Delta
Environmental
Consultants, Inc.

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November 15, 1994

Why not MW southwest (upgradient) of MW-6/MW-3 ? As required w/ J Shins Aug 16, 1994 letter

Ms. Juliett Shin
Alameda County Department of Environmental Health
Hazardous Material Division
1131 Harbor Bay Parkway #250
Oakland, California 94621

Subject: *Proposed Additional Hydrogeologic Investigative Work*
Exxon Station R/S No. 7-0104
1725 Park Street
Alameda, California
Delta Project No. D094-832

Dear Ms. Shin:

Delta Environmental Consultants, Inc. (Delta), has been authorized by Exxon Company, U.S.A. (Exxon), to conduct additional hydrogeologic investigative work at the Exxon service station located at 1725 Park Street, Alameda, Alameda County, California (Figures 1 and 2). Delta proposes to drill two additional soil borings and complete the borings as ground water monitoring wells. The ground water monitoring wells will be installed to assess the upgradient (toward the northwest and southwest) extent of dissolved petroleum hydrocarbons in ground water as requested in the Alameda County Health Care Services Agency letter dated August 16, 1994.

Site Description

Exxon Station No. 7-0104 is an operating retail gasoline station located at the western corner of Park Street and Eagle Avenue in Alameda, California (Figure 1). The site is at an elevation of 17 feet above mean sea level. The surrounding topography is relatively flat (U.S.G.S. 1980). Structures at the site include a building with a convenience store, two multi-pump fuel-dispenser islands, and three double walled fiberglass underground storage tanks (USTs), which were installed in 1986. The site is in a commercial district; however, Alameda High School is located approximately one half mile southwest of the site. The approximate location of the station facilities, existing USTs and pump islands, and other pertinent site features are shown on Figure 2. Existing or former retail service stations are at each corner of the intersection of Eagle Avenue and Park Street (Figure 2).

Project Background Information

Harding Lawson Associates (Harding Lawson) of Novato, California, performed an initial site investigation in 1988, which included drilling six soil borings and constructing ground water monitoring wells (MW-1 through MW-6) at the site. Gasoline hydrocarbons were detected in soil and ground water samples collected during the 1988 drilling event (Harding Lawson, March 21, 1989). In 1990, Harding Lawson drilled seven shallow soil borings and one deep boring, completing the deep boring as a ground water monitoring well (MW-7) on-site (Harding Lawson, May 1, 1990). Harding Lawson subsequently drilled five soil borings in December 1991 and

constructed five ground water extraction wells (EW-1 through EW-5) on-site (Harding Lawson, May 1, 1990). The locations of the on-site wells are shown on Figure 2.

In September 1992, Harding Lawson performed an off-site ground water survey to evaluate the horizontal extent of petroleum hydrocarbons in ground water related to the on-site source and whether potential off-site sources contributed to dissolved hydrocarbons in ground water near the site. Harding Lawson concluded that petroleum hydrocarbons from on-site sources appear to be limited to the site and possibly slightly off-site. Harding Lawson further concluded that additional sources of petroleum hydrocarbons are present to the southeast and southwest of the site. During the field investigation, ground water monitoring wells were noted at the former service station across Park Street southeast of the site. Hydrocarbons present in ground water southeast of the Exxon site may originate from this off-site source. Additionally, a release of petroleum hydrocarbons was reported at the Shell service station on Park Street southwest of the site. Activities at this location may be the source of petroleum hydrocarbons present southwest of the Exxon site (Harding Lawson, October 30, 1992).

In October 1992, Harding Lawson performed a vapor extraction test, which included six individual short-term tests. Results of the vapor extraction test indicated soil vapor extraction appears to be a viable technology for removing hydrocarbons from soil; however, existing wells do not have sufficient open length of screen to allow adequate air flow. During the tests, the air flow rates from the wells generally did not increase with applied vacuum, indicating that the air flow paths to the wells do not develop significantly during short-term operation. Air flow rates were generally low (between 1 and 6.5 cubic feet per minute (cfm)) except for well MW-7, which achieved a flow rate of 26 cfm. The induced vacuum created a radius of influence generally between 30 and 50 feet (Harding Lawson, December 28, 1992).

In December 1992, Harding Lawson began construction of a ground water pumping and treatment system at the site. The system removes ground water from the existing extraction wells (EW-1 through EW-5) and pumps the water to an aboveground bioreactor tank, through activated carbon canisters prior to discharge to the sanitary sewer system. Harding Lawson began operation of the system in February 1993.

Additional monitoring wells (MW-8, MW-9, and MW-10) were installed by RESNA Industries, Inc. (RESNA), in May 1993, to define the down and crossgradient extent of dissolved petroleum hydrocarbons in ground water. Harding Lawson performed quarterly ground water monitoring at the site from June 1988 through January 1993. RESNA conducted monitoring activities from January 1993 through February 1994. The results of the monitoring activities are included in Enclosure A.

Delta began ground water monitoring activities at the site in September 1994. Ground water level measurements recorded by Delta in September 1994 are included in Table 1. Ground water sample analytical results from samples collected by Delta are included in Table 2.

In general, the direction of ground water flow is toward the northeast with a gradient of approximately 0.01. Depth to the ground water table beneath the site ranges from approximately 5.5 to 12 feet below grade due to seasonal fluctuations. The downgradient extent of petroleum hydrocarbons in ground water is assessed with the existing ground water monitoring well network, although the upgradient extent is undefined.

Proposed Soil Borings

Delta proposes to advance two additional soil borings to approximately 20 feet below grade and complete these borings as ground water monitoring wells MW-11 and MW-12. The approximate locations of the proposed wells are shown in Figure 2. These locations may be moved depending on above and subsurface obstacles (overhead lines, buildings, trees, and below grade utilities). Soil samples will be collected from each soil boring at 5-foot intervals at changes in lithology, and will be field-analyzed for the presence of petroleum hydrocarbon vapors with a photoionization detector (PID). The methods used to drill and sample the soil borings are included in Enclosure B. Soil boring logs containing soil descriptions and PID readings will be prepared and submitted in a report.

Two soil samples from each boring will be collected and submitted to a California-certified laboratory for analysis of benzene, toluene, ethylbenzene, xylenes (BTEX), and total petroleum hydrocarbons (TPH) as gasoline by U.S. Environmental Protection Agency (EPA) Method 8015/8020.

Proposed Well Installations

Proposed ground water monitoring wells MW-11 and MW-12 will be constructed with 2-inch diameter, flush-threaded, Schedule 40 PVC casing. The wells will be screened from their total depth to approximately 5 feet below grade. The annular space in the monitoring wells will be filled with No. 3 Lonestar sand from 1-foot above the well screen to the maximum depth of the well. A 1-foot thick bentonite seal will be placed above the filter pack. The annular space above the bentonite seal will be filled with cement grout containing approximately 5 percent bentonite. Proposed construction details for the monitoring wells are included in Enclosure C.

The ground water monitoring well will be developed and sampled in accordance to methods described in Enclosure B.

Schedule

Within two weeks following the approval of this work plan, Delta will submit well construction permits to Alameda County Flood Control and Water Conservation District. Right of entry agreement documents will be obtained from the off-site property owners allowing the installation of the proposed monitoring wells. If the off-site property owner does not authorize entry within 30 days, Delta will request assistance from the Alameda County Health Services to obtain the necessary documents. A report summarizing the results of the soil borings and soil vapor extraction test will be submitted to Alameda County Health Services approximately three weeks following the installing of the wells.

Remarks/Signatures

The interpretations 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. Other than this, no warranty is implied or intended.

If you have any questions regarding this letter report, please do not hesitate to call Todd M. Galati at (916) 638-2085.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Charles Keoni Almeida
Project Hydrogeologist

Todd M. Galati
Project Manager

Eric J. Holm, R.G.
California Registered Geologist No. 5880

CKA (LRP500.TA)
Enclosures

cc: Mr. Richard Hiett, California Regional Water Quality Board - San Francisco Bay Region

TABLE 1

GROUND WATER LEVEL DATA

Exxon Retail Station No. 7-0104
1725 Park Street
Alameda, California

Monitoring Well	Date	Top of Riser Elevation (ft)[a]	Depth to Water (ft)	Ground Water Elevation (ft)	Comments
MW-1	09/12/94	17.35	7.11	10.24	No LPH[b] or Sheen
MW-2	09/12/94	16.67	6.71	9.96	No LPH or Sheen
MW-3	09/12/94	17.11	6.58	10.53	No LPH or Sheen
MW-4	09/12/94	17.34	6.80	10.54	No LPH or Sheen
MW-5	09/12/94	16.71	7.12	9.59	No LPH or Sheen
MW-6	09/12/94	17.56	6.88	10.68	No LPH or Sheen
MW-7	09/12/94	17.12	6.43	10.69	No LPH or Sheen
MW-8	09/12/94	16.33	6.42	9.91	No LPH or Sheen
MW-9	09/12/94	15.62	6.84	8.78	No LPH or Sheen
MW-10	09/12/94	16.79	7.04	9.75	No LPH or Sheen
EW-1	09/12/94	16.22	6.13	10.09	No LPH or Sheen
EW-2	09/12/94	16.05	6.09	9.96	Sheen
EW-3	09/12/94	16.02	6.12	9.9	No LPH or Sheen
EW-4	09/12/94	16.61	5.69	10.92	No LPH or Sheen
EW-5	09/12/94	16.51	6.30	10.21	No LPH or Sheen

[a] Elevation of top of well casing has been surveyed relative to mean sea level (RESNA Industries, Inc., February 10, 1994)
[b] Liquid-phase petroleum hydrocarbons.

TABLE 2

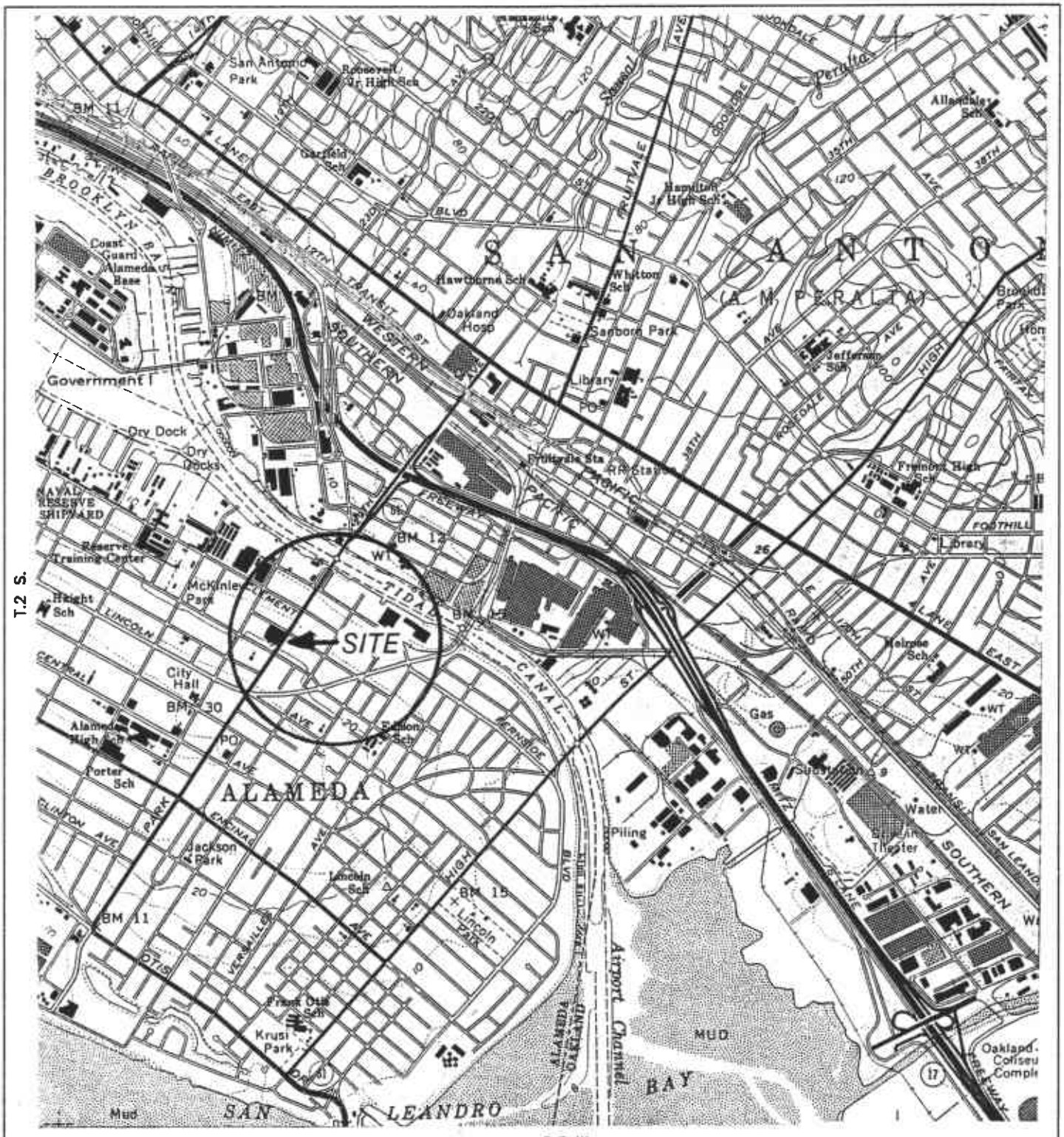
GROUND WATER SAMPLE RESULTS

Concentrations in parts per billion (ppb)

Exxon Retail Station No. 7-0104
1725 Park Street
Alameda, California

Monitoring Well	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH[a] as gasoline
MW-1	09/12/94	200	1.9	210	6.6	1,600
MW-2	09/12/94	4,400	120	1,700	2,100	31,000
MW-3	09/12/94	580	8.0	340	100	3,100
MW-4	09/12/94	900	57	310	490	5,200
MW-5	09/12/94	2,300	17	320	230	10,000
MW-6	09/12/94	150	4.4	170	85	1,500
MW-7	09/12/94	490	50	280	70	6,000
MW-8	09/12/94	<0.5	<0.5	<0.5	<0.5	<50
MW-9	09/12/94	<0.5	<0.5	<0.5	<0.5	<50
MW-10	09/12/94	<0.5	<0.5	1.6	<0.5	71
EW-1	09/12/94	40	<0.5	10	5.4	400
EW-2	09/12/94	2,000	79	180	290	8,800
EW-3	09/12/94	44	5.9	12	31	300
EW-4	09/12/94	1,700	12	210	77	4,000
EW-5	09/12/94	26	1.7	11	12	180

[a] Total petroleum hydrocarbons.



GENERAL NOTES:
BASE MAP FROM U.S.G.S.
OAKLAND EAST, CA.
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

North

CALIF

QUADRANGLE LOCATION

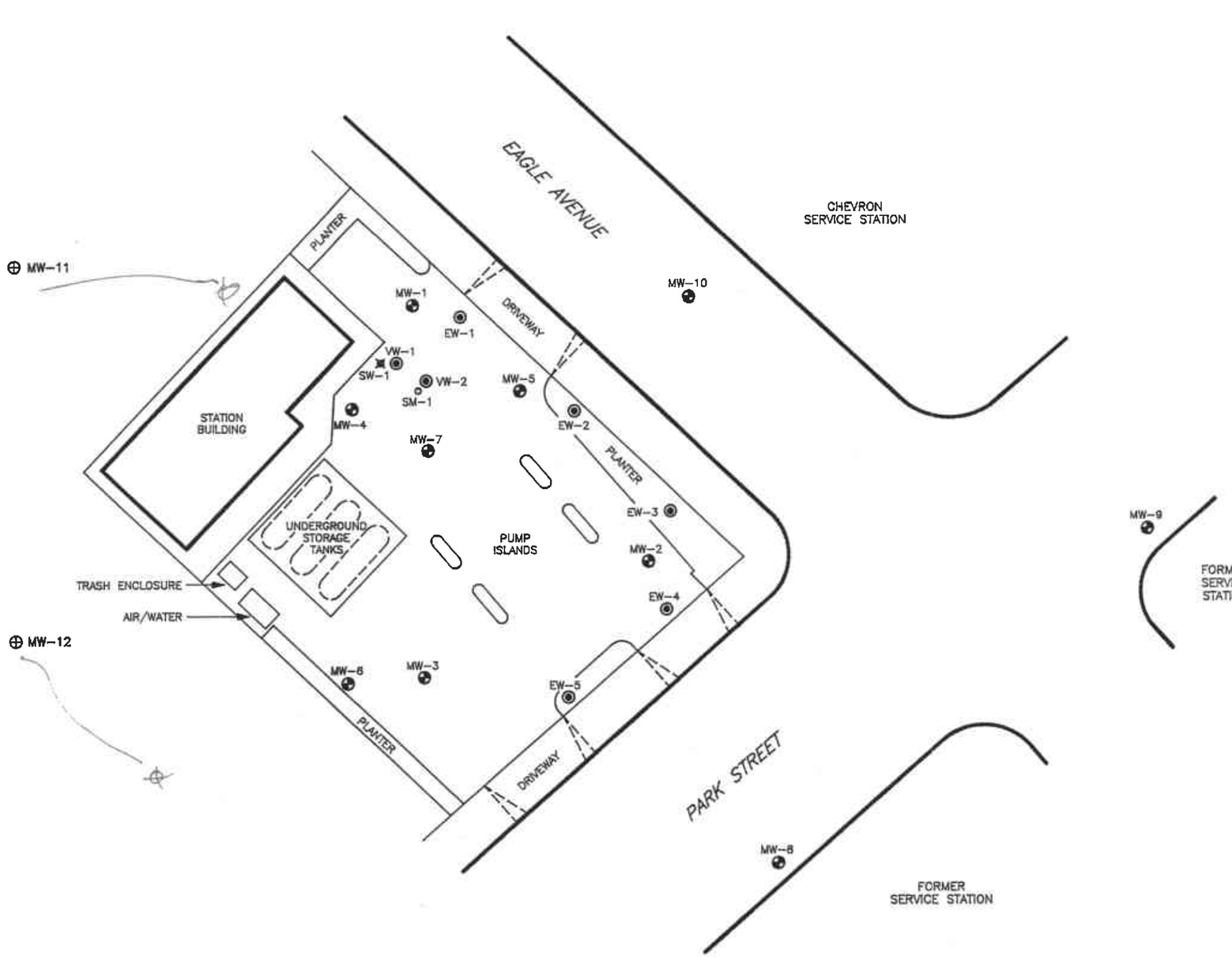
0 2000 FT

SCALE 1 : 24,000

FIGURE 1
SITE LOCATION MAP
EXXON STATION NO 7-0104
1725 PARK STREET
ALAMEDA, CA.

PROJECT NO. 0094-832	DRAWN BY LH. 9/27/94
FILE NO. —	PREPARED BY RDM
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.



NOTE:

BASE MAP ADAPTED FROM RESNA FIGURE.SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FIGURE 2

SITE MAP

EXXON STATION NO 7-0104

1725 PARK STREET

ALAMEDA, CA.

PROJECT NO. 0094-832	DRAWN BY I.H. 11/14/94
FILE NO. 94-832-1	PREPARED BY CKA
REVISION NO. 2	REVIEWED BY CKA 11/16/94

Delta Environmental Consultants, Inc.

ENCLOSURE A

Previous Ground Water Monitoring Data

TABLE 1

CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA

Exxon Service Station No. 7-0104

1725 Park Street

Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet ..... >		<	parts per billion		..... >	
MW-1 (17.35)	06/07/88	NM	NM	—	27,000	5,000	77	1,100	2,700
	06/10/88#	NLPH	6.35	11.00					
	01/17/89	NLPH	5.81	11.54	6,800	2,000	91	800	1,600
	01/24/89#	NLPH	5.16	12.19					
	06/01/89	sheen	6.27	11.08	1,700	170	6.9	13	230
	09/18/89	NLPH	7.11	10.24	2,100	9.0	53	18	130
	10/20/89#	NLPH	7.28	10.07					
	11/22/89#	NLPH	7.02	10.33					
	12/11/89	NLPH	6.60	10.75	5,800	200	42	290	330
	02/13/90#	NLPH	6.02	11.33					
	03/07/90a#	NM	NM	—					
	03/13/90	NLPH	5.91	11.44	2,300	430	14	16	220
	04/18/90#	NLPH	6.18	11.17					
	05/23/90#	NLPH	6.29	11.06					
	06/14/90	NLPH	6.19	11.28	32,000	1,400	19	<5	120
	08/21/90#	NLPH	7.03	10.32					
	09/19/90	NLPH	7.26	10.09	950	290	2.9	<0.5	27
	12/17/90	NLPH	6.75	10.60	2,100	550	13	350	110
	01/31/91#	NLPH	6.78	10.57					
	02/25/91#	NLPH	6.59	10.76					
	03/19/91	NLPH	5.85	11.50	1,400	900	45	390	150
	04/22/91#	sheen	5.72	11.63					
	05/17/91#	NLPH	6.00	11.35					
	07/24/91	NLPH	6.79	10.56	9,700	1,300	670	950	2,100
	09/10/91#	NLPH	7.25	10.10					
	09/23/91#	NLPH	7.33	10.02					
	10/21/91#	NLPH	7.53	9.82					
	10/22/91	NM	NM	—	540	220	1.8	110	7.8
	11/18/91#	NLPH	7.13	10.22					
	12/11/91#	NLPH	7.25	10.10					
	01/21/92	NLPH	6.54	10.81	1,800	650	23	300	64
	02/20/92#	NLPH	4.82	12.53					
	03/19/92#	NLPH	5.24	12.11					
	04/24/92	NLPH	5.71	11.64	4,900	1,600	78	660	250
	05/13/92#	NLPH	5.99	11.36					
	06/24/92#	NLPH	6.65	10.70					
	07/16/92	NLPH	6.72	10.63	3,400	1,000	11	550	100
	08/19/92#	NLPH	7.07	10.28					
	09/24/92	NLPH	7.36	9.99	3,700	1,300	21	330	<10
	02/05/93	NLPH	5.21	12.14	11,000	2,400	160	1,400	790
	04/30/93	NLPH	5.88	11.47	6,500	330	320	640	1,300
	05/14/93#	NLPH	7.22	10.13					

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	. . . . . >	<	parts per billion			. . . . . >
MW-1 cont. (17.35)	07/15/93	NLPH	8.01	9.34	7,600	270	62	1,100	1,000
	10/21/93#	NM	7.83	9.52	840	18	1.4	72	17
	11/16/93	NLPH	8.69	8.66					
	11/30/93#	NM	8.38	8.69					
	12/17/93#	NM	7.42	9.93					
	01/31/93#	NM	6.37	10.98	810	15	9.0	98	58
	02/24-25/94	NLPH	6.23	10.84					
MW-2 (16.67)	06/07/88	—	—	—	110,000	12,000	12,000	2,100	12,000
	06/10/88#	NLPH	6.20	10.47					
	01/17/89	NLPH	5.96	10.71	30,000	6,600	3,300	1,800	7,700
	01/24/89#	NLPH	5.04	11.63					
	06/01/89	sheen	6.32	10.35	8,700	330	280	680	1,200
	09/18/89	NLPH	6.73	9.94	17,000	580	280	570	220
	10/20/89#	NLPH	6.87	9.80					
	11/22/89#	NLPH	6.80	9.87					
	12/11/89	NLPH	6.57	10.10	32,000	1,000	850	310	1,200
	02/13/90#	NLPH	6.12	10.55					
	03/13/90	NLPH	6.02	10.65	39,000	3,500	1,500	2,100	3,900
	04/18/90#	NLPH	6.35	10.32					
	05/23/90#	NLPH	6.28	10.39					
	06/14/90	NLPH	6.14	10.53	34,000	3,800	730	1,600	3,900
	08/21/90#	NLPH	6.70	9.97					
	09/19/90	NLPH	6.84	9.83	63,000	670	180	390	1,000
	12/17/90	NLPH	6.46	10.21	140,000	3,700	2,500	3,000	8,300
	01/31/91#	sheen	6.66	10.01					
	02/25/91#	NLPH	6.50	10.17					
	03/19/91	sheen	5.76	10.91	48,000	4,500	1,600	2,100	5,500
	04/22/91#	NLPH	5.78	10.89					
	05/17/91#	NLPH	6.01	10.66					
	07/24/91	NLPH	6.43	10.24	49,000	3,500	2,200	2,000	6,400
	09/10/91#	NLPH	6.81	9.86					
	09/23/91#	NLPH	6.82	9.85					
	10/21/91#	NLPH	7.01	9.66					
	10/22/91	—	—	—	34,000	3,700	1,100	1,800	5,200
	11/18/91#	NLPH	6.66	10.01					
	12/11/91#	NLPH	6.85	9.82					
	01/21/92	NLPH	6.22	10.45	21,000	4,600	1,300	1,700	5,100
	02/20/92#	NLPH	5.28	11.39					
	03/19/92#	NLPH	5.34	11.33					
	04/24/92	sheen	5.75	10.92	36,000	5,000	970	2,300	5,200
	05/13/92#	NLPH	5.95	10.72					

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	>	<	parts per billion			>
MW-2 cont. (16.67)	06/24/92#	NLPH	6.39	10.28					
	07/16/92	sheen	6.50	10.17	42,000	3,500	490	1,800	3,700
	08/19/92#	NLPH	6.69	9.98					
	09/24/92	sheen	6.74	9.93	26,000	3,600	670	1,700	3,300
	02/05/93#	0.01	5.56	11.10					
	04/30/93	sheen	5.78	10.89	280,000	11,000	6,500	5,500	160,000
	05/14/93#	NA	NA	—					
	07/15/93#	0.01	7.89	8.79					
	10/21/93#	NM	7.24	9.43					
	11/16/93#	0.02	8.37	8.32					
	11/30/93#	NM	7.93	8.74					
	12/17/93#	NM	7.74	8.93					
	01/31/94#	NM	6.32	10.35					
	02/24-25/94	NLPH	6.93	9.74	51,000	11,000	1,700	2,700	5,500
MW-3 (17.11)	06/07/88	NM	NM	—	28,000	6,000	80	940	1,900
	06/10/88#	NLPH	6.05	11.06					
	01/17/89	NLPH	5.49	11.62	5,300	2,500	230	590	1,100
	01/24/89#	NLPH	5.38	11.73					
	06/01/89	NLPH	5.96	11.15	5,400	330	300	570	680
	09/18/89	NLPH	6.65	10.46	12,000	680	170	350	860
	10/20/89#	NLPH	6.88	10.23					
	11/22/89#	NLPH	6.74	10.37					
	12/11/89	NLPH	6.37	10.74	14,000	1,100	150	670	690
	02/13/90#	NLPH	5.58	11.53					
	03/13/90	NLPH	5.48	11.63	18,000	6,300	200	1,100	1,100
	04/18/90#	NLPH	6.01	11.10					
	05/23/90#	NLPH	6.14	10.97					
	06/14/90	NLPH	5.83	11.28	9,500	1,300	880	310	1,800
	08/21/90#	NLPH	6.67	10.44					
	09/19/90	NLPH	6.88	10.23	16,000	5,000	65	1,500	450
	12/17/90	NLPH	6.46	10.65	6,700	1,500	64	650	460
	01/31/91#	NLPH	6.24	10.87					
	02/25/91#	NLPH	6.18	10.93					
	03/19/91	NLPH	5.35	11.76	18,000	4,200	2,100	1,100	1,200
	04/22/91#	NLPH	5.72	11.39					
	05/17/91#	NLPH	5.55	11.56					
	07/24/91	NLPH	6.41	10.70	38,000	6,200	990	2,900	9,600
	09/10/91#	NLPH	6.80	10.31					
	09/23/91#	NLPH	6.80	10.31					
	10/21/91#	NLPH	7.09	10.02					
	10/22/91	NM	NM	—	23,000	3,400	150	2,500	4,400

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	>	<		parts per billion	....	>
MW-3 cont. (17.11)	11/18/91#	NLPH	6.74	10.37					
	12/11/91#	NLPH	6.79	10.32					
	01/21/92	NLPH	6.16	10.95	13,000	2,700	30	1,800	740
	02/20/92#	NLPH	4.89	12.22					
	03/19/92#	NLPH	4.85	12.26					
	04/24/92	NLPH	5.28	11.83	17,000	4,200	170	1,600	600
	05/13/92#	NLPH	5.58	11.53					
	06/24/92#	NLPH	6.22	10.89					
	07/16/92	NLPH	6.36	10.75	11,000	2,700	230	1,100	570
	08/19/92#	NLPH	6.65	10.46					
	09/24/92	NLPH	6.93	10.18	7,100	2,000	44	1,000	220
	02/05/93	NLPH	4.71	12.40	13,000	3,600	110	1,300	430
	04/30/93	NLPH	5.46	11.65	13,000	1,600	370	1,600	1,800
	05/14/93#	NLPH	6.53	10.58					
	07/15/93	NLPH	7.28	9.83	2,100	310	15	230	58
	10/21/93#	NM	7.42	9.69					
	11/16/93	NLPH	8.02	9.09	4,000	400	400	120	490
	11/30/93	—	7.79	9.32	—	—	—	—	—
	12/17/93#	NM	7.13	9.98					
	01/31/94#	NM	6.32	10.79					
	02/24-25/94	NLPH	6.04	11.07	3,300	280	52	150	400
MW-4 (17.34)	01/17/89	NLPH	5.36	11.98	19,000	1,000	1,500	360	2,200
	01/24/89#	NLPH	5.46	11.88					
	06/01/89	NLPH	6.01	11.33	3,600	180	240	63	810
	09/18/89	NLPH	6.80	10.54	6,000	290	200	28	510
	10/20/89#	NLPH	7.08	10.26					
	11/22/89#	NLPH	6.82	10.52					
	12/11/89	NLPH	6.37	10.97	13,000	750	910	510	1,200
	02/13/90#	NLPH	5.49	11.85					
	03/07/90a#	NM	NM	—					
	03/13/90	NLPH	5.44	11.90	12,000	1,500	1500	470	28,000
	04/18/90#	NLPH	6.14	11.20					
	05/23/90#	NLPH	6.22	11.12					
	06/14/90	NLPH	5.92	11.42	12,000	5,700	400	1,300	760
	08/21/90#	NLPH	6.83	10.51					
	09/19/90	NLPH	7.07	10.27	5,500	670	180	390	1,000
	12/17/90	NLPH	6.50	10.84	14,000	1,400	620	540	2,100
	01/31/91#	NLPH	6.66	10.68					
	02/25/91#	NLPH	6.21	11.13					
	03/19/91	NLPH	5.29	12.05	11,000	1,500	740	620	2,100
	04/22/91#	NLPH	5.26	12.08					

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	>	<	parts per billion			>
MW-4 cont. (17.34)	05/17/91#	NLPH	5.60	11.74					
	07/24/91	NLPH	6.54	10.80	10,000	1,200	440	410	1,200
	09/10/91#	NLPH	7.04	10.30					
	09/23/91#	NLPH	7.14	10.20					
	10/21/91#	sheen	7.30	10.04					
	10/22/91	—	—	—	4,600	750	190	350	780
	11/18/91#	NLPH	6.90	10.44					
	12/11/91#	NLPH	7.01	10.33					
	01/21/92	NLPH	6.25	11.09	6,000	1,300	320	510	1,200
	02/20/92#	NLPH	4.79	12.55					
	03/19/92#	NLPH	4.70	12.64					
	04/24/92	sheen	5.25	12.09	11,000	1,700	630	710	1,600
	05/13/92#	sheen	5.62	11.72					
	06/24/92#	sheen	6.19	11.15					
	07/16/92	sheen	6.51	10.83	5,400	870	240	440	700
	08/19/92#	NLPH	6.85	10.49					
	09/24/92	NLPH	7.17	10.17	5,900	1,300	130	530	690
	02/05/93	NLPH	4.61	12.73	15,000	2,300	820	980	2,200
	04/30/93	NLPH	5.59	11.75	21,000	4,000	960	1,500	2,900
	05/14/93#	NLPH	6.50	10.84					
	07/15/93	NLPH	7.50	9.84	2,300	440	55	130	220
	10/21/93#	NM	7.77	9.57					
	11/16/93	NLPH	8.27	9.07	5,100	820	160	260	760
	11/30/93	—	8.02	9.32	—	—	—	—	—
	12/17/93#	NM	7.04	10.30					
	01/31/94#	NM	6.36	10.98					
	02/24-25/94	NLPH	5.78	11.56	9,800	2,200	190	660	1,200
MW-5 (16.71)	01/17/89	NLPH	5.39	11.32	26,000	8,700	3,900	990	5,900
	01/24/89#	NLPH	5.51	11.20					
	06/01/89	sheen	5.83	10.88	5,200	240	220	130	690
	09/18/89	NLPH	6.52	10.19	8,000	340	150	140	460
	10/20/89#	NLPH	6.72	9.99					
	11/22/89#	NLPH	6.54	10.17					
	12/11/89	NLPH	6.21	10.50	15,000	720	320	450	870
	02/13/90#	NLPH	5.60	11.11					
	03/07/90#	NM	NM	—					
	03/13/90	NLPH	5.54	11.17	10,000	3,400	220	280	800
	04/18/90#	NLPH	5.75	10.96					
	05/23/90#	NLPH	5.98	10.73					
	06/14/90	NLPH	5.81	10.90	12,000	3,300	160	350	730
	08/21/90#	NLPH	6.51	10.20					

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	..... >	<	parts per billion		..... >	
MW-5 cont. (16.71)	09/19/90	NLPH	6.70	10.01	8,500	1,800	85	120	460
	12/17/90	sheen	6.24	10.47	18,000	2,300	810	430	1,400
	01/31/91#	NLPH	6.31	10.40					
	02/25/91#	NLPH	6.13	10.58					
	03/19/91	NLPH	5.32	11.39	17,000	2,900	610	580	1,200
	04/22/91#	sheen	5.30	11.41					
	05/17/91#	NLPH	5.59	11.12					
	07/24/91	NLPH	6.33	10.38	16,000	3,200	320	690	1,100
	09/10/91#	NLPH	6.66	10.05					
	09/23/91#	NLPH	6.75	9.96					
	10/21/91#	sheen	6.92	9.79					
	10/22/91	NM	NM	—	6,600	2,000	64	320	480
	11/18/91#	NLPH	6.55	10.16					
	12/11/91#	NLPH	6.64	10.07					
	01/21/92	sheen	6.07	10.64	14,000	4,000	190	630	1,300
	02/20/92#	NLPH	4.83	11.88					
	03/19/92#	sheen	4.83	11.88					
	04/24/92	sheen	5.32	11.39	12,000	2,600	120	620	530
	05/13/92#	sheen	5.61	11.10					
	06/24/92#	NLPH	6.17	10.54					
	07/16/92	sheen	6.25	10.46	20,000	4,000	48	880	720
	08/19/92#	sheen	6.53	10.18					
	09/24/92	sheen	6.80	9.91	9,300	2,200	31	330	250
	02/05/93b#	NLPH	4.70	12.01					
	04/30/93	sheen	5.43	11.28	30,000	5,900	450	1,900	1,500
	05/14/93#	NLPH	7.31	9.40					
	07/15/93#	0.07	7.93	8.84					
	10/21/93#	NM	7.25	9.46					
	11/15/93#	0.04	8.42	8.32					
	11/30/93#	—	8.10	8.61					
	12/17/93#	NM	7.43	9.28					
	01/31/94#	NM	5.95	10.76					
	02/24-25/94#	sheen	6.23	10.48					
MW-6 (17.56)	01/17/89	NLPH	5.59	11.97	38,000	7,400	9,300	2,000	9,900
	01/24/89#	NLPH	5.27	12.29					
	06/01/89	sheen	6.25	11.31	23,000	1,900	2,500	2,000	6,000
	09/18/89	NLPH	6.95	10.61	17,000	650	410	650	320
	10/20/89#	NLPH	7.24	10.32					
	11/22/89#	NLPH	7.05	10.51					
	12/11/89	NLPH	6.63	10.93	29,000	1,100	810	330	1,500
	02/13/90#	NLPH	5.70	11.86					

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	..... >	<		parts per billion	.....	>
MW-6 cont. (17.56)	03/07/90#	NM	NM	---					
	03/13/90	NLPH	5.63	11.93	38,000	12,000	15,000	2,500	12,000
	04/18/90#	NLPH	6.26	11.30					
	05/23/90#	NLPH	6.42	11.14					
	06/14/90	NLPH	6.19	11.37	38,000	9,100	7,800	2,900	12,000
	08/21/90#	NLPH	7.01	10.55					
	09/19/90	NLPH	7.23	10.33	22,000	4,200	300	1,400	3,400
	12/17/90	NLPH	6.66	10.90	20,000	3,100	4,100	890	2,700
	01/31/91#	NLPH	6.39	11.17					
	02/25/91#	NLPH	6.39	11.17					
	03/19/91	NLPH	5.57	11.99	180,000	11,000	55,000	5,600	28,000
	04/22/91#	NLPH	5.42	12.14					
	05/17/91#	NLPH	5.73	11.83					
	07/24/91	NLPH	6.72	10.84	48,000	5,400	2,300	2,000	9,000
	09/10/91#	NLPH	7.15	10.41					
	09/23/91#	NLPH	7.25	10.31					
	10/21/91#	NLPH	7.42	10.14					
	10/22/91	NM	NM	---	18,000	3,100	700	1,400	2,900
	11/18/91#	NLPH	7.08	10.48					
	12/11/91#	NLPH	7.17	10.39					
	01/21/92	NLPH	6.40	11.16	9,400	2,100	370	1,000	1,100
	02/20/92#	NLPH	5.06	12.50					
	03/19/92#	NLPH	4.86	12.70					
	04/24/92	NLPH	5.44	12.12	42,000	3,500	8,000	2,100	8,000
	05/13/92#	NLPH	5.83	11.73					
	06/24/92#	NLPH	6.50	11.06					
	07/16/92	NLPH	6.68	10.88	14,000	1,600	1,000	1,000	2,500
	08/19/92#	NLPH	7.00	10.56					
	09/24/92	NLPH	7.28	10.28	4,700	790	97	640	540
	02/05/93	NLPH	4.84	12.72	26,000	2,500	4,300	1,700	5,300
	04/30/93	NLPH	5.69	11.87	9,600	1,000	410	1,100	1,600
	05/14/93#	NLPH	6.52	11.04					
	07/15/93	NLPH	7.51	10.05	4,600	250	72	540	650
	10/21/93#	NM	7.85	9.71					
	11/16/93	NLPH	8.29	9.27	410	41	12	47	71
	11/30/93#	NM	8.08	9.48					
	12/17/93#	NM	7.27	10.29					
	01/31/94#	NM	6.62	10.94					
	02/24-25/94	NLPH	6.23	11.33	4,300	190	190	300	460

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	>	<	parts per billion			>
MW-7 (17.12)	01/09/90	NM	NM	—	17,000	380	180	330	1,300
	02/13/90#	NLPH	4.98	12.14					
	03/13/90	NLPH	4.94	12.18	16,000	360	270	83	460
	05/23/90#	NLPH	5.87	11.25					
	06/14/90	NLPH	5.55	11.57	14,000	1,200	2,800	75	930
	09/19/90	NLPH	6.79	10.33	16,000	2,800	95	2,500	1,700
	12/17/90	NLPH	6.15	10.97	75,000	2,600	7,000	3,300	14,000
	01/31/91#	NLPH	6.64	10.48					
	02/25/91#	NLPH	5.80	11.32					
	03/19/91	NLPH	4.96	12.16	44,000	1,600	740	3,400	8,600
	04/22/91#	NLPH	4.82	12.30					
	05/17/91#	NLPH	5.18	11.94					
	07/24/91	NLPH	6.22	10.90	18,000	1,300	160	2,700	1,000
	09/10/91#	NLPH	6.71	10.41					
	09/23/91#	NLPH	6.84	10.28					
	10/21/91#	NLPH	7.00	10.12					
	10/22/91	—	—	—	10,000	990	26	1,900	490
	11/18/91#	NLPH	6.56	10.56					
	12/11/91#	NLPH	6.68	10.44					
	01/21/92	NLPH	5.99	11.13	23,000	2,200	3,000	1,800	6,100
	02/20/92#	NLPH	4.36	12.76					
	03/19/92#	NLPH	4.22	12.90					
	04/24/92	NLPH	4.84	12.28	25,000	1,400	220	2,100	2,600
	05/13/92#	NLPH	5.24	11.88					
	06/24/92#	NLPH	6.04	11.08					
	07/16/92	NLPH	6.19	10.93	8,700	470	45	970	86
	08/19/92#	NLPH	6.55	10.57					
	09/24/92	NLPH	6.83	10.29	9,200	560	48	1,300	54
	02/05/93	NLPH	4.11	13.01	33,000	1,100	2,300	1,200	4,200
	04/30/93b	NLPH	5.29	11.83	13,000	240	85	710	320
	05/14/93#	NLPH	5.91	11.21					
	07/15/93	NLPH	7.07	10.05	6,900	200	30	500	48
	10/21/93#	NM	7.55	9.57					
	11/16/93	NLPH	7.85	9.27	7,400	300	85	480	120
	11/30/93#	NM	7.66	9.46					
	12/17/93#	NM	6.75	10.37					
	01/31/94#	NM	6.22	10.90					
	02/24-25/94	NLPH	5.52	11.60	7,200	470	120	400	330

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	>	<	parts per billion			>
MW-8 (16.33)	05/14/93	NLPH	6.54	9.79	<50	<0.5	<1.0	<0.5	<0.5
	07/15/93	NLPH	6.57	9.76	<50	<0.5	<0.5	<0.5	<0.5
	10/21/93#	NM	6.83	9.50					
	11/16/93	NLPH	7.15	9.18	<50	<0.5	<0.5	<0.5	<0.5
	11/30/93	—	6.94	9.39	—	—	—	—	—
	12/17/93#	NM	6.48	9.85					
	01/31/94#	NM	6.13	10.20					
	02/24-25/94	NLPH	5.80	10.53	<50	<0.5	<0.5	<0.5	<0.5
MW-9 (15.62)	05/14/93	NLPH	6.61	9.01	<50	<0.5	<1.0	<0.5	<0.5
	07/15/93	NLPH	6.79	8.83	<50	<0.5	<0.5	<0.5	<0.5
	10/21/93#	NM	6.97	8.65					
	11/16/93	NLPH	7.12	8.50	<50	<0.5	<0.5	<0.5	<0.5
	11/30/93	—	6.98	8.64	—	—	—	—	—
	12/17/93#	NM	6.73	8.87					
	01/31/94#	NM	6.71	8.91					
	02/24-25/94	NLPH	6.45	9.17	<50	<0.5	<0.5	<0.5	<0.5
MW-10 (16.79)	05/14/93	NLPH	6.91	9.88	97	<0.5	<0.5	9.8	22
	07/15/93	NLPH	7.47	9.32	160	<0.5	<0.5	15	19
	10/21/93#	NM	7.57	9.22					
	11/16/93	NLPH	8.17	8.62	<50	<0.5	<0.5	<0.5	<0.5
	11/30/93	—	7.96	8.83	—	—	—	—	—
	12/17/93#	NM	7.25	9.54					
	01/31/94#	NM	6.66	10.13					
	02/24-25/94	NLPH	6.53	10.26	280	<0.5	<0.5	12	7.0
EW-1 (16.22)	10/21/93#	NM	6.67	9.55					
	12/17/93#	NM	10.09	6.13					
	01/31/94#	NM	5.38	10.84					
	02/24-25/94	NLPH	5.58	10.64	1,000	140	4.5	15	120
EW-2 (16.05)	10/21/93#	NM	6.71	9.34					
	12/17/93#	NM	14.95	1.10					
	01/31/94#	NM	5.35	10.70					
	02/24-25/94	LPH	14.30	1.75	5,200	1,200	390	63	410
EW-3 (16.02)	10/21/93#	NM	6.55	9.47					
	12/17/93#	NM	15.65	0.37					
	01/31/94#	NM	5.34	10.68					
	02/24-25/94	NLPH	21.00	-4.98	91	<0.5	<0.5	<0.5	<0.5

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 10 of 11)

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		< . . . . . feet . . . . . >			< . . . . . parts per billion . . . . . >				
EW-4 (15.61)	10/21/93#	NM	6.13	9.48					
	12/17/93#	NM	14.60	1.01					
	01/31/94#	NM	5.08	10.53					
	02/24-25/94	LPH	14.88	0.73	4,600	1,900	140	13	450
EW-5 (16.51)	10/21/93#	NM	6.77	9.74					
	12/17/93#	NM	14.20	2.31					
	01/31/94#	NM	5.64	10.87					
	02/24-25/94	NLPH	11.95	4.56	1,000	140	45	3.4	190
Field Blanks	12/11/89	—	—	—	<50	0.88	0.95	0.62	1.7
	12/17/90	—	—	—	<50	<0.5	<0.5	<0.5	<0.5
	03/19/91	—	—	—	<50	<0.5	<0.5	<0.5	<0.5
	07/24/91	—	—	—	<50	<0.5	<0.5	<0.5	<0.6
	10/22/91	—	—	—	<50	<0.5	<0.5	<0.5	<0.5
	01/21/92	—	—	—	<50	<0.5	<0.5	<0.5	<0.5
	07/16/92	—	—	—	<50	<0.5	<0.5	<0.5	<0.5
Travel Blanks	06/14/90	—	—	—	<50	<0.5	<0.5	<0.5	<0.5
	09/19/90	—	—	—	<50	0.8	<0.5	0.6	1.0
	04/24/92	—	—	—	<50	<0.5	<0.5	<0.5	<0.5
	09/24/92	—	—	—	230	<0.5	<0.5	<0.5	<0.5
	Maximum Contaminant Levels (MCLs) (DHS)				—	1.0	—	680	1,750
	Drinking Water Action Level (DWAL) (DHS)				—	—	100	—	—

See notes on page 11 of 11.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	feet	..... >	<	parts per billion		.....	>

Notes:

TOC	=	Elevation of top of well casing; datum is mean sea level, revised February 10, 1994.
SUBJ	=	Results of subjective evaluation, liquid-phase product thickness (PT) in feet
DTW	=	Depth to water
Elev.	=	Elevation of groundwater; datum is mean sea level; adjusted for free-phase petroleum hydrocarbons when present using the equation: Elev. = TOC - [DTW + (PT * 0.8)] where PT is the product thickness
TPHg	=	Total petroleum hydrocarbons as gasoline analyzed using EPA method 5030/8015
BTEX	=	Benzene, Toluene, Ethylbenzene, and total Xylenes analyzed using EPA method 5030/8020
NM	=	Not Monitored
NLPH	=	No liquid-phase petroleum hydrocarbons present in well
LPH	=	Liquid-phase petroluem hydrocarbons present in well, thickness not measured, or not measurable.
NA	=	Well not accessible on this date
<	=	Less than the indicated detection limit shown by the laboratory
---	=	Not applicable
#	=	Well not sampled on this date
a	=	03/07/90 sampling: Total Dissolved Solids were detected in samples from MW-1 and MW-4 at 910 parts-per-million (ppm) and 370 ppm, respectively.
b	=	a peak eluting before benzene was present in the groundwater samples from MW-5 and MW-7, and is suspected to be methyl-tert-butyl-ether (MTBE).

ENCLOSURE B

Field Methods and Procedures

FIELD METHODS AND PROCEDURES

1.0 HEALTH AND SAFETY PLAN

Field work performed by Delta and subcontractors at the site will be conducted according to guidelines established in a Site Health and Safety Plan (SHSP). The SHSP is a document which describes the hazards that may be encountered in the field and specifies protective equipment, work procedures, and emergency information. A copy of the SHSP will be at the site and available for reference by appropriate parties during work at the site.

2.0 LOCATING UNDERGROUND UTILITIES

Prior to commencement of work on site, Delta will research the location of all underground utilities with the assistance of Underground Service Alert (USA). USA will contact the owners of the various utilities in the vicinity of the site to have the utility owners mark the locations of their underground utilities. Work associated with the boring and monitoring well installation will precede by manual hand augering to a minimum depth of 5 feet below grade to avoid contact with underground utilities.

3.0 SOIL SAMPLING AND CONTAMINATION REDUCTION

Soil borings and soil sampling will be performed under the direction of a Delta geologist. The soil borings will be advanced using a truck-mounted, hollow-stem auger, drilling rig.

To reduce the chances of cross-contamination between boreholes, all downhole drilling and sampling equipment will be steam-cleaned between each boring or well. To reduce cross-contamination between samples, the split-barrel sampler will be washed in a solution of trisodiumphosphate (TSP) soap and water, and double-rinsed between each sampling event.

Soil sampling will be done in accordance with ASTM 1586-84. Using this procedure, a 2-inch inside-diameter California-type sampler with three 6-inch diameter brass tubes is driven into the soil by a 140-pound weight. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as penetration resistance or the "N" value. The N value is used as an empirical measure of the relative density of cohesionless soils and the consistency of cohesive soils.

Upon recovery, a portion of the soil sample will be placed into a ziplock bag and sealed for later screening with a photoionization detector. Another portion of the soil sample will be used for classification and description. The remaining brass tube (closest to the shoe of the sampler) will be sealed

at the ends with teflon tape and plastic caps and will be stored at approximately 4°C for transport to the laboratory.

4.0 SOIL CLASSIFICATION

As the samples are obtained in the field, they will be classified using visual and manual methods by the crew chief/geologist in accordance with the Unified Soil Classification System (USCS). Representative portions of the samples will be then retained for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata, the N value, and pertinent information regarding the method of maintaining and advancing the borehole will be made.

5.0 SOIL SAMPLE SCREENING/HNU PORTABLE PHOTOIONIZATION DETECTOR METHOD

After the soil samples within the ziplock bags have been brought to ambient temperature, the headspace vapors collected from the soil sample in the bag will be screened with a portable photoionization detector or similar device. The sample corner of the bag will be opened and the detector probe immediately placed within the headspace. The highest observed reading will be recorded.

6.0 MONITORING WELL DEVELOPMENT

After installing the monitoring well, the air/water interface will be examined from liquid-phase petroleum hydrocarbons (LPPH). If LPPH's are not present, the well will be developed with a surge block and bailer (or pump) until the water produced will be relatively sediment-free and until the conductivity, pH and temperature stabilize. If the well is pumped dry during the development process, recharge rates will be recorded. No water or chemicals will be introduced into the monitoring wells during well development. All developed water will be placed in drums, labeled, and stored on site for later disposal.

7.0 GROUND WATER SAMPLING

Three to five wetted casing volumes of liquid will be removed from the well by bailing with a clean bailer or pump. A liquid sample will then be collected from the well with a dedicated disposable bailer. Each sample will be appropriately labeled and stored on ice from the time of collection through the time of delivery to the laboratory. Ground water samples will be transported to the laboratory and analyzed within the EPA-specified holding times for the requested analyses.

8.0 LIQUID-PHASE PETROLEUM

If liquid-phase petroleum is present in a well, the thickness of the petroleum layer will be measured using an electronic water/liquid phase petroleum sounding device.

9.0 ANALYTICAL PROCEDURES

Selected soil samples submitted to the laboratory will be analyzed for BTEX and TPH as gasoline using EPA Method 8015/8020. Ground water samples submitted to the laboratory will be analyzed for the same constituents as the soil samples.

10.0 QUALITY ASSURANCE PLAN

This section describes the field and analytical procedures to be followed throughout the investigation.

10.1 General Sample Collection and Handling Procedures

Proper collection and handling are essential to ensure the quality of a sample. Each sample will be collected in a suitable container, preserved correctly for the intended analysis, and stored prior to analysis for no longer than the maximum allowable holding time.

10.2 Sample Identification and Chain-of-Custody Procedures

Sample identification and chain-of-custody procedures ensure sample integrity and document sample possession from the time of collection to its ultimate disposal. Each sample container submitted for analysis will have a label affixed to identify the job number, sampler, date and time of sample collection, and a sample number unique to that sample.

This information, in addition to a description of the sample, field measurements made, sampling methodology, names of on-site personnel, and any other pertinent field observations, will be recorded on the borehole log or in the field records. Samples will be analyzed by a California-certified laboratory.

A chain-of-custody form will be used to record possession of the samples from time of collection to arrival at the laboratory. When the samples are shipped, the person in custody will relinquish the samples by signing the chain-of-custody form and noting the time. The sample-control officer at the laboratory

will verify sample integrity and confirm that the sample is collected in the proper container, preserved correctly, and that there is an adequate volume for analysis.

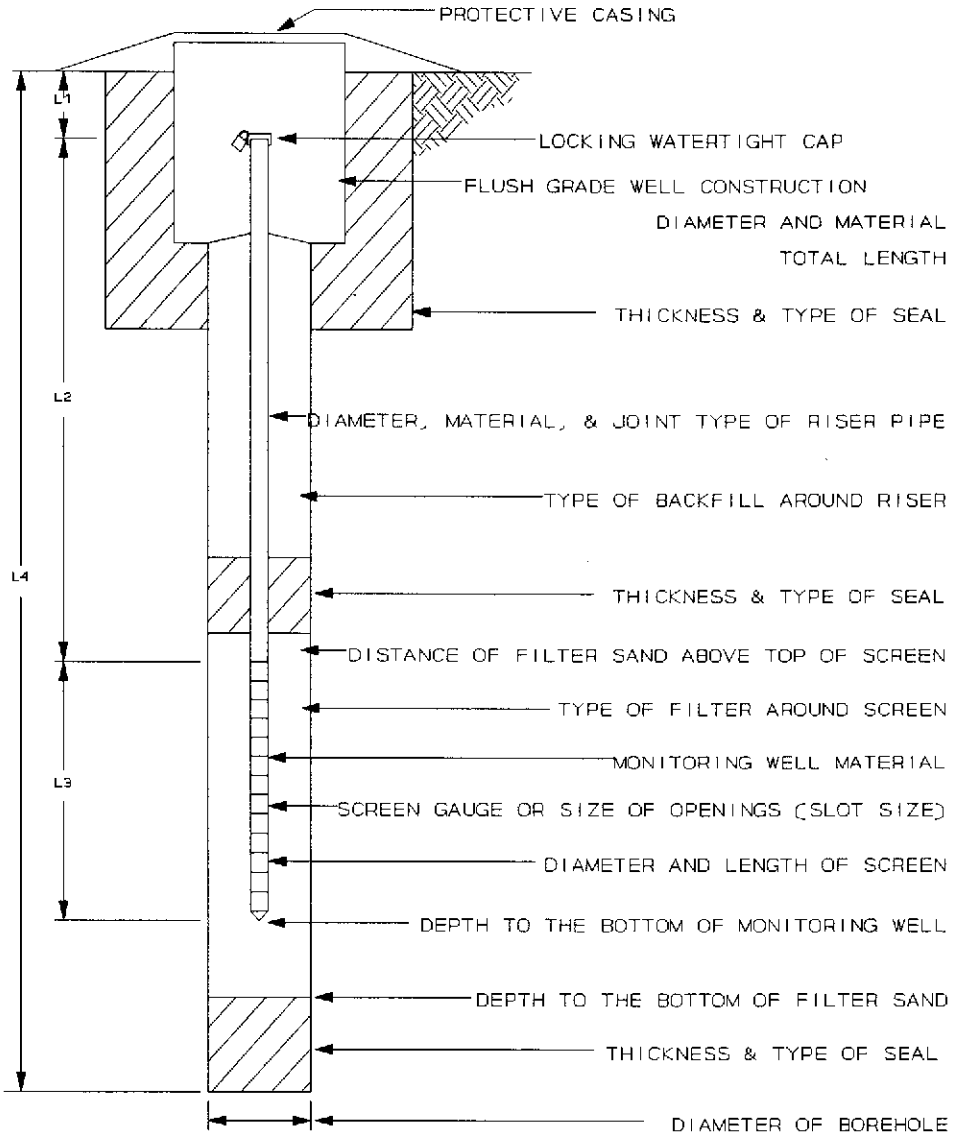
If these conditions are met, the sample will be assigned a unique log number for identification throughout analysis and reporting. The log number will be recorded on the chain-of-custody form and in the legally-required log book maintained by the laboratory in the laboratory. The sample description, date received, client's name, and other relevant information will also be recorded.

PROPOSED MONITORING WELL CONSTRUCTION DETAILS

Project: Exxon Station RAS No. 7-0104
1725 Park Street
Oakland, California

Monitoring Well No. MW-11

Delta No. D094-832



DIAMETER AND MATERIAL	12-inch steel
TOTAL LENGTH	12 inches
THICKNESS & TYPE OF SEAL	12 inches concrete
DIAMETER, MATERIAL, & JOINT TYPE OF RISER PIPE	2-inch SCH 40 PVC, flush threaded
TYPE OF BACKFILL AROUND RISER	Cement grout with 5% bentonite
THICKNESS & TYPE OF SEAL	1 foot bentonite
DISTANCE OF FILTER SAND ABOVE TOP OF SCREEN	1 foot
TYPE OF FILTER AROUND SCREEN	No. 3 Lonestar sand, or equivalent
MONITORING WELL MATERIAL	Schedule 40 PVC
SCREEN GAUGE OR SIZE OF OPENINGS (SLOT SIZE)	0.020 inch
DIAMETER AND LENGTH OF SCREEN	2 inches x 15 feet
DEPTH TO THE BOTTOM OF MONITORING WELL	20 feet
DEPTH TO THE BOTTOM OF FILTER SAND	20 feet
THICKNESS & TYPE OF SEAL	NA
DIAMETER OF BOREHOLE	8 inches

L1 = 0.5 FT
L2 = 14.5 FT
L3 = 15.0 FT
L4 = 20.0 FT

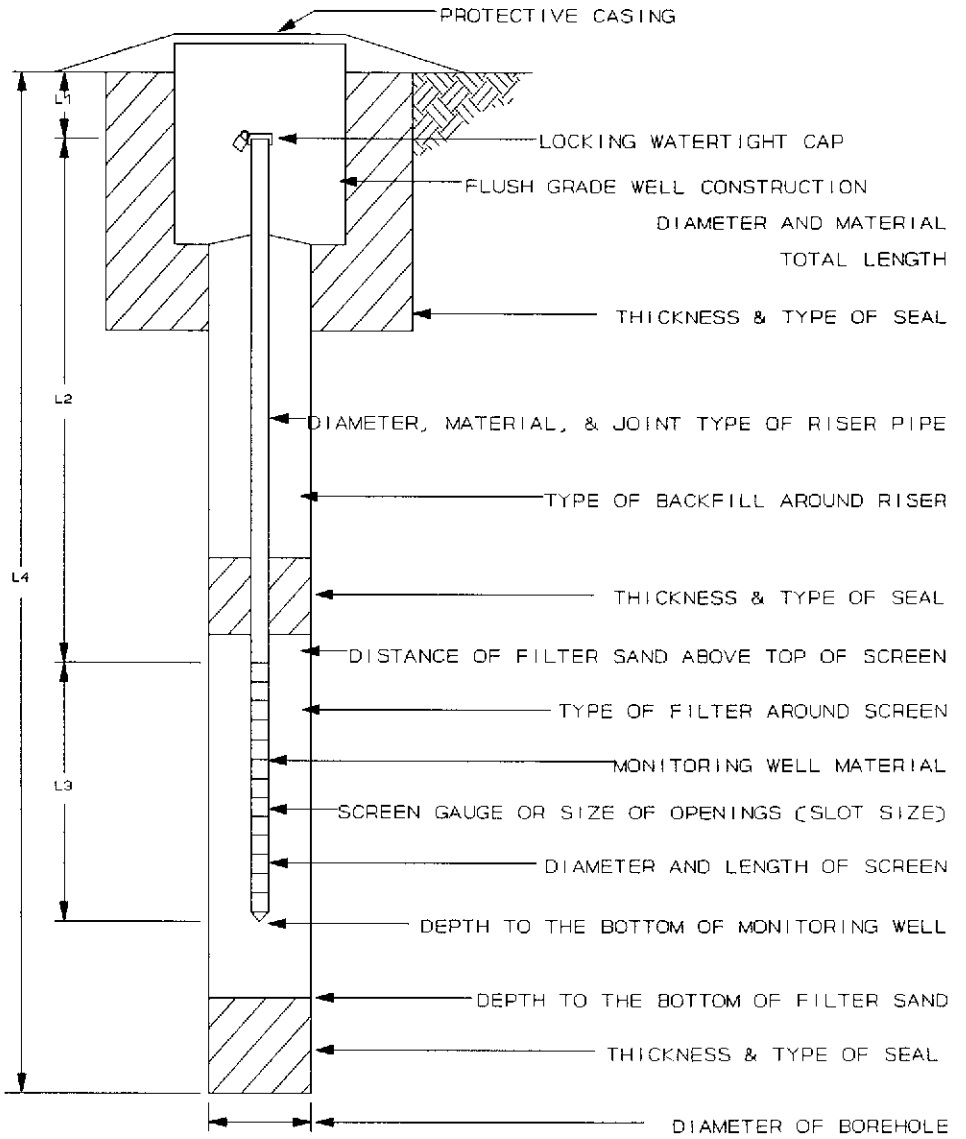
Delta Environmental Consultants, Inc.

PROPOSED MONITORING WELL CONSTRUCTION DETAILS

Project: Exxon Station RAS No. 7-0104
1725 Park Street
Oakland, California

Monitoring Well No. MW-12

Delta No. D094-832



DIAMETER AND MATERIAL	12-inch steel
TOTAL LENGTH	12 inches
THICKNESS & TYPE OF SEAL	12 inches concrete
DIAMETER, MATERIAL, & JOINT TYPE OF RISER PIPE	2-inch SCH 40 PVC, flush threaded
TYPE OF BACKFILL AROUND RISER	Cement grout with 5% bentonite
THICKNESS & TYPE OF SEAL	1 foot bentonite
DISTANCE OF FILTER SAND ABOVE TOP OF SCREEN	1 foot
TYPE OF FILTER AROUND SCREEN	No. 3 Lonestar sand, or equivalent
MONITORING WELL MATERIAL	Schedule 40 PVC
SCREEN GAUGE OR SIZE OF OPENINGS (SLOT SIZE)	0.020 inch
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DEPTH TO THE BOTTOM OF MONITORING WELL	20 feet
DEPTH TO THE BOTTOM OF FILTER SAND	20 feet
THICKNESS & TYPE OF SEAL	NA
DIAMETER OF BOREHOLE	8 inches

L1 = 0.5 FT
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L3 = 15.0 FT
L4 = 20.0 FT

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