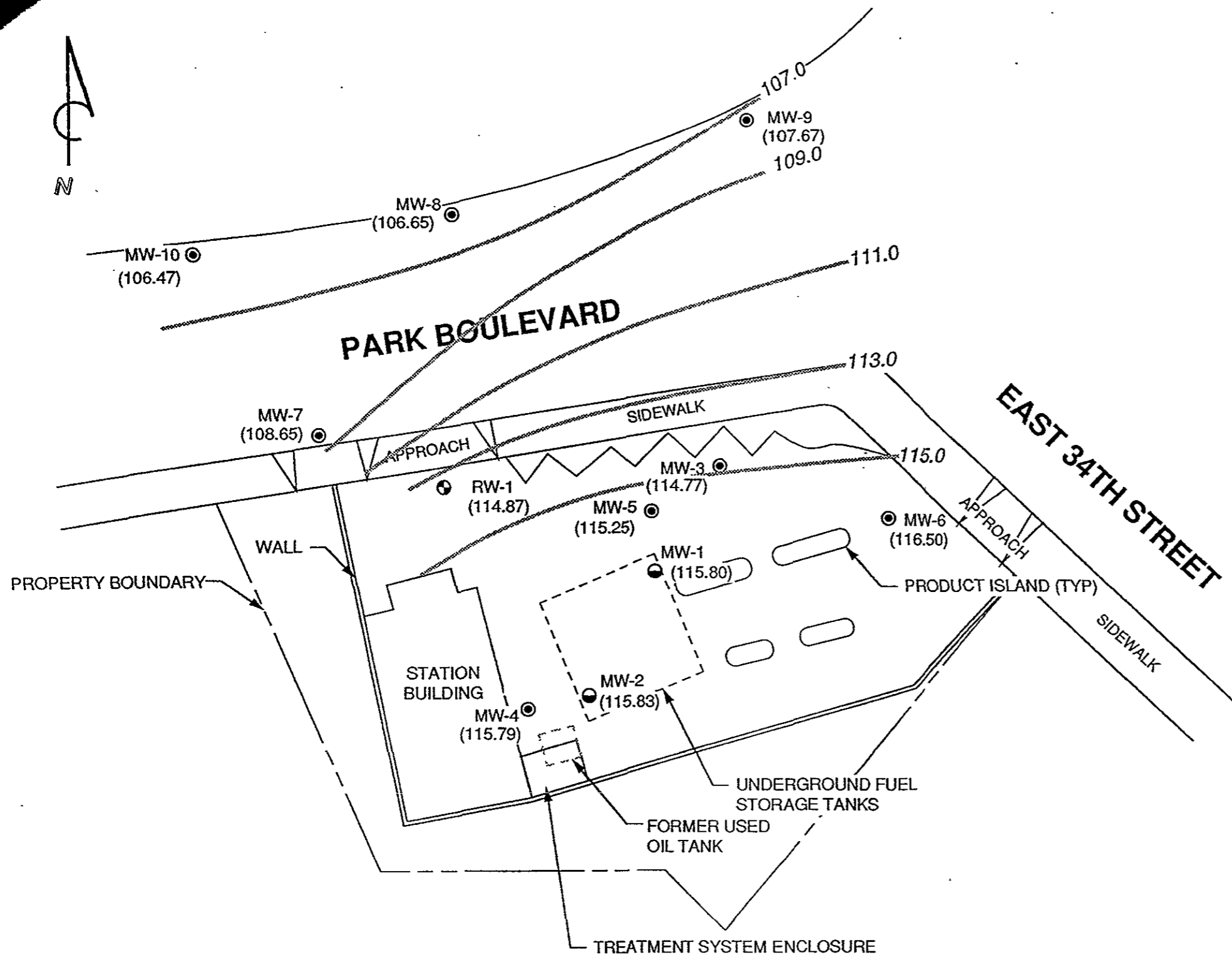
PACIFIC ENVIRONMENTAL GROUP, INC.



ARCO SERVICE STATION 2107
 3310 Park Boulevard at East 34th Street
 Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: 1
 PROJECT: 330-105.2A



LEGEND

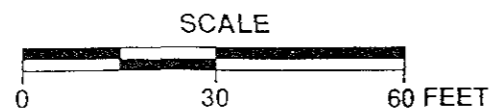
- MW-5 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- RW-1 ● GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION
- MW-1 ● TANK PIT OBSERVATION WELL LOCATION AND DESIGNATION
- (116.50) GROUNDWATER ELEVATION IN FEET - MSL, 2-21-95
- 107.0 — GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 2-21-95



APPROXIMATE DIRECTION
OF GROUNDWATER FLOW
APPROXIMATE GRADIENT = 0.07



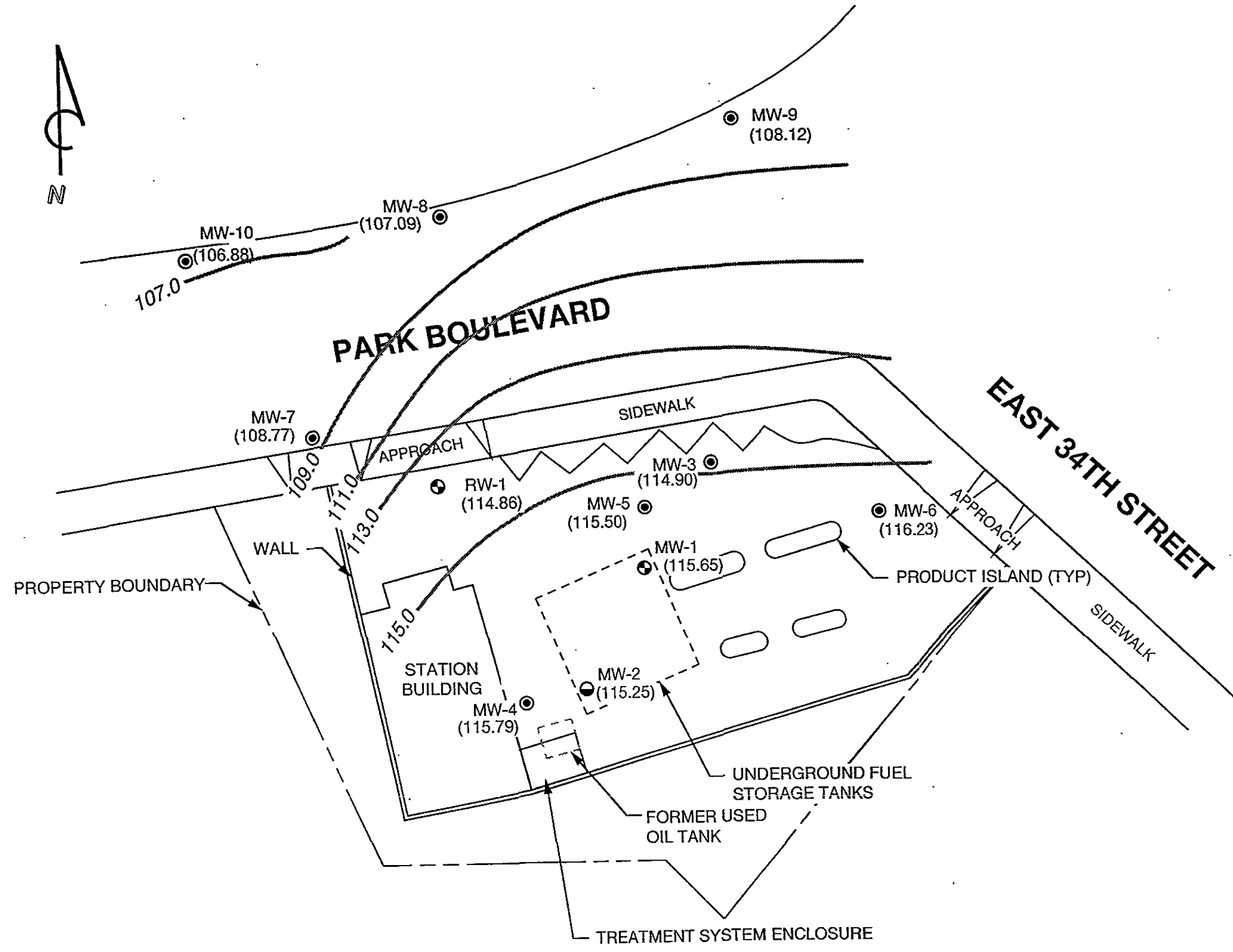
PACIFIC
ENVIRONMENTAL
GROUP, INC.




ARCO SERVICE STATION 2107
3310 Park Boulevard at East 34th Street
Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE:
1
PROJECT
330-105 2B



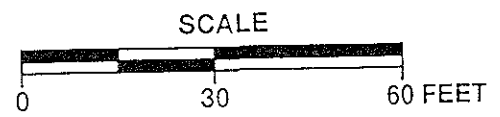
- LEGEND**
- MW-5 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
 - RW-1 ● GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION
 - MW-1 ● TANK PIT OBSERVATION WELL LOCATION AND DESIGNATION
 - (115.50) GROUNDWATER ELEVATION IN FEET - MSL, 5-22-95
 - 113.0 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 5-22-95



APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.06

 PACIFIC ENVIRONMENTAL GROUP, INC.



ARCO SERVICE STATION 2107
3310 Park Boulevard at East 34th Street
Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: 1
PROJECT: 330-105.2B

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Subsurface Environmental Investigation
ARCO Station 2107, Oakland, California

December 30, 1992
69021.10

TABLE 1
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
ARCO Station 2107
Oakland, California
(Page 1 of 3)

Sample-Date	TPHg	TPHd	B	T	E	X	TOG	BNA _s	VOC _s	Cd	Cr	Pb	Zn
<u>Former Waste-Oil UST Pit-January 1987</u>													
*J-1	NA	140	0.79	5.8	2.5	14.0	NA	NA	**	NA	NA	NA	NA
<u>Former Gasoline UST Pit-January 1987</u>													
*S.E.	<10	<10	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA
*S.W.	<10	<10	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA
*N.E.	<10	<10	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA
*N.W.	<10	<10	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA
<u>Borings-April 1990</u>													
S-5-B3	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	ND	ND	ND	ND	ND	ND
S-10-B3	<2.0	NA	<0.050	<0.050	<0.050	0.057	NA	ND	ND	ND	ND	ND	ND
S-20-B3	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	ND	ND	ND	ND	ND	ND
S-10-B4	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	ND	ND	ND	ND	ND	ND
S-5-B6	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	ND	ND	ND	ND	ND	ND
S-7-B6	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	ND	ND	ND	ND	ND	ND
S-13-B6	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	ND	ND	ND	ND	ND	ND
S-20-B6	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	ND	ND	ND	ND	ND	ND
<u>Borings-July 1990</u>													
S-8.5-B7	<2.0	110	<0.050	<0.050	<0.050	<0.050	<50	ND	ND	0.507	18.3	9.48	41.8
S-14-B7	<2.0	110	<0.050	<0.050	<0.050	<0.050	90	ND	ND	0.565	16.8	9.95	49.8
S-5-B8	<2.0	NA	<0.050	0.10	0.064	0.29	NA	ND	ND	ND	ND	ND	ND
S-7.5-B8	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	NA	NA	NA	NA	<1.0*	NA
S-14.5-B8	<2.0	NA	<0.050	<0.050	<0.050	<0.050	NA	ND	ND	ND	ND	ND	ND
<u>Borings-May 1991</u>													
S-15.5-B9	<1.0	<1.0	<0.005	<0.005	<0.005	0.028	<30	NA	NA	NA	NA	NA	NA
S-21-B9	<1.0	<1.0	<0.008	<0.005	<0.005	0.033	<30	NA	NA	NA	NA	NA	NA
S-25.5-B9	<1.0	<1.0	<0.005	<0.005	<0.005	0.007	<30	NA	NA	NA	NA	NA	NA
S-5-B10	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30	NA	NA	NA	NA	NA	NA
S-10-B10	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30	NA	NA	NA	NA	NA	NA
S-15.5-B10	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30	NA	NA	NA	NA	NA	NA
S-20.5-B10	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30	NA	NA	NA	NA	NA	NA

See notes on page 3 of 3.

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Subsurface Environmental Investigation
ARCO Station 2107, Oakland, California

December 30, 1992
69021.10

TABLE 1
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
ARCO Station 2107
Oakland, California
(Page 2 of 3)

Sample	TPHg	TPHd	B	T	E	X	TOG	BNA _s	VOC _s	Cd	Cr	Pb	Zn
<u>Borings (continued)</u>													
S-8-B11	90	43	0.18	0.050	0.16	1.1	130	NA	NA	NA	NA	NA	NA
S-12.5-B11	<1.0	3.1	<0.005	<0.005	<0.005	<0.005	<30	NA	NA	NA	NA	NA	NA
S-20-B11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30	NA	NA	NA	NA	NA	NA
<u>Borings-August 1991</u>													
S-4.5-B12	<1.0	3.3	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA
S-10-B12	<1.0	1.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA
S-5-B13	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA
<u>Borings-October 1992</u>													
S-9-B14	1,700	2,500	<0.0050	<0.0050	25	130	NA	NA	NA	NA	NA	NA	NA
S-11-B14	2.5	<1.0	0.023	0.0050	0.12	0.31	NA	NA	NA	NA	NA	NA	NA
S-15-B14	140	230	<0.0050	<0.0050	2.0	10	NA	NA	NA	NA	NA	NA	NA
S-20-B14	3.6	2.4	0.043	<0.0050	0.16	0.26	NA	NA	NA	NA	NA	NA	NA
<u>Borings-June 1992</u>													
S-5-B15	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA
S-8-B15	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA
S-9.5-B15	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA
S-31.5-B15	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA
S-5-B16	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA
S-25-B16	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA
<u>Composite Stockpile</u>													
S-0823-SP(a-d)	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA
S-0615-SP A-IB6	24		<0.050	0.12	0.12	0.11	NA	NA	NA	NA	NA	NA	NA
SP-1019-A-D	55	28	0.26	0.24	0.92	3.4	NA	NA	NA	NA	NA	NA	NA
TTLC										100	2,500	1,000	5,000
See notes on page 3 of 3.													

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Subsurface Environmental Investigation
ARCO Station 2107, Oakland, California

December 30, 1992
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TABLE 1
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
ARCO Station 2107
Oakland, California
(Page 3 of 3)

Results are in parts per million (ppm)

TPHg = total petroleum hydrocarbons as gasoline

B: benzene T: toluene E: ethylbenzene X: total xylenes

BNAs = base neutral and acid extractables including polynuclear aromatics
(¹ = naphthalene, ² = 2-methylnaphthalene)

VOCs = volatile organics except for BTEX

< = Below indicated laboratory reporting limit

* = Soil sampling performed by SCS during UST removal and replacement (SCS, January 22, 1987).

** Results of VOC analysis:

- 2,400 ppb Acetone
- 65 ppb 2-Butone
- 790 ppb Benzene
- 10 Tetrachloroethene
- 5,800 ppb Toluene
- 2,500 ppb ethylbenzene
- 14,000 ppb Total xylenes
- Nondetectable for 33 additional VOCs.

Estimated Concentrations of Tentatively Identified Extra Compounds:

- 2200 ppb 2-methylbutane
- 790 ppb methylcyclopentane
- 770 ppb methylcyclohexane
- 670 ppb 3-methylhexane
- 800 ppb 2,5,6-trimethyloctane

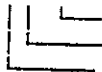
NA = Not Analyzed

* = Organic lead by DHS Method.

TTLIC = Total threshold limit concentration values (Title 22 of the California Administrative Code, January 1988)

Sample Number explanation:

S-7.5-B8



Boring number
Sample depth in feet below ground surface
Soil sample

Table B-2
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

ARCO Service Station 2107
3310 Park Boulevard at East 34th Street
Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)	
MW-1	08/10/94	250	21	3.7	0.8	10	NA	NA	
	11/21/94	87	8.4	<0.5	<0.5	<0.5	NA	NA	
	02/21/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	05/22/95	<50	3.2	5.1	<0.50	2.0	NA	NA	
	08/23/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	08/23/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	11/20/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
MW-2	08/10/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/21/94	13	2.3	<0.5	<0.5	1.7	NA	NA	
	02/21/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	05/22/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	08/23/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	11/20/95	<50	1.5	<0.50	<0.50	<0.50	NA	NA	
MW-3	07/16/90	4,000	430	8.7	27	85	NA	NA	
	10/25/90	5,400	800	6.6	25	30	NA	NA	
	01/23/91	6,900	760	12	91	29	NA	NA	
	04/24/91	4,300	800	<120	<120	<120	NA	NA	
	07/24/91	3,400	620	<0.30	3.6	7.9	NA	NA	
	10/31/91	4,100	690	<6.0	<6.0	22	NA	NA	
	03/12/92	Well Inaccessible							
	04/16/92	2,800	790	<10.0	21	<10.0	NA	NA	
	06/30/92	1,100	170	<2.5	<2.5	<2.5	880 *	NA	
	09/10/92	790	44	<0.5	1.1	1	NA	NA	
	09/25/92	NA	NA	NA	NA	NA	3,300 *	NA	
	11/11/92	810	31	<0.5	1.4	1.1	510 *	NA	
	02/08/93	390	<0.5	5	1.3	0.9	290 *	NA	
	05/10/93	130	<0.5	<0.5	<0.5	<0.5	110 *	NA	
	08/27/93	52	<0.5	<0.5	<0.5	<0.5	<50	NA	
	11/12/93	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	02/08/94	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	05/04/94	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	08/10/94	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	11/21/94	Well Inaccessible							
	02/21/95	310	<0.50	<0.50	<0.50	<0.50	360 *	NA	
	05/22/95	100	<0.50	<0.50	<0.50	<0.50	420 *	NA	
	08/23/95	Well Sampled Semiannually							
11/20/95	200	<0.50	<0.50	<0.50	<0.50	250 *	NA		
MW-4	07/16/90	1,500	100	8.3	4.7	12	300	<5,000	
	10/25/90	390	(200)	(15)	(16)	(25)	<100	<5,000	
	01/23/91	520	(<4)	(<4)	(<4)	(<4)	<100	<5,000	
	04/24/91	260	59	1.6	0.7	3.7	NA	NA	
	07/24/91	56	(59)	(<2)	(<2)	(<2)	NA	NA	
	10/31/91	290	87	<1.5	3.2	<1.5	NA	NA	
	03/12/92	290	3.9	0.41	<0.30	0.3	NA	NA	
	04/16/92	290	22	1.9	0.4	52	NA	NA	
	04/16/92	Well Inaccessible							
	06/30/92	260	56	3.4	5.2	83	NA	NA	
	09/10/92	880	270	18	22	23	160 *	NA	
	09/25/92	270	80	0.6	3.6	<0.5	NA	NA	
	11/11/92	NA	NA	NA	NA	NA	<50	NA	
	02/08/93	<50	5.2	<0.5	<0.5	<0.5	<50	NA	
	05/10/93	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	08/27/93	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
11/12/93	<50	<0.5	<0.5	<0.5	<0.5	<50	NA		

Table B-2 (continued)
Historical Groundwater Analytical Data
 Total Purgeable Petroleum Hydrocarbons
 (TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

ARCO Service Station 2107
 3310 Park Boulevard at East 34th Street
 Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)	
MW-4 (cont.)	02/08/94	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	05/04/94	<50	1.4	2.1	<0.5	5.9	<50	NA	
	08/10/94	<50	<0.5	<0.5	<0.5	<0.5	60 *	NA	
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5	<50 *	NA	
	02/21/95	<50	<0.50	<0.50	<0.50	<0.50	<50	NA	
	05/22/95	<50	0.73	1.3	<0.50	<0.50	<50	NA	
	08/23/95	Well Sampled Semiannually							130 *
	11/20/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
MW-5	07/16/90	22,000	500	97	120	1,300	NA	NA	
	10/25/90	21,000	750	30	190	1,800	NA	NA	
	01/23/91	15,000	510	22	130	710	NA	NA	
	04/24/91	15,000	580	260	160	1,100	NA	NA	
	07/24/91	16,000	1,500	820	190	750	NA	NA	
	10/31/91	21,000	1,500	84	310	1,000	NA	NA	
	03/12/92	Well Inaccessible							NA
	04/16/92	9,600	630	97	190	830	NA	NA	
	06/30/92	11,000	510	54	120	740	4,800 *	NA	
	09/10/92	8,200	210	14	54	170	NA	NA	
	09/25/92	NA	NA	NA	NA	NA	570 *	NA	
	11/11/92	7,100	230	<10 **	62	87	3,700 *	NA	
	02/08/93	3.5	98	<10 **	<10 **	18	1,800 *	NA	
	05/10/93	350	13	<0.5	1.2	0.9	240 *	NA	
	08/27/93	180	11	5	0.8	1.1	140 *	NA	
	11/12/93	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	02/08/94	300	13	57	5.7	38	70 *	NA	
	05/04/94	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	08/10/94	<50	1.8	<0.5	1.5	<0.5	60 *	NA	
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5	59 *	NA	
	02/21/95	<50	1.2	2.0	0.52	1.1	150 *	NA	
	05/22/95	<50	<0.50	<0.50	<0.50	<0.50	270 *	NA	
	08/23/95	Well Sampled Semiannually							NA
	11/20/95	<50	<0.50	0.51	<0.50	<0.50	170 *	NA	
MW-6	07/16/90	<20	<0.5	<0.5	<0.5	<0.5	NA	NA	
	10/25/90	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	01/23/91	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	04/24/91	<30	<0.30	<0.30	<0.30	<0.30	NA	NA	
	07/24/91	<30	<0.30	<0.30	<0.30	<0.30	NA	NA	
	10/31/91	<30	<0.30	<0.30	<0.30	<0.30	NA	NA	
	03/12/92	Well Inaccessible							NA
	04/16/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	06/30/92	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	09/10/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/11/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/10/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/27/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/12/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/04/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/10/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/21/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	05/22/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	08/23/95	Well Sampled Annually							NA
	11/20/95	Well Sampled Annually							NA

Table B-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
 (TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

ARCO Service Station 2107
 3310 Park Boulevard at East 34th Street
 Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)	
MW-7	08/29/91	<30	0.73	1.1	<0.30	<0.30	130	NA	
	10/31/91	44	1.4	<0.30	0.63	1.3	NA	NA	
	03/12/92	Well Inaccessible							NA
	04/16/92	74	21	<0.5	0.7	1.3	<50	NA	
	06/30/92	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	09/10/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/11/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/10/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/27/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/12/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/04/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/10/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/21/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	05/22/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
08/23/95	Well Sampled Semiannually							NA	
11/20/95	<50	<0.50	<0.50	<0.50	<0.50	<0.50	NA	NA	
MW-8	08/29/91	<30	<0.30	<0.30	<0.30	<0.30	<50	NA	
	10/31/91	<30	1.2	<0.30	0.48	0.95	<50	NA	
	03/12/92	Well Inaccessible							NA
	04/16/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	06/30/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	09/10/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/11/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/10/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/27/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/12/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/94	50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/04/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/10/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/21/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	05/22/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
08/23/95	Well Sampled Annually							NA	
11/21/95	<50	<0.50	<0.50	<0.50	<0.50	<0.50	NA	NA	
MW-9	06/30/92	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	09/10/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/11/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/10/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/27/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/12/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/04/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/10/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/21/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	05/22/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
08/23/95	Well Sampled Annually							NA	
11/21/95	<50	<0.50	<0.50	<0.50	<0.50	<0.50	NA	NA	
MW-10	06/30/92	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	
	09/10/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/11/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	

Table B-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
 (TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

ARCO Service Station 2107
 3310 Park Boulevard at East 34th Street
 Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)	
MW-10 (cont.)	02/06/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/10/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/27/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/12/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/08/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	05/04/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/10/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/21/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	05/22/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	08/23/95	Well Sampled Annually							
	11/21/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	RW-1	11/11/92	7,600	99	30	440	1,300	3,100 *	NA
02/08/93		430	70	1.9	6.4	9.2	130 *	NA	
05/10/93		280	13	<0.5	7.5	2	490 *	NA	
08/27/93		<50	<0.5	<0.5	<0.5	<0.5	170 *	NA	
11/12/93		350	13	<0.5	2.2	0.7	110 *	NA	
02/08/94		<50	4.2	1	<0.5	2.9	<50	NA	
05/04/94		110	3.3	<0.5	3.2	9.3	ND	NA	
08/10/94		<50	0.6	<0.5	<0.5	<0.5	<50	NA	
11/21/94		<50	<0.5	<0.5	<0.5	1.8	<50	NA	
02/21/95		50	<0.50	<0.50	1.2	2.3	220	NA	
05/22/95		<50	<0.50	<0.50	1.7	<0.50	130 *	NA	
08/23/95		Well Sampled Semiannually							
11/20/95		<50	<0.50	<0.50	<0.50	<0.50	97 *	NA	
TEPH	= Total extractable petroleum hydrocarbons								
ppb	= Parts per billion								
NA	= Not analyzed								
*	= Sample reported to contain a lower boiling point hydrocarbon mixture quantitated as diesel. The chromatogram reportedly did not match the typical diesel fingerprint.								
**	= Raised method reporting limit due to high analyte concentration requiring sample dilution.								
Prior to June 1995, TPPH as gasoline and TEPH as Diesel were reported as TPH as gasoline and diesel, respectively.									

Table B-3
 Historical Groundwater Analytical Data
 Total Methyl t-Butyl Ether

ARCO Service Station 2107
 3310 Park Boulevard at East 34th Street
 Oakland, California

Well Number	Date Sampled	Methyl t-Butyl Ether (ppb)
MW-1	08/23/95	<2.5
	11/20/95	8.6
MW-2	08/23/95	<2.5
	11/20/95	18
MW-3	08/23/95	NS
	11/20/95	53
MW-4	08/23/95	NS
	11/20/95	99
MW-5	08/23/95	NS
	11/20/95	98
MW-6	08/23/95	NS
	11/20/95	NS
MW-7	08/23/95	NS
	11/20/95	160
MW-8	08/23/95	NS
	11/21/95	<2.5
MW-9	08/23/95	NS
	11/21/95	14 27 *
MW-10	08/23/95	NS
	11/21/95	3.5
RW-1	08/23/95	NS
	11/20/95	170 220 *

ppb = Parts per billion
 * = Confirmation for MTBE performed according to EPA Method 8240.

ATTACHMENT C

**HISTORICAL REMEDIAL SYSTEM
PERFORMANCE DATA**

Table C-1
 Historical Groundwater Extraction System Performance Data

ARCO Service Station 2107
 3310 Park Boulevard at East 34th Street
 Oakland, California

Sample I.D.	Date Sampled	Totalizer Reading (gallons)	Net Volume (gallons)	Average Flow Rate (gpm)	TPPH as Gasoline			Benzene			Primary Carbon Loading (percent)
					Influent Concentration (µg/L)	Net Removed (lbs)	Removed to Date (lbs)	Influent Concentration (µg/L)	Net Remove (lbs)	Removed to Date (lbs)	
INFL	01/25/93	a 2,095	2,095	3.2	2,400	0.04	0.04	52	0.001	0.00	0.1
INFL	01/26/93	7,135	5,040	3.5	NS	0.10	0.14	NS	0.007	0.01	0.2
INFL	01/28/93	8,799	1,664	3.6	4,800	0.07	0.21	270	0.004	0.01	0.3
INFL	02/05/93	36,879	28,080	3.6	4,300	1.00	1.21	710	0.115	0.13	1.5
INFL	02/10/93	52,388	15,509	2.2	1,600	0.21	1.42	180	0.058	0.18	1.8
INFL	02/18/93	68,516	16,128	1.4	890	0.12	1.54	76	0.017	0.20	1.9
INFL	02/25/93	86,660	18,144	1.8	220	0.03	1.57	7.1	0.006	0.21	2.0
INFL	03/08/93	94,670	8,010	1.5	5,100	0.34	1.91	610	0.021	0.23	2.4
INFL	03/19/93	113,162	18,492	2.3	5,100	0.79	2.70	300	0.070	0.30	3.4
INFL	03/24/93	123,876	10,714	2.5	2,400	0.21	2.91	140	0.020	0.32	3.6
INFL	04/01/93	139,936	16,060	2.6	3,400	0.45	3.36	160	0.020	0.34	4.2
INFL	05/05/93	210,724	70,788	1.7	680	0.40	3.76	55	0.063	0.40	4.7
INFL	05/20/93	237,367	26,643	1.2	NS	0.15	3.91	NS	0.009	0.41	4.9
INFL	06/01/93	250,687	13,320	1.0	NS	0.07	3.98	NS	0.005	0.41	5.0
INFL	06/09/93	262,835	12,148	1.0	660	0.07	4.05	28	0.004	0.42	5.1
INFL	06/28/93	286,217	23,382	0.9	NS	0.13	4.18	NS	0.003	0.42	5.2
INFL	07/08/93	292,667	6,450	0.5	260	0.01	4.19	1.4	0.001	0.42	5.2
INFL	07/22/93	306,145	13,478	0.7	NS	0.03	4.22	NS	0.004	0.43	5.3
INFL	08/04/93	333,223	27,078	1.4	480	0.11	4.33	67	0.008	0.43	5.4
INFL	08/18/93	359,835	26,612	1.2	NS	0.11	4.44	NS	0.008	0.44	5.6
INFL	09/23/93	389,991	30,156	0.6	NS	0.04	4.48	NS	0.009	0.45	5.6
INFL	10/06/93	402,021	12,030	0.7	130	0.01	4.50	7.4	0.004	0.46	5.6
INFL	10/21/93	419,854	17,833	0.6	NS	0.02	4.52	NS	0.001	0.46	5.6
INFL	11/10/93	426,649	6,795	0.6	850	0.05	4.56	8.4	0.000	0.46	5.7
INFL	11/24/93	441,330	14,681	0.8	NS	0.10	4.66	NS	0.001	0.46	5.8
INFL	01/26/94	454,825	13,495	1.2	NS	0.06	4.72	NS	0.001	0.46	5.9
INFL	02/02/94	455,192	367	0.03	140	0.00	4.72	8.1	0.000	0.46	5.9
INFL	03/01/94	455,604	412	0.01	87	0.00	4.72	2.8	0.000	0.46	5.9
INFL	03/29/94	502,785	47,181	1.2	1,500	0.59	5.31	21	0.005	0.46	6.6
INFL	04/27/94	b 529,277	26,492	0.63	NS	0.33	5.64	NS	0.005	0.47	7.1
INFL	11/30/94	c 531,268	1,991	N/A	830	0.01	5.66	0.93	0.000	0.47	7.1
INFL	12/16/94	d 542,699	11,431	0.50	NS	e 0.08	5.73	NS	e 0.000	0.47	7.2
INFL	02/02/95	576,998	34,299	0.37	64	0.26	5.99	1.4	0.000	0.47	7.5
INFL	03/07/95	595,175	18,177	0.38	NS	e 0.01	6.00	NS	e 0.000	0.47	7.5
INFL	04/13/95	602,583	7,408	0.14	ND	0.00	6.00	ND	0.000	0.47	7.5
INFL	05/09/95	f 612,957	10,374	0.28	NS	e 0.00	6.00	NS	e 0.000	0.47	7.5
REPORTING PERIOD: 12/31/96 - 03/31/96 (f)					TOTAL POUNDS REMOVED: 6.00			0.47			
TOTAL GALLONS REMOVED:					6.98			0.06			
PERIOD POUNDS REMOVED:					0.00			0.00			
PERIOD GALLONS REMOVED:					0.00			0.00			
TOTAL GALLONS EXTRACTED:					612,957						
PERIOD GALLONS EXTRACTED:					N/A						
PERIOD AVERAGE FLOW RATE (gpm):					N/A						
PRIMARY BED CAPACITY REMAINING (%):					92.5%						
TPPH	= Total purgeable petroleum hydrocarbons				a. All data prior to 9/1/94 provided by prior consultant.						
gpm	= Gallons per minute				b. RESNA shut system down 4/27/94.						
µg/L	= Micrograms per liter				c. Pacific Environmental Group, Inc. became consultant for the site 9/1/94.						
lbs	= Pounds				d. System was shut down 12/16/94 to 12/31/94.						
NS	= Not sampled				e. TPH/benzene pounds removed estimated from previous data.						
N/A	= Not available or not applicable				f. System left shut down 5/9/95 due to low concentrations/removal rates.						
System operation began 1/25/93 under RESNA Industries, Inc.; system shut down 4/27/94 - 11/29/94.											
Carbon loading assumes an 8% isotherm.											
Pounds of hydrocarbons removed to date through 3/29/94 provided by RESNA; benzene removed estimated from data provided.											

Table C-2
 Historical Groundwater Extraction System Analytical Data

ARCO Service Station 2107
 3310 Park Boulevard
 Oakland, California

Sample I.D.	Date Sampled	TPPH as				Ethyl-benzene (µg/L)	Xylenes (µg/L)
		Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)			
SP-1	11/02/94	59	<0.50	<0.50	2.7	7.0	
	11/30/94	830	0.93	<0.50	4.8	59	
	02/02/95	64	1.4	<0.50	0.54	1.8	
	04/13/95	<50	<0.50	<0.50	0.66	3.4	
SP-2	11/30/94	780	<0.50	<0.50	4.1	56	
	02/02/95	<50	1.2	<0.50	<0.50	1.1	
	04/13/95	<50	<0.50	<0.50	<0.50	<0.50	
SP-3	11/30/94	<50	<0.50	<0.50	<0.50	<0.50	
	02/02/95	<50	<0.50	<0.50	<0.50	<0.50	
	04/13/95	<50	<0.50	<0.50	<0.50	<0.50	
SP-4	11/02/94	<50	<0.50	<0.50	<0.50	<0.50	
	11/30/94	<50	<0.50	<0.50	<0.50	<0.50	
	02/02/95	<50	<0.50	<0.50	<0.50	<0.50	
	04/13/95	<50	<0.50	<0.50	<0.50	<0.50	
TPPH = Total purgeable petroleum hydrocarbons µg/L = Micrograms per liter ND = Not detected above detection limits SP-1 = Sample location at influent to aeration tank SP-2 = Sample location at midpoint between first and second carbon vessels SP-3 = Sample location at midpoint between second and third carbon vessels SP-4 = Sample location at effluent of treatment system System startup on 1/25/93 by RESNA Industries, Inc. Pacific Environmental Group, Inc. (PACIFIC) became consultant 9/01/94. PACIFIC restarted system on 11/29/94. See certified analytical reports for individual detection limits.							

Figure C-1
 Historical Groundwater Extraction System Mass Removal Trend

ARCO Service Station 2107
 3310 Park Boulevard
 Oakland, California

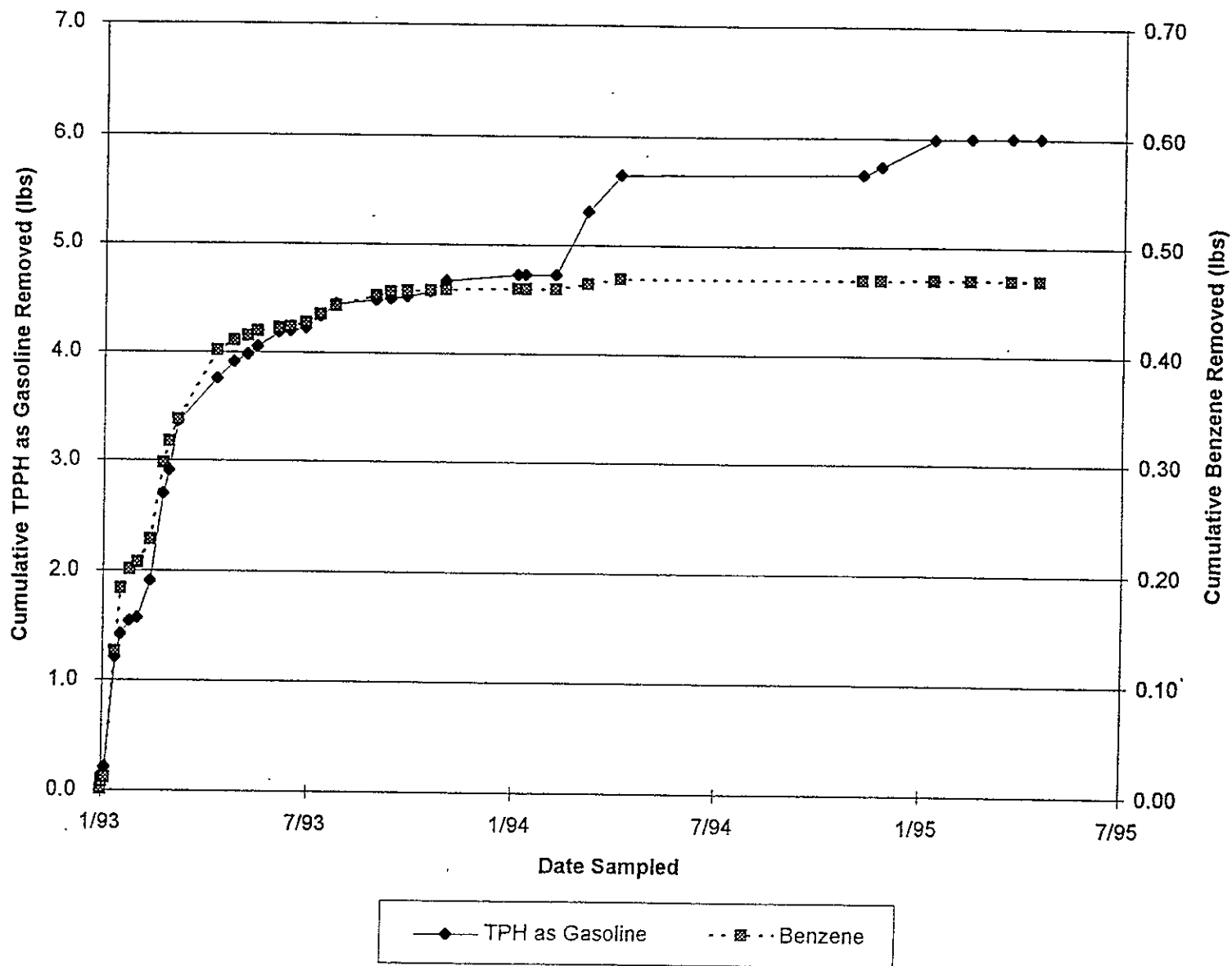


Figure C-2
 Historical Groundwater Extraction System Hydrocarbon Concentrations

ARCO Service Station 2107
 3310 Park Boulevard
 Oakland, California

