



Delta
Environmental
Consultants, Inc.

90 OCT 17 PM 12: 28

3330 Data Drive, Suite 100
Rancho Cordova, CA 95670
916/638-2085
FAX: 916/638-8385

October 11, 1990

Mr. Dennis Byrne
Environmental Health Services
Hazardous Materials Department
County of Alameda
470 27th Street
Oakland, California 94607

Subject: *Quarterly Monitoring Report*
Shell Service Station
3420 San Pablo Avenue
Oakland, California
Shell Wic No. 204-5508-5306
Delta Project No. 40-88-666

Dear Mr. Byrne:

Enclosed is a copy of Delta Environmental Consultant's, Inc. (Delta), *Quarterly Monitoring Report* for the subject site. Delta is currently seeking encroachment permits upgradient of MW-6, and on the west side of San Pablo Avenue across from the site, to complete our hydrogeologic investigation.

If you have any questions regarding this matter, please contact me at (916) 638-2085.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Hal Hansen

Hal Hansen
Hydrogeologist/Project Manager

HH:law
Enclosure

cc/enc: Ms. Lisa McCann, California Regional Water Quality Control Board,
San Francisco Bay Region
Ms. Diane Lundquist, Shell Oil Company

90 OCT 17 PM 12: 28

QUARTERLY MONITORING REPORT

3420 SAN PABLO AVENUE
OAKLAND, CALIFORNIA
SHELL WIC NO. 204-5508-5306
DELTA PROJECT NO. 40-88-666

Prepared by:

Delta Environmental Consultants, Inc.
3330 Data Drive, Suite 100
Rancho Cordova, California 95670
(916) 638-2085

October 11, 1990

TABLE OF CONTENTS

1.0 INTRODUCTION		1
2.0 SITE DATA		1
2.1	Depth to Ground Water Elevations and Observations	1
2.2	Ground Water Quality	2
3.0 DISCUSSION		2
4.0 REMARKS/SIGNATURES		3

Tables

TABLE 1	Ground Water Elevations
TABLE 2	Ground Water Chemical Analysis

Figures

FIGURE 1	Site Location Map
FIGURE 2	Water Table Contour Map - 7/26/90

Appendices

APPENDIX A	Certified Analytical Laboratory Reports
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QUARTERLY MONITORING REPORT

3420 SAN PABLO AVENUE
OAKLAND, CALIFORNIA
SHELL WIC NO. 204-5508-5306
DELTA PROJECT NO. 40-88-666

1.0 INTRODUCTION

This report presents results of ground water quality and ground water elevation measurements made by Delta Environmental Consultants, Inc. (Delta), in July 1990 for nine existing monitoring wells at the Shell service station located at 3420 San Pablo Avenue, Oakland, California (site, Figure 1).

Previous reports on the site include the following:

<u>Report</u>	<u>Date</u>	<u>Author</u>
<i>Soil and Ground Water Investigation</i>	September 1988	Ensco Environmental Services, Inc.
<i>Phase I Hydrogeologic Assessment Investigation</i>	August 14, 1989	Delta
<i>Phase II Hydrogeologic Assessment Investigation</i>	May 30, 1990	Delta
<i>Quarterly Monitoring Report</i>	July 30, 1990	Delta

On July 26, 1990, a site visit was made to perform the following:

- Measure water levels and record physical observations.
- Collect water samples from monitoring wells MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 for analysis of volatile organics and total petroleum hydrocarbons (TPH) by U.S. Environmental Protection Agency (EPA) Methods 8015 and 8020.

2.0 SITE DATA

2.1 Depth to Ground Water Elevations and Observations

Depth to ground water was measured and physical observations recorded at monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 on July 26, 1990. The results are presented in Table 1. During the subjective analysis of water removed from the wells, it was noted that monitoring well MW-1 contained 0.01-feet of free product. Figure 2 is a ground water contour map showing the location of the nine monitoring wells and the measured ground water elevations. The July 26, 1990, ground water elevations indicate a complex pattern of ground water flow. The general trend of ground water flow appears to be toward the south, except for irregularities in the water table surface near MW-5 and MW-9.

2.2 Ground Water Quality

Ground water samples collected from monitoring wells MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 on July 26, 1990, were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and TPH as gasoline. MW-1 was not sampled because it contained 0.01-feet of free product. The results from these laboratory analyses are presented in Table 2. Analytical results from samples collected during previous sampling events are provided for comparison. Copies of certified laboratory reports for the July 1990 sampling event are included in Appendix A.

Dissolved hydrocarbons were detected in samples collected from each monitoring well in July 1990. Benzene concentrations ranged from less than 0.3 parts per billion (ppb) in MW-3 to 15,000 ppb benzene in MW-2.

3.0 DISCUSSION

The water level has dropped in each monitoring well except MW-5 and MW-6. Water level changes have ranged from an increase of 0.61 foot in MW-6 to a decrease of 0.77 foot in MW-9. Free product thickness in MW-1 has remained constant at approximately 0.01 foot. Dissolved benzene concentrations have decreased in monitoring wells MW-3, MW-4, MW-5, and MW-7 between April and July 1990.

Delta will continue to monitor water levels and water quality on a quarterly basis. The next sampling event will take place in October 1990. Delta is currently seeking an encroachment permit from the city of Oakland to install an upgradient and a downgradient monitoring well to complete the hydrogeologic investigation.

4.0 REMARKS/SIGNATURES

The recommendations contained in this report represent our professional opinions and are based in part on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. This report has been prepared solely for the use of Shell and any reliance on this report by third parties shall be at such party's sole risk. Other than this, no warranty is implied or intended.

DELTA ENVIRONMENTAL CONSULTANTS, INC.

This report was prepared by: Hal E. Hansen Date 10-11-90
Hal E. Hansen
Hydrogeologist/Project Manager

The work performed in this report was done under the supervision of a California Registered Geologist:

Dale A. van Dam Date 10/11/90
Dale A. van Dam, R.G.
California Registered
Geologist #4632

/law

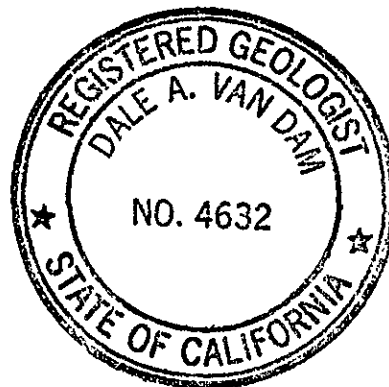


TABLE 1

Ground Water Elevations

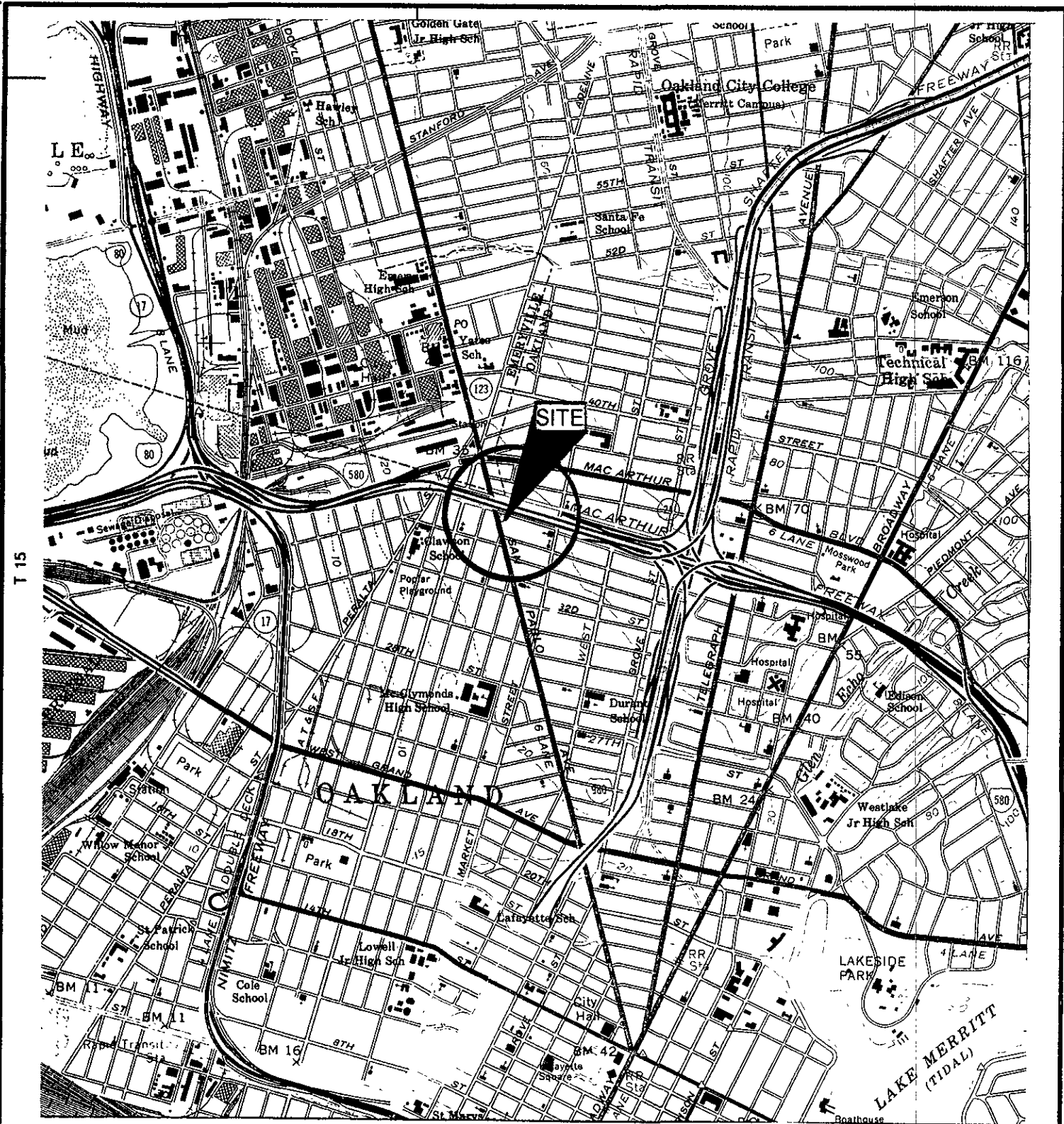
<u>Monitoring Well</u>	<u>Date</u>	<u>Top of Riser Elevation (ft)</u>	<u>Water Depth (feet)</u>	<u>Ground Water Elevation (ft)</u>	<u>Physical Observations</u>
MW-1	06/12/89	21.28	9.57	11.71	---
	01/23/90		9.04	12.24	Odor
	02/02/90		8.89	12.39	Odor
	02/21/90		8.00	13.28	0.01' Free product
	04/10/90		9.47	11.81	0.01' Free product
	07/26/90		9.73	11.55	0.01' Free product
MW-2	06/12/89	21.56	7.96	13.60	---
	01/23/90		8.30	13.26	No odor
	02/02/90		8.04	13.52	Odor
	02/21/90		7.57	13.99	No odor
	04/10/90		7.94	13.62	No odor
	07/26/90		8.41	13.15	
MW-3	06/12/89	21.78	10.77	11.01	---
	01/23/90		9.26	12.52	No odor
	02/02/90		9.33	12.45	No odor
	02/21/90		8.24	13.54	No odor
	04/10/90		10.26	11.52	No odor
	07/26/90		10.98	10.80	
MW-4	06/12/89	20.31	11.19	9.12	---
	01/23/90		9.25	11.06	No odor
	02/02/90		8.04	12.27	No odor
	02/21/90		7.90	12.41	---
	04/10/90		9.30	11.01	No odor
	07/26/90		9.56	10.75	
MW-5	01/23/90	20.91	7.89	13.02	Slight odor
	02/02/90		8.23	12.68	No odor
	02/21/90		7.31	13.60	Slight odor
	04/10/90		9.89	11.72	No odor
	07/26/90		9.80	11.11	
MW-6	01/23/90	22.32	7.57	14.75	No odor
	02/02/90		7.86	14.46	No odor
	02/21/90		6.95	15.37	No odor
	04/10/90		9.25	13.07	No odor
	07/26/90		8.64	13.68	
MW-7	01/23/90	20.36	6.98	13.38	No odor
	02/02/90		8.91	11.45	Odor
	02/21/90		6.65	13.71	No odor
	04/10/90		6.99	13.37	No odor
	07/26/90		7.33	13.03	
MW-8	01/23/90	20.95	7.19	13.76	Slight odor
	02/02/90		7.32	13.36	No odor
	02/21/90		6.90	14.05	Very slight odor
	04/10/90		7.20	13.75	No odor
	07/26/90		7.58	13.37	
MW-9	01/23/90	21.19	9.31	11.88	No odor
	02/02/90		9.02	12.17	No odor
	02/21/90		8.28	12.91	No odor
	04/10/90		8.41	12.78	No odor
	07/26/90		9.18	12.01	

TABLE 2

Ground Water Chemical Analysis (ppb)

Monitoring Well	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	EDB ^a	EDC ^b	TPH ^c
MW-1	04/17/89	1,400	2,300	6,600	1,100	ND ^d	10.0	12,000
	01/23/90							FP ^e
	04/10/90							FP
	07/26/90							FP
MW-2	04/17/89	12,000	1,800	12,000	2,200	<100	36.0	35,000
	01/23/90	110	9.6	140	3,300	NA ^f	NA	40,000
	04/10/90	12,000	570	560	6,800	NA	NA	45,000
	07/26/90	15,000	840	1,400	10,000	NA	NA	53,000
MW-3	04/17/89	3.0	2.0	9.0	<1.0	<1.0	<1.0	100
	01/23/90	1.1	<0.3	<0.3	<0.3	NA	NA	140
	04/10/90	1.1	<0.3	<0.3	1.2	NA	NA	250
	07/26/90	<0.3	<0.3	<0.3	<0.3	NA	NA	<30
MW-4	04/17/89	1.2	<1.0	3.0	1.0	<0.1	1.5	500
	01/23/90	1.2	<0.3	<0.3	<0.3	NA	NA	150
	04/10/90	150	3.5	9.8	11	NA	NA	1,000
	07/26/90	78	3.7	<0.3	12	NA	NA	3,300
MW-5	01/23/90	4.8	<0.3	<0.3	<0.3	NA	NA	290
	04/10/90	40	0.59	0.63	2.7	NA	NA	750
	07/26/90	8.9	<0.3	<0.3	<0.3	NA	NA	1,700
MW-6	01/23/90	460	100	9.3	1,600	NA	NA	33,000
	04/10/90	460	21	40	170	NA	NA	9,200
	07/26/90	890	43	120	490	NA	NA	7,700
MW-7	01/23/90	61	1.3	<0.3	1,600	NA	NA	3,200
	04/10/90	4,300	23	18	550	NA	NA	15,000
	07/26/90	3,800	24	280	340	NA	NA	8,800
MW-8	01/23/90	160	730	47.0	3,300	NA	NA	22,000
	04/10/90	2,600	630	250	2,100	NA	NA	21,000
	07/26/90	3,600	1,600	610	3,600	NA	NA	20,000
MW-9	01/23/90	<0.3	0.3	0.97	3.0	NA	NA	8.8
	04/10/90	500	4.1	1.3	50	NA	NA	2,500
	07/26/90	730	4.0	6.7	12	NA	NA	2,500

^aEthylene dibromide.^b1,2-dichloroethene.^cTotal petroleum hydrocarbons as gasoline.^dNot detected.^eFree product.^fNot analyzed.



T 15

GENERAL NOTES:
 BASE MAP FROM U.S.G.S.
 OAKLAND WEST, CA.
 7.5 MINUTE TOPOGRAPHIC
 SCALE 1 : 24,000'

R 4 W



SCALE



Delta
 Environmental
 Consultants, Inc.

FIGURE 1
 SITE LOCATION MAP
 3420 SAN PABLO AVENUE
 OAKLAND, CA.

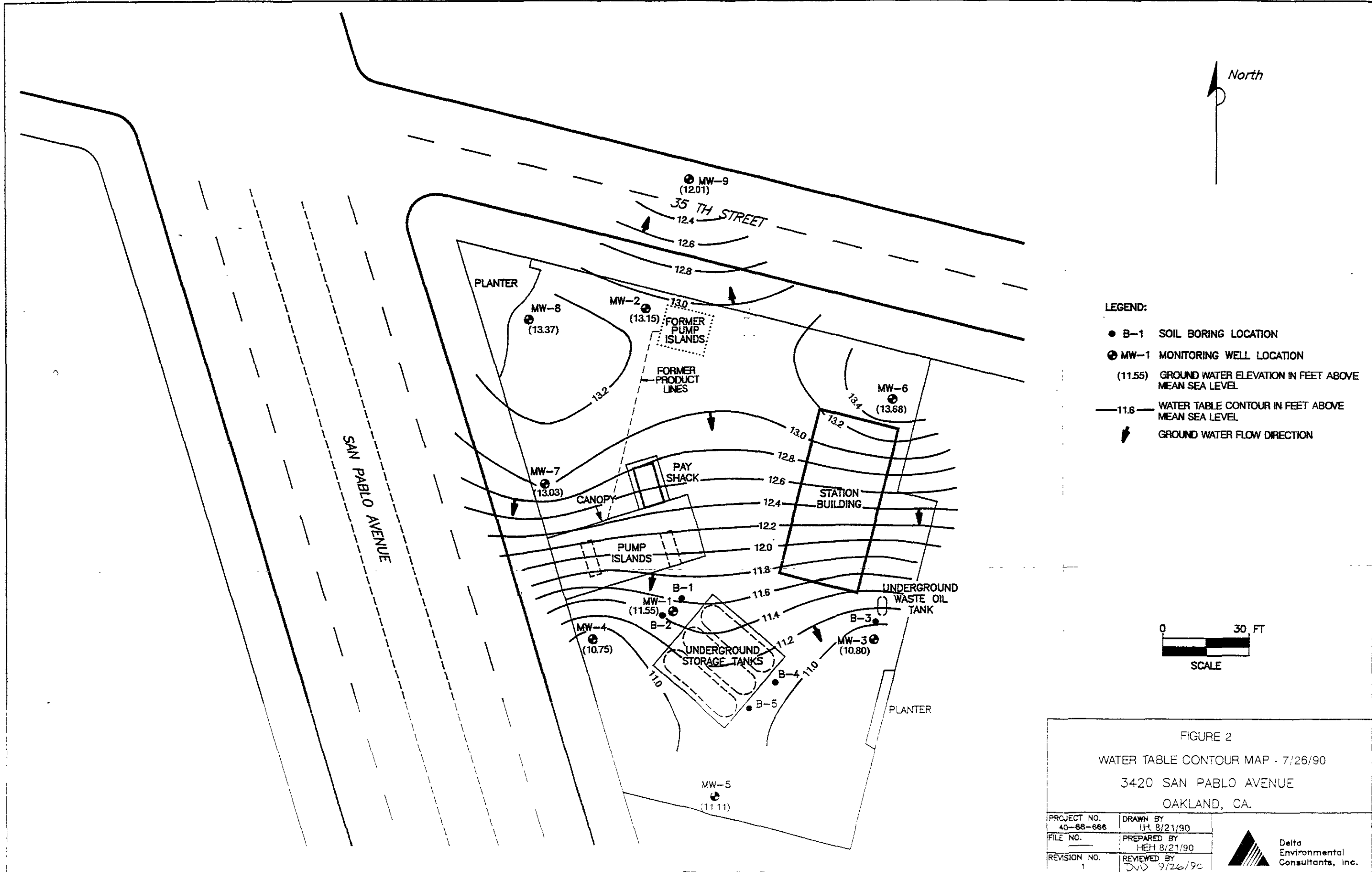


QUADRANGLE LOCATION

DRAWN BY: *DM 1-5-89*

JOB NO. 40-88-666

CHK BY: *TJC 10/1/90*



- LEGEND:**
- B-1 SOIL BORING LOCATION
 - ⊙ MW-1 MONITORING WELL LOCATION
 - (11.55) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
 - 11.6— WATER TABLE CONTOUR IN FEET ABOVE MEAN SEA LEVEL
 - ↘ GROUND WATER FLOW DIRECTION

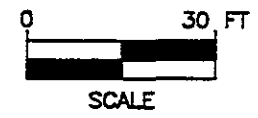


FIGURE 2
WATER TABLE CONTOUR MAP - 7/26/90
3420 SAN PABLO AVENUE
OAKLAND, CA.

PROJECT NO. 40-88-666	DRAWN BY LH 8/21/90
FILE NO.	PREPARED BY HEH 8/21/90
REVISION NO. 1	REVIEWED BY DJD 9/26/90

Delta
Environmental
Consultants, Inc.

APPENDIX A

Certified Analytical Laboratory Reports



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Delta Environmental Consultants 3330 Data Drive Rancho Cordova, CA 95670 Attention: Hal Hanson	Client Project ID: #40-88-666, Shell, Oakland Matrix Descript: Water Analysis Method: EPA 5030/8015/8020 First Sample #: 007-4920 A	Sampled: Jul 27, 1990 Received: Jul 30, 1990 Analyzed: Jul 30-Aug 1, 1990 Reported: Aug 7, 1990
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TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/L (ppm)	Benzene mg/L (ppm)	Toluene mg/L (ppm)	Ethyl Benzene mg/L (ppm)	Xylenes mg/L (ppm)
0074920 A	MW-2	53	15	0.84	1.4	10
0074921 A	MW-3	N.D.	N.D.	N.D.	N.D.	N.D.
0074922 A	MW-4	3.3	0.078	0.0037	N.D.	0.012
0074923 A	MW-5	1.7	0.0089	N.D.	N.D.	N.D.
0074924 A	MW-6	7.7	0.89	0.043	0.12	0.49
0074925 A	MW-7	8.8	3.8	0.024	0.28	0.34
0074926 A	MW-8	20	3.6	1.6	0.61	3.6
0074927 A	MW-9	2.5	0.73	0.0040	0.0067	0.012

Detection Limits:	0.030	0.00030	0.00030	0.00030	0.00030
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

V. Tague
Vickie Tague
Project Manager

Please Note:
3420 San Pablo Ave., Oakland, CA



Sample Identification/Field Chain of Custody Record

5 DAY RUSH

Project: Oakland shell 3420 San Pablo Ave W.O.# 40-88-666
 Shipped by: G. Mastad Delta
 Shipped to: Segair Analytical Labs Redwood City CA
 Results to the attention of: Hal Hansen

Sampling Point	Location	Field ID #	Date	Sample Type	No. of Containers	Analysis Required
MW- 2	San Pablo shell Oakland CA	0074920	7/27/90	water	2	BTEX-TPH
3	↓	21	↓	↓	↓	↓
4		22				
5		23				
6		24				
7		25				
8		26				
9		27				

Sampler(s) (signature) Gary Mastad
 Field ID Relinquished by: (signature) Received by: (signature) Date/Time Comments

Field ID	Relinquished by: (signature)	Received by: (signature)	Date/Time	Comments
all of above	<u>Gary Mastad</u>	<u>[Signature]</u>	7/27/90	
			7/30/90	1115

Sealed for shipment by: (signature) Gary Mastad Date/Time 7/27/90 Shipment method: Fed Ex-ess

Comments: Shell contact - Diane Lundquist
Shell wic # 204-5308-5306 Shell CT/DL 5441
Shell AFE # 986642