DECEMBER 1994 QUARTERLY GROUND WATER MONITORING REPORT FOR THE FORMER ALAMEDA SERVICE STATION A-528 TARGET DUBLIN 7608 AMADOR VALLEY BOULEVARD DUBLIN, CALIFORNIA

March 2, 1995

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INTRODUCTION

This report presents the December 1994 quarterly ground water monitoring results for the former Alameda Service Station A-528, located at 7608 Amador Valley Boulevard in Dublin, California ("the site"). This report was prepared in accordance with McLaren/Hart's quarterly ground water sampling and interim remediation measure plan (McLaren/Hart, 1993a) and followed previously-presented recommendations (McLaren/Hart, 1994). Interim remediation at well MW-2 and sampling from wells MW-1 and MW-3 have been discontinued as recommended by Ms. Eva Chu of the Alameda County Health Care Services Agency, Department of Environmental Health, Hazardous Materials Division in letter StID 3746, dated July 21, 1994.

OBJECTIVES AND SCOPE OF WORK

A site location map is presented as Figure 1 and a site map showing monitoring well locations is included as Figure 2. Quarterly monitoring of site wells is being conducted to monitor lateral extent of petroleum hydrocarbons in shallow ground water beneath the site.

The work associated with the December 1994 quarterly monitoring event included: sampling monitoring wells MW-2, MW-4 and MW-6 for the presence of gasoline-related constituents and collecting water elevations from five monitoring wells (MW-1, MW-2, MW-3, MW-4 and MW-6). Monitoring well MW-5 was inadvertently paved over during Site development activities and was not accessible during December 1994. A second site-wide water elevation sounding was performed on January 24, 1995, which included MW-5.

Ground water Elevations and Flow Directions

Ground water surface elevations were measured on December 21, 1994, prior to sampling (Table 1). These data were used to construct the December 1994 ground water contour map (Figure 3). The inferred ground water flow direction is generally toward the east and is apparently influenced by the presence of more permeable materials in the excavation area, causing a small ground water mound to form. This flow direction is generally consistent with historic ground water flow directions. Based on the observed contour pattern, MW-2 and MW-5 appear to be downgradient while MW-4 is down-to cross-gradient of the former excavation area.

The static depth to ground water ranges from 5.02 to 6.66 feet below ground surface or 334.62 to 335.85 feet above mean sea level. The average hydraulic gradient is approximately 0.011 feet/foot. The December water level measurements indicate that ground water levels in all wells have increased since September 1994 (Table 2). These increases range from 0.24 to 0.34 feet. The average increase was .29 feet. Figure 4 illustrates inferred ground water contours developed using the January 1995 data. As shown in Table 2, ground water levels in all wells increased significantly from December 1994 to January 1995. Flow direction and gradient are also consistent with historic ground water flow.

Ground water Sampling Activities

Ground water samples were collected from MW-2, MW-4 and MW-6 on December 21, 1994. Prior to sampling each well, four casing volumes were purged with a centrifugal pump. Temperature, pH, electric conductivity, and turbidity were measured after each casing volume was removed. After all parameters had stabilized, with the turbidity at or below 6.3 Nephelometric Turbidity Units (NTU), sampling was performed using a disposable bailer.

Sampling Event Data Sheets are enclosed as Appendix I. A slight gasoline odor was noted during purging of MW-2.

Ground water samples were stored in a container filled with ice and delivered to MBT Environmental Laboratories, a state-certified laboratory located in Rancho Cordova, California. A chain-of-custody record was completed during sampling and accompanied each sample shipment to the laboratory. The samples were submitted for analysis by EPA Method 5030 (LUFT) for total petroleum hydrocarbons as gasoline (TPH/G) and for benzene, toluene, ethyl benzene, and xylenes (BTEX) analyses by EPA Method 8020. Trip blanks were included in the shipments to the laboratory to be analyzed for TPH/G and BTEX.

Ground water Analytical Results

Table 3 and Figure 5 present the December 1994 sampling event analytical results.

No chemicals at or above the reporting limits were detected in MW-2 or MW-4. This was the first event in which no chemicals were detected in MW-2.

Ethylbenzene (1.3 ppb) and total xylenes (.67 ppb) were detected in the sample collected from MW-6. These levels are consistent with recent analytical results.

The trip blank sample did not contain any contaminants above the reporting limits. The Analytical Data Sheets and Chain-of-Custody Records for the ground water samples are included as Appendix II.

The DHS Maximum Contaminant Levels (MCLs) for BTEX compounds in drinking water include: 1 ppb benzene; 680 ppb ethyl benzene; and 1,750 ppb total xylenes. The Federal MCL for toluene is 1,000 ppb. There is no state action level for TPH/G.

CONCLUSIONS

The following conclusions are based on data collected to date:

- Free-floating petroleum product was not observed in any of the wells.
- Concentrations of gasoline-related constituents detected in well MW-6 increased slightly from those detected in the September 1994 quarterly.
- Concentrations of gasoline-related constituents were not detected in well MW-2. This represents the first time since sampling began in February 1991 that benzene was not detected in MW-2. However, a slight petroleum odor and PID readings were recorded during purging of this well.
- Concentrations of gasoline-related constituents were not detected in well MW-4.
- Benzene concentrations at MW-6 were less than the reporting level of 0.3 ppb, the fourth consecutive quarter such concentrations have been less than the MCL (1 ppb), demonstrating the effectiveness of the interim remediation previously conducted at this well.
- As shown on Figures 3 and 4, the apparent ground water flow direction at the site is generally to the east, consistent with historic flow directions.
- Ground water elevations increased an average of 0.29 feet from September to December 1994.

Future work at the site consists of:

- Ground water sampling as scheduled in March 1995;
- If concentrations remain at levels below MCLs, consideration for obtaining case closure may be warranted.
  - MW-4 has not contained detectable concentrations of the chemicals of concern for three quarters. If the March results are similar, this well should be removed from the quarterly monitoring program.
  - MW-6 concentrations have been below MCLs for four consecutive quarters, this well should also be considered for removal from the quarterly sampling program.

Not yet.

REFERENCES

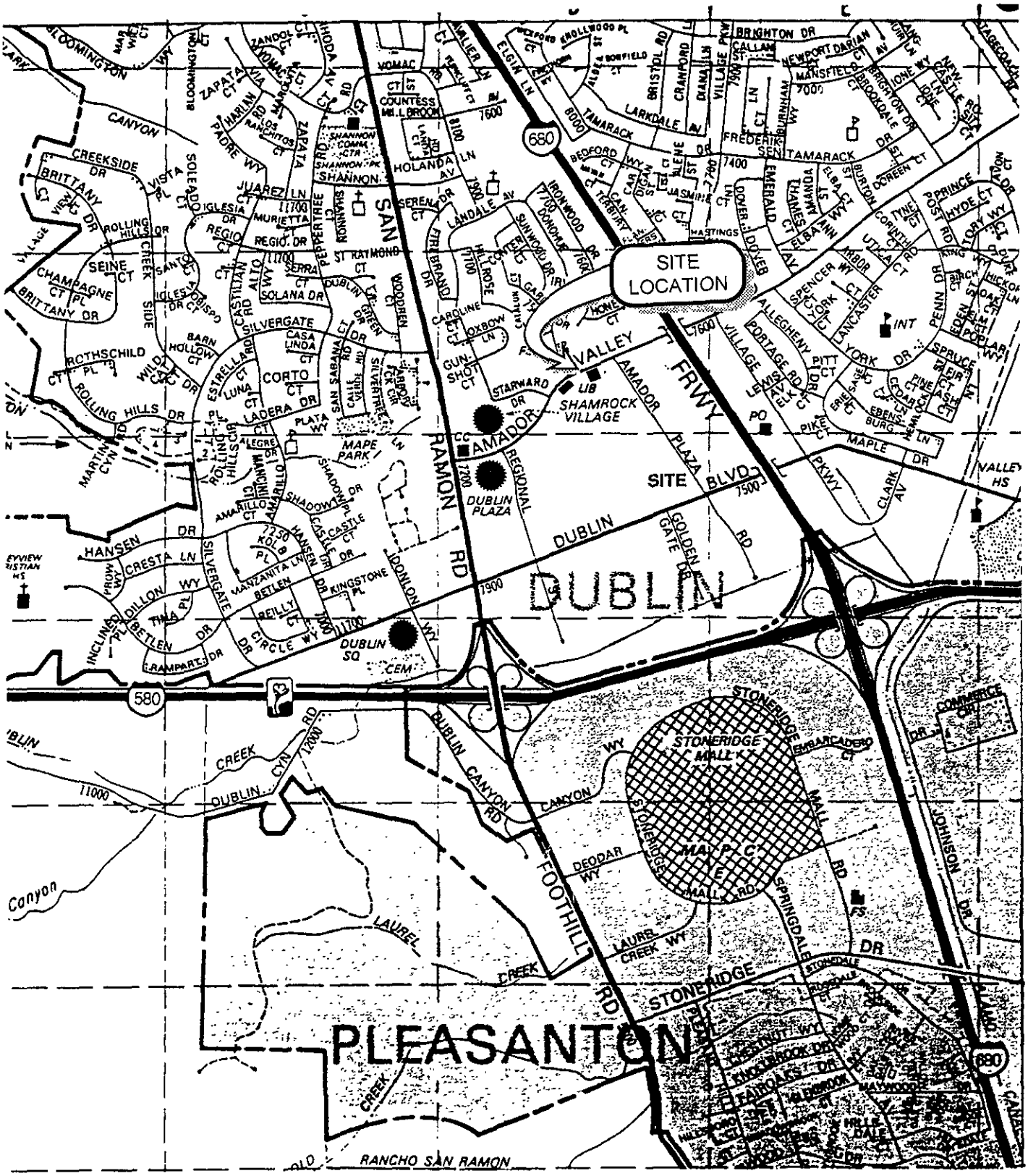
Alameda County Health Care Service Agency, 1992, "Revision of Quarterly Monitoring Program at the former Alameda Service Station A-558, 7608 Amador Valley Boulevard, Dublin", December 18, 1993

McLaren/Hart, 1993a, "Proposal to Conduct Quarterly Ground water Sampling and Interim Remediation at the Target Store T-328 Dublin, California", September 13, 1993

McLaren/Hart, 1994, "September 1994 Quarterly Ground water Monitoring and Interim Remediation Report for the Former Alameda Service Station A-528."

Alameda County Health Care Service Agency, 1994, "QMR at Former Alameda Service Station A-527, 7608 Amador Valley Blvd., Dublin 94568". letter St ID 3746 to McLaren/Hart, July 21, 1994.

FIGURE 1
SITE LOCATION MAP
FORMER ALAMEDA SERVICE STATION
A-578
DUBLIN, CA



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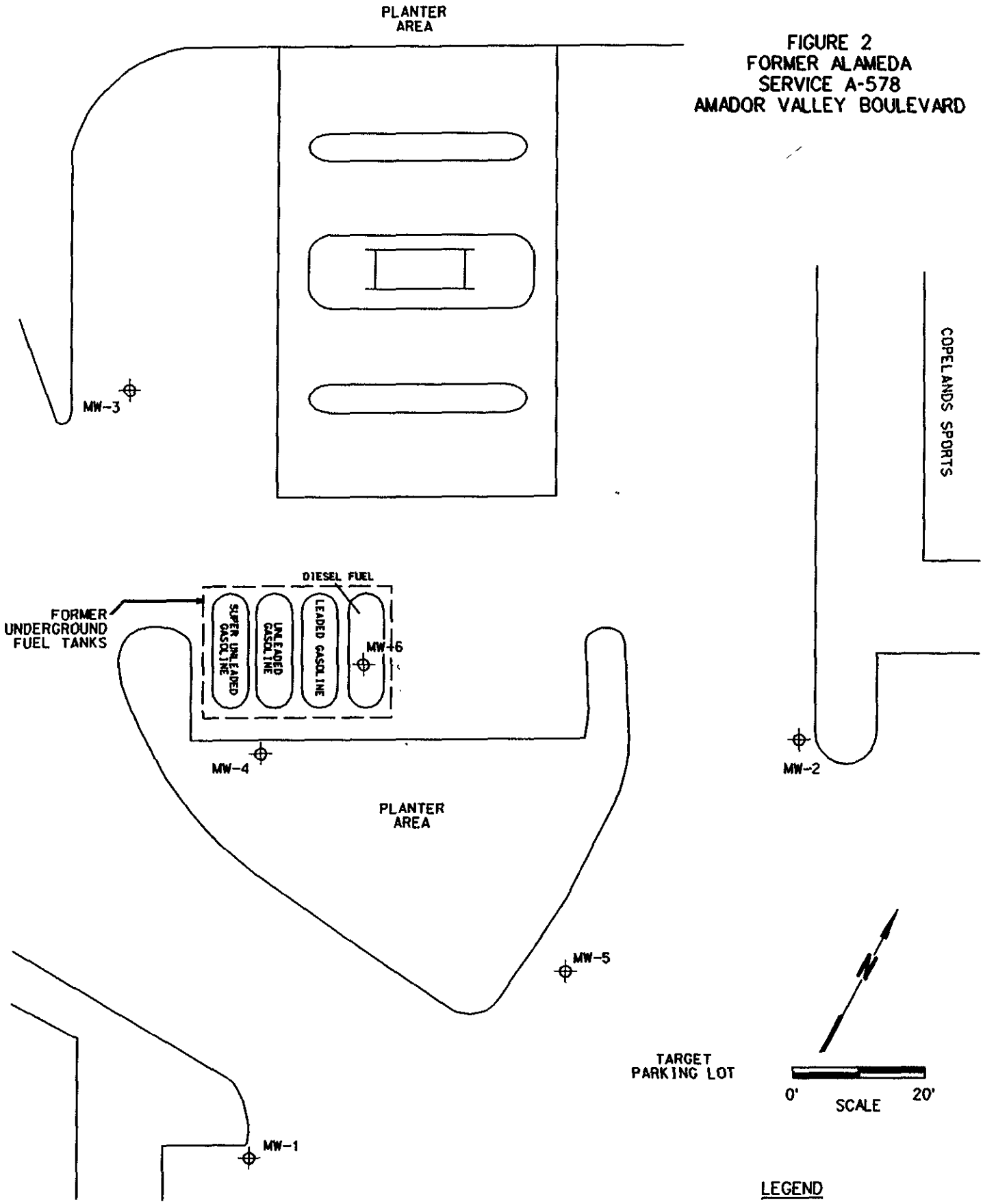

FIGURE 2
FORMER ALAMEDA
SERVICE A-578
AMADOR VALLEY BOULEVARD

McLaren Hart

TD4940/02.dgn: Rev: 02-07-95

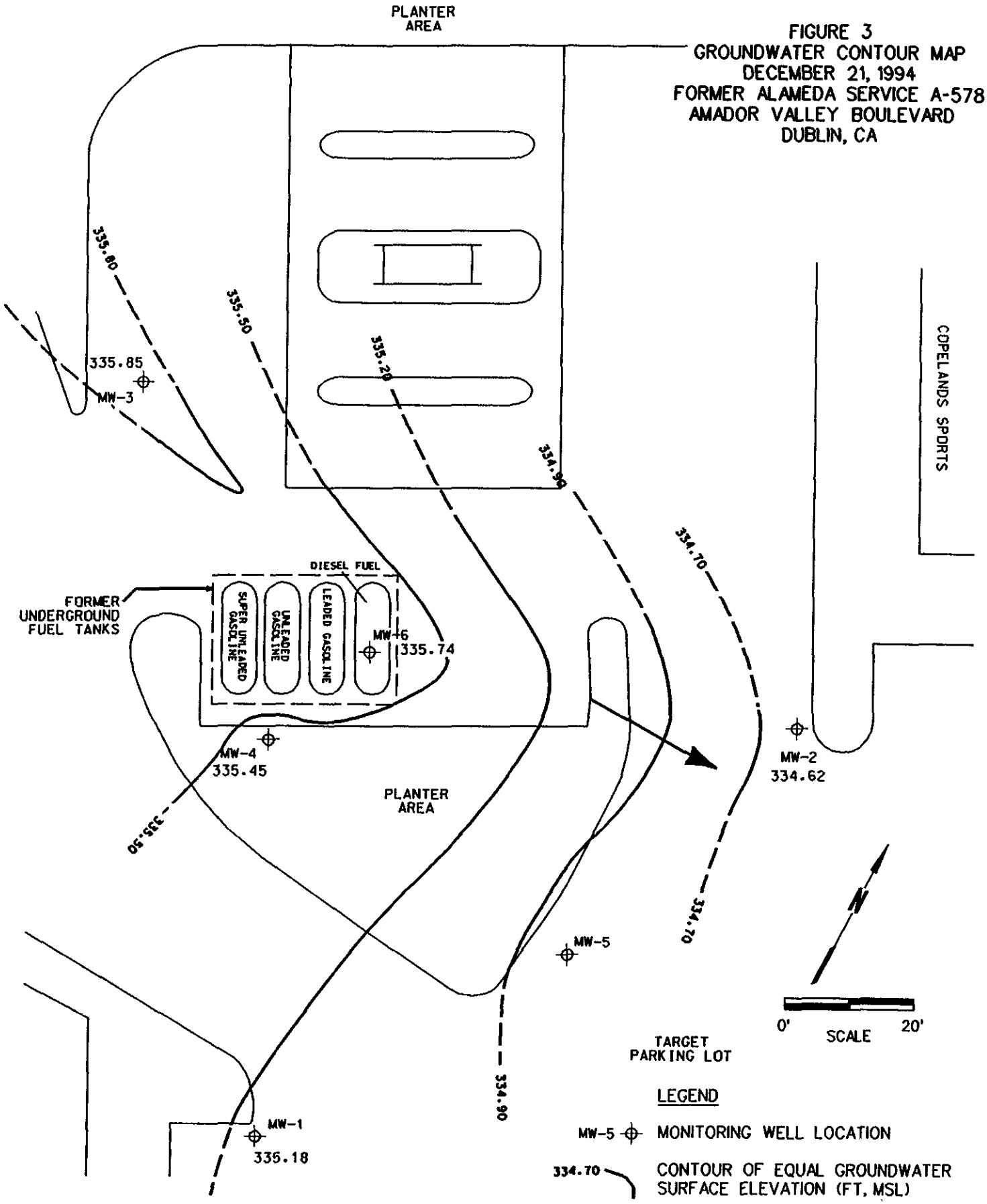

FIGURE 3
GROUNDWATER CONTOUR MAP
DECEMBER 21, 1994
FORMER ALAMEDA SERVICE A-578
AMADOR VALLEY BOULEVARD
DUBLIN, CA

McLaren Hart

TD494Q/03.dgn; Rev: 03-02-95

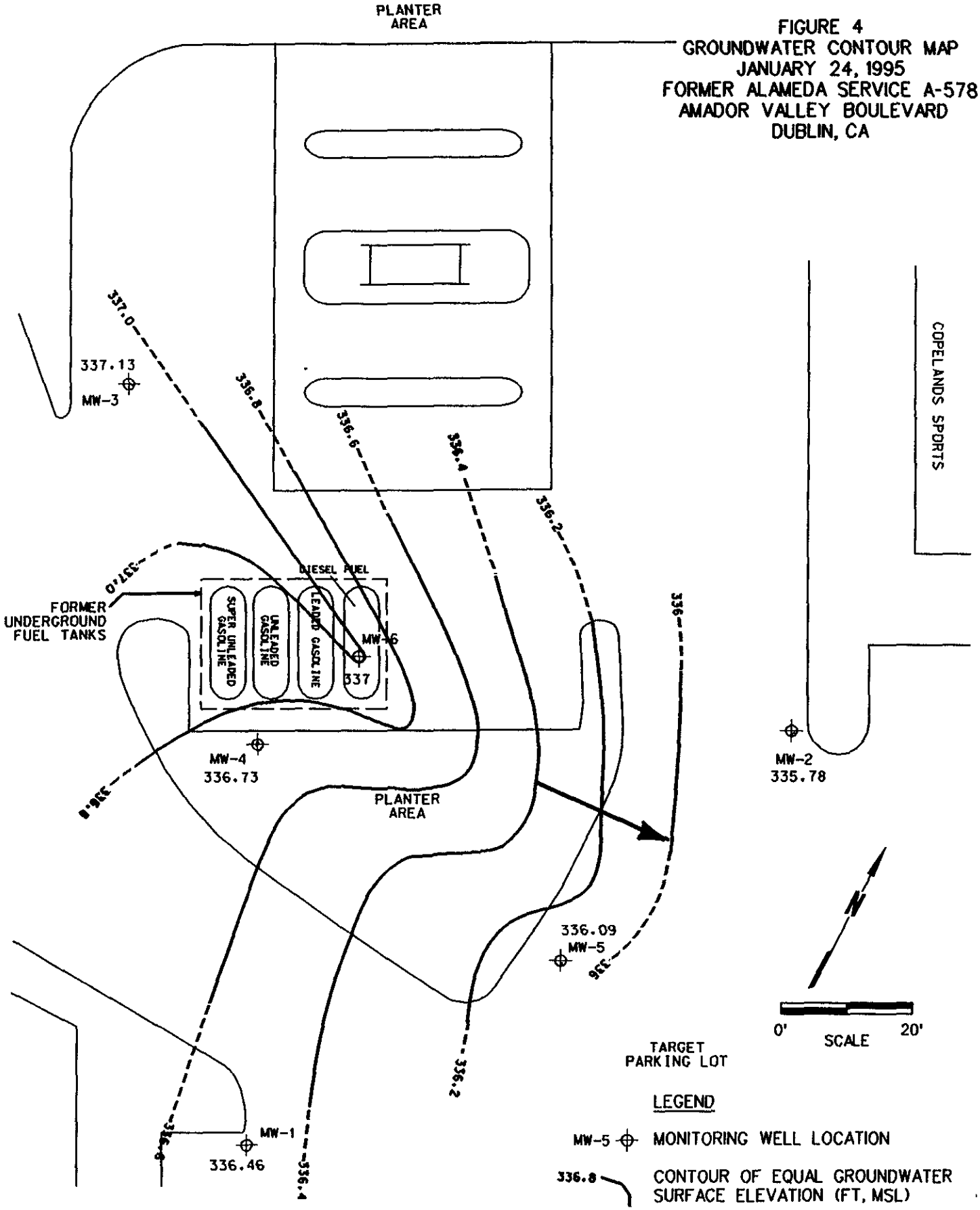

FIGURE 4
GROUNDWATER CONTOUR MAP
JANUARY 24, 1995
FORMER ALAMEDA SERVICE A-578
AMADOR VALLEY BOULEVARD
DUBLIN, CA

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T0494Q/04.DGN 03-02-95

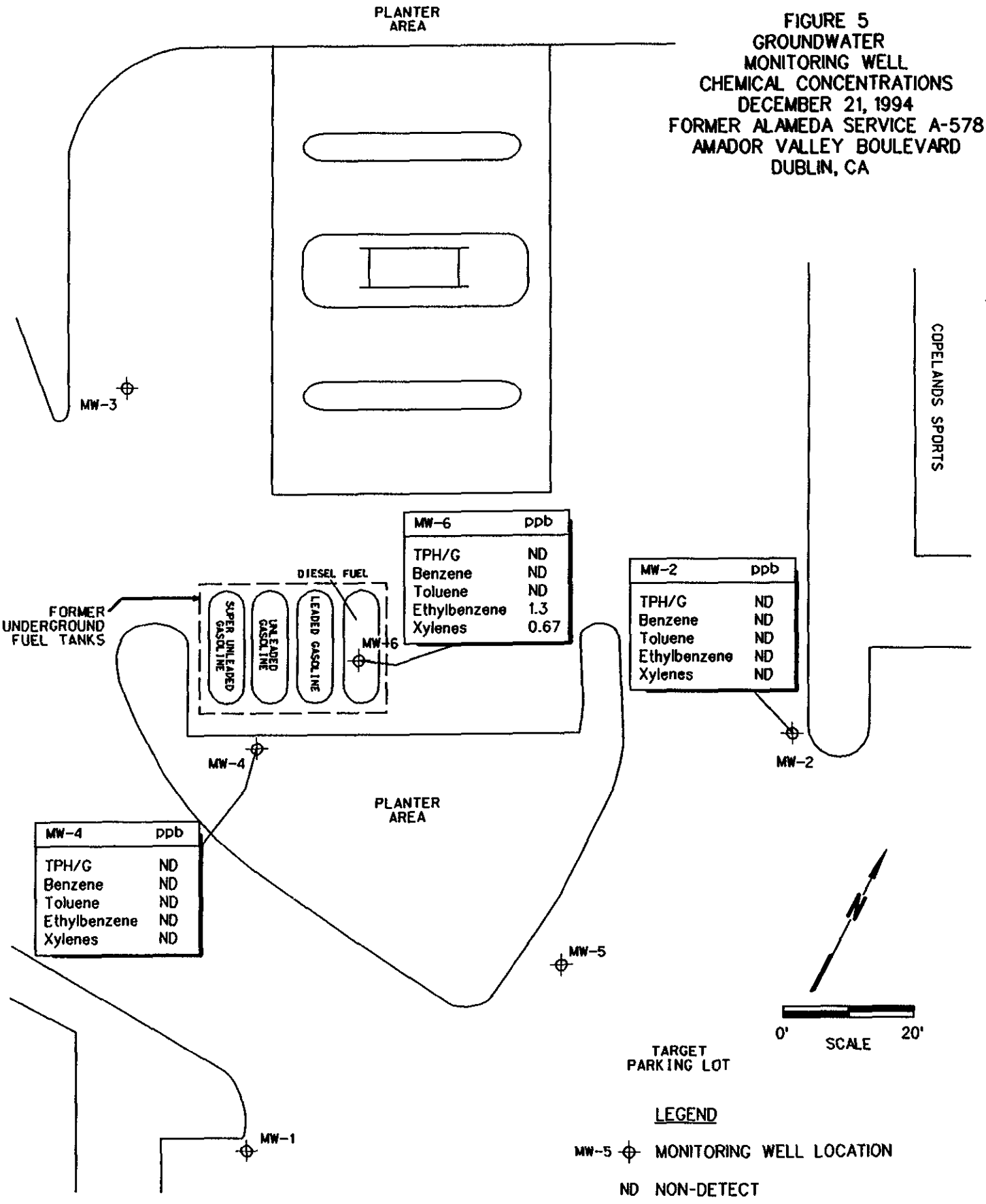


FIGURE 5
GROUNDWATER
MONITORING WELL
CHEMICAL CONCENTRATIONS
DECEMBER 21, 1994
FORMER ALAMEDA SERVICE A-578
AMADOR VALLEY BOULEVARD
DUBLIN, CA

LEGEND

MW-5 ⊕ MONITORING WELL LOCATION

ND NON-DETECT

ppb PARTS PER BILLION

TPH/G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

McLaren Hart

TD494Q/05.dgn: Rev: 02-07-95

TABLE 1

WELL CONSTRUCTION DETAILS AND GROUNDWATER SURFACE ELEVATIONS
FORMER ALAMEDA SERVICE STATION, A-578
DUBLIN, CALIFORNIA

WELL DESIGNATION	SCREENED INTERVAL (feet below grade)	GROUND SURFACE ELEVATION (MSL)*	SCREENED INTERVAL (MSL)	TOP OF CASING ELEVATION (MSL)	STATIC WATER LEVEL (feet below TOC)		GROUND WATER ELEVATION (MSL)	
					12/21/94	1/24/95	12/21/94	1/24/95
MW-1	5-20	340.30	320.30 - 335.30	340.20	5.02	3.74	335.18	336.46
MW-2	5-20	340.52	320.52 - 335.52	340.27	5.65	4.49	334.62	335.78
MW-3	5-20	341.67	321.67 - 336.67	341.00	5.15	3.87	335.85	337.13
MW-4	5-20	342.31	322.31 - 337.31	342.11	6.66	5.38	335.45	336.73
MW-5	5-20	340.52	320.52 - 335.52	340.09	Inaccessible	4.00	NA	336.09
MW-6	4.5 - 14.5	341.13	326.63 - 336.63	340.81	5.07	3.81	335.74	337

*Feet above mean sea level

TABLE 2

SUMMARY OF Ground water ELEVATION DATA
FORMER ALAMEDA SERVICE STATION A-578
DUBLIN, CALIFORNIA

WELL I.D.	TOP OF CASING ELEVATION (MSL)*	DATE MEASURED	DEPTH TO WATER (ft)	WATER ELEVATIONS (MSL)	CHANGE SINCE LAST READING (ft)
MW-1	340.20	02/28/91	5.00	335.20	
		06/14/91	5.53	334.67	-0.59
		09/26/91	5.97	334.23	-0.38
		12/30/91	5.50	334.70	0.47
		03/26/92	4.65	335.55	0.85
		06/23/92	4.92	335.28	-0.27
		09/24/92	5.10	335.10	-0.18
		12/29/92	4.89	335.31	0.21
		03/24/93	3.57	336.63	1.32
		06/28/93	3.79	336.41	-0.22
		09/28/93	4.24	335.96	-0.45
		12/16/93	4.72	335.48	-0.48
		03/28/94	4.90	335.30	-0.18
		06/16/94	4.93	335.27	-0.03
		09/30/94	5.32	334.88	-0.39
		12/21/94	5.02	335.18	0.30
		01/24/95	3.74	336.78	1.6
MW-2	340.27	02/28/91	5.46	334.81	
		06/14/91	5.90	334.37	-0.44
		09/26/91	6.54	333.73	-0.64
		12/30/91	5.83	334.44	0.71
		03/27/92	5.35	334.92	0.48
		06/23/92	5.69	334.58	-0.34
		09/24/92	5.70	334.57	-0.01
		12/29/92	5.52	334.75	0.18
		03/24/93	4.48	335.79	1.04
		06/28/93	4.67	335.60	-0.19
		09/28/93	5.01	335.26	-0.34
		12/16/93	5.40	334.87	-0.39
		03/28/94	5.58	334.69	-0.18
		06/16/94	5.59	334.68	-0.01
		09/30/94	5.89	334.38	-0.30
		12/21/94	5.65	334.62	0.24
		01/24/95	4.49	335.78	1.16
MW-3	341.00	02/28/91	5.61	335.39	
		06/14/91	5.40	335.60	0.21
		09/26/91	6.29	334.71	-0.89
		12/30/91	5.75	335.25	0.54
		03/26/92	4.58	336.42	1.17
		06/23/92	5.27	335.73	-0.69
		09/24/92	5.47	335.53	-0.20
		12/29/92	5.08	335.92	0.39
		03/24/93	3.83	337.17	1.25
		06/28/93	4.02	336.98	-0.19
		09/28/93	4.42	336.58	-0.40
		12/16/93	4.97	336.03	-0.55
		03/28/94	4.99	336.01	-0.02
		06/16/94	5.06	335.94	-0.07
		09/30/94	5.45	335.55	-0.39
		12/21/94	5.15	335.85	0.30
		01/24/95	3.87	337.13	1.28

TABLE 2

SUMMARY OF Ground water ELEVATION DATA
FORMER ALAMEDA SERVICE STATION A-578
DUBLIN, CALIFORNIA
(continued)

WELL I.D.	TOP OF CASING ELEVATION (MSL)*	DATE MEASURED	DEPTH TO WATER (ft)	WATER ELEVATIONS (MSL)	CHANGE SINCE LAST READING (ft)
MW-4	342.11	02/28/91	7.01	335.10	
		06/14/91	7.01	335.10	0.00
		09/26/91	7.81	334.30	-0.80
		12/30/91	7.17	334.94	0.64
		03/27/92	6.44	335.67	0.73
		06/23/92	6.70	335.41	-0.26
		09/24/92	6.84	335.27	-0.14
		12/29/92	6.59	335.52	0.25
		03/24/93	5.38	336.73	1.21
		06/28/93	5.52	336.59	-0.14
		09/28/93	5.89	336.22	-0.37
		12/16/93	6.51	335.60	-0.62
		03/28/94	6.54	335.57	-0.03
		06/16/94	6.58	335.53	-0.04
		09/30/94	6.92	335.19	-0.34
		12/21/94	6.66	335.45	0.26
		01/24/95	5.38	336.73	1.28
MW-5	340.09	06/14/91	5.81	334.28	
		09/26/91	5.92	334.17	-0.11
		12/30/91	5.52	334.57	0.40
		03/26/92	4.80	335.29	0.72
		06/23/92	5.23	334.86	-0.43
		09/24/92	5.07	335.02	0.16
		12/29/92	5.04	335.05	0.03
		03/24/93	3.99	336.10	1.05
		06/28/93	4.11	335.98	-0.12
		09/28/93	4.50	335.59	-0.39
		12/16/93	4.99	335.10	-0.49
		03/28/94	5.15	334.94	-0.16
		06/16/94	5.15	334.94	0.00
		09/30/94	5.49	334.60	-0.34
		01/24/95	4.00	336.09	1.49
MW-6	340.81	09/26/91	6.45	334.36	
		12/30/91	5.71	335.10	0.74
		03/27/92	5.03	335.78	0.68
		06/23/92	5.38	335.43	-0.35
		09/24/92	5.57	335.24	-0.19
		12/29/92	5.22	335.59	0.35
		03/24/93	3.86	336.95	1.36
		06/28/93	3.95	336.86	-0.09
		09/28/93	4.30	336.51	-0.35
		12/16/93	5.05	335.76	-0.75
		03/28/94	4.82	335.99	0.23
		06/16/94	4.93	335.88	-0.11
		09/30/94	5.41	335.40	-0.48
		12/21/94	5.07	335.74	0.34
		01/24/95	3.81	337	1.26

* MSL = Mean Sea Level

TABLE 3

ANALYTICAL RESULTS OF Ground water SAMPLES (ppb)
FORMER ALAMEDA SERVICE STATION, A-578
DUBLIN, CALIFORNIA

WELL DESIGNATION	DATE	TPH/G	TPH/D	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
MW-1	2/91	<50	<500	<0.5	<0.5	<0.5	<0.5
	6/91	<50	—	<0.5	<0.5	<0.5	<0.5
	9/91	<50	—	<0.5	<0.5	<0.5	<0.5
	12/91	<50	—	<0.5	<0.5	<0.5	<0.5
Discont.	3/92	<50	—	<0.3	<0.3	<0.3	<0.3
	6/92	<50	—	<0.3	<0.3	<0.3	<0.3
	9/92	<50	—	<0.3	<0.3	<0.3	<0.3
	3/94	<50	—	<0.3	<0.3	<0.3	<0.3
MW-2	2/91	50	<500	2.0	0.8	1.1	5.8
	6/91	51	—	6.6	<0.5	1.1	1.33
	9/91	<50	—	5.0	<0.5	0.64	<0.5
	12/91	<50	—	6.1	<0.5	<0.5	<0.5
	3/92	<50	—	3.6	<0.5	<0.5	<0.5
	6/92	<50	—	9.5	<0.3	<0.3	<0.3
	9/92	<50	—	1.3	<0.3	<0.3	<0.3
	12/92	150	—	35[b]	0.81	4.0	3.2
BTE	3/93	<50	—	3.2	<0.3	<0.3	0.86
	6/93	<50	—	17.0[b]	<0.3	0.93	0.41
	9/93	81	—	5.0[b]	<0.3	3.8	4.06
	12/93	<50	—	0.53	<0.3	<0.3	<0.3
	3/94	67	—	9.2	0.47	2.5	4.40
	6/94	95	—	14.0	<0.5	4.1	4.90
	9/94	130	—	42.0[b]	<0.3	2.4	<0.3
	12/94	<50	—	<0.3	<0.3	<0.3	<0.3
MW-3	2/91	<50	<500	<0.5	<0.5	<0.5	<0.5
	6/91	<50	—	<0.5	<0.5	<0.5	<0.5
	9/91	<50	—	<0.5	<0.5	<0.5	<0.5
	12/91	<50	—	<0.5	<0.5	<0.5	<0.5
	3/92	<50	—	<0.3	<0.3	<0.3	<0.3
Absent.	6/92	<50	—	<0.3	<0.3	<0.3	<0.3
	9/92	<50	—	<0.3	<0.3	<0.3	<0.3
	6/94	<50	—	<0.5	<0.5	<0.5	<0.5

TABLE 3

ANALYTICAL RESULTS OF Ground water SAMPLES (ppb)
FORMER ALAMEDA SERVICE STATION, A-578
DUBLIN, CALIFORNIA
(continued)

WELL DESIGNATION	DATE	TPH/G	TPH/D	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
MW-4	2/91	6,000	<500	680	<20	160	250
	6/91	6,100	—	680	<25	150	<25
	9/91	<50	—	100	<0.5	45	8.1
	12/91	180	—	6.4	<1.0	16	25.8
	3/92	560	—	120	6.0	5.0	<0.5
	6/92	<50	—	<0.3	<0.3	<0.3	<0.3
	9/92	<50	—	<0.3	<0.3	<0.3	<0.3
	12/92	<50	—	0.92	<0.3	<0.3	<0.3
	3/93	<50	—	4.3	<0.3	0.98	<0.3
OR	6/93	<50	—	2.1	<0.3	<0.3	0.31
	9/93	<50	—	2.8	<0.3	<0.3	<0.3
	12/93	<50	—	1.0	<0.3	<0.3	<0.3
	3/94	460[b]	—	3.2[b]	<3.0	45[b]	19[b]
	6/94	<500[c]	—	<5[c]	<5[c]	<5[c]	<5[c]
	9/94	<500[c]	—	<3[c]	<3[c]	<3[c]	<3[c]
	12/94	<50	—	<.3	<.3	<.3	<.3
MW-5	6/91	<50	—	<0.5	<0.5	<0.5	<0.5
	9/91	<50	—	<0.5	<0.5	<0.5	<0.5
	12/91	<50	—	<0.5	<0.5	<0.5	<0.5
	3/92	<50	—	<0.3	<0.3	<0.3	<0.3
	6/92	<50	—	<0.3	<0.3	<0.3	<0.3
	9/92	<50	—	<0.3	<0.3	<0.3	<0.3
	12/92	<50	—	<0.3	<0.3	<0.3	<0.3
	3/93	<50	—	<0.3	<0.3	<0.3	<0.3
~~discont~~	6/93	<50	—	<0.3	<0.3	<0.3	<0.3
annually	9/93	<50	—	<0.3	<0.3	<0.3	<0.3
in March	12/93	<50	—	<0.3	<0.3	<0.3	<0.3
	3/94	<50	—	<0.3	<0.3	<0.3	<0.3
	6/94	<50	—	1.5	<0.5	<0.5	<0.5
	9/94	<50	—	<0.3	<0.3	<0.3	<0.3

TABLE 3

ANALYTICAL RESULTS OF Ground water SAMPLES (ppb)
FORMER ALAMEDA SERVICE STATION, A-578
DUBLIN, CALIFORNIA
(continued)

WELL DESIGNATION	DATE	TPH/G	TPH/D	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
MW-6	9/91	2,300	—	760	11	360	236
	10/91	1,900	—	230	<5	140	12.1
	12/91	2,500	<500	360	<50[a]	260	<50[a]
	3/92	2,600	<500	400	<50[a]	280	<50[a]
	6/92	1,500	—	220	<3[b]	190	<3[b]
	9/92	<480[b]	—	28	<3[b]	120	<3[b]
	12/92	250	—	16[b]	<0.3	33[b]	16.4
	3/93	<50	<500	<0.3	<0.3	0.37	0.88
	6/93	<50	—	<0.3	<0.3	0.72	1.48
	9/93	230	—	0.46	<0.3	6.4	12.6
	12/93	<50	—	2.5	<0.3	2.6	3.5
	3/94	45	—	0.34	<0.3	2.2	2.2
	6/94	120	—	0.79	<0.5	5.9	8.7
	9/94	<50	—	<0.3	<0.3	0.47	0.43
	12/94	<50	—	<0.3	<0.3	1.3	0.67

QTR

a = The analysis was run at a 1:100 dilution to bring target analytes within linear working range of the GC.
b = The analysis was run at a 1:10 dilution to bring target analytes within linear working range of the GC.
c = The analysis was run at a 1:10 dilution due to the presence of non-target analyte interferences.
— = Not analyzed.

APPENDIX I

SAMPLING EVENT DATA SHEETS

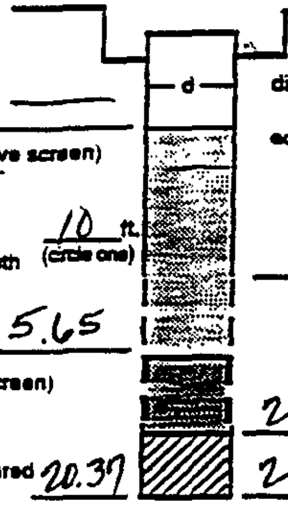
McLaren Hart SAMPLING EVENT DATA SHEET
(fill out completely)

WELL OR LOCATION *MW-2*

PROJECT *TARGET, DUBLIN* EVENT *Quarterly* SAMPLER *D. WATTS* DATE *12/21/94*

Well / Hydrologic statistics

Well type *MW* (MW, EW, etc.)



diameter *4"*

equals *.65* gal/ft. casing

SWL (if above screen)

packer / intake / bailer depth (circle one) *10* ft.

5 TOP

SWL (if in screen) *5.65*

20 BOP

measured T.D. *20.37*

20 T.D. (as built)

Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	*1312*	*1 GPM*	
	1322		*6.93*
	1332		*8.61*
	1342		*8.70*
	1352		*8.81*
Stop	*1353*		*8.81*
Sampled	*1357*		*7.05*
(Final IWL)	*1402*		*5.77*

Purge calculation

.65 gal/ft. · *14.72* ft. = *9.75* gals x ~~3~~ *4* = *39* gals.

SWL to BOP or packer to BOP — one volume — purge volume-3 casings

Head purge calculation (Airlift only)

____ gal/ft. · ____ ft. = ____ gals.

packer to SWL

Equipment Used / Sampling Method / Description of Event:

CENTRIFUGAL Pump USED to PURGE.
DISPOSABLE BAILER USED to SAMPLE.

GROUNDWATER HAS SLIGHT PETROLEUM ODOR.

PID READINGS TAKEN AT SOURCE.

Additional comments:
USED MEASURED T.D. FOR PURGE Calculation.

50% RECOVERY: 13.01
80% RECOVERY: 8.59 SAMPLE TURBIDITY: 1.05

Actual gallons purged *41*

Actual volumes purged *4.2*

Well yield ⊕ (see below) *HY/MY*

COC # *11324*

Sample I.D.	Analysis	Lab
263051-54	*TPH-G (4-16) BTEX (8020)*	*MBT*

	Gallons purged *	TEMP °C / °F (circle one)	EC (us / cm)	PH	TURBIDITY (NTU)	PID (PPM)	
1.	*10*	*61.5*	*1380*	*6.81*	*1.88*	*70.1 (init.)*	
2.	*20*	*62.9*	*1400*	*6.86*	*0.99*	*0.0*	
3.	*30*	*64.0*	*1460*	*6.84*	*0.86*		
4.	*40*	*64.7*	*1480*	*6.87*	*0.75*	*39.2 (1355)*	
5.							

* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop

MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.

VLY - Minimal recharge - unable to purge 3 volumes.

SAMPLING EVENT DATA SHEET
(fill out completely)

McLaren

WELL OR LOCATION MW-4

PROJECT TARGET, DUBLIN EVENT QUARTERLY SAMPLER D. WATTS DATE 12/21/94

Well / Hydrologic statistics

Well type MW (MW, EW, etc.)

diameter 4"

equals .65 gal/ft. casing

SWL (if above screen)

packer / intake / bailer depth (circle one) 11 ft.

5 TOP

SWL 6.66 (if in screen)

20 BOP

measured T.D. 19.83

20 T.D. (as built)

Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1047	1 GPM	
	1056		9.36
	1106		9.58
	1115		9.71
	1124		9.75
Stop	1125		9.75
Sampled	1135		6.86
(Final IWL)	1144		6.92

Purge calculation

.65 gal/ft. · 13.34 ft. = 8.75 gals x 4 = 35 gals.

SWL to BOP or packer to BOP; one volume; purge volume - 3 casings

Head purge calculation (Airlift only)

___ gal/ft. · ___ ft. = ___ gals. packer to SWL

Equipment Used / Sampling Method / Description of Event:

CENTRIFUGAL PUMP USED TO PURGE.
DISPOSABLE BAILER USED TO SAMPLE.

PID READINGS TAKEN AT SOURCE.

Actual gallons purged 38

Actual volumes purged 4.3

Well yield (see below) MY

COC # 11324

Sample I.D.	Analysis	Lab
263137-40 (TD)	TPH/G / BTEX (LUFT / 8020)	MBT
263141-44	↓	↓

Additional comments:

USED DESIGN T.D. FOR PURGE CALCULATION.

50% RECOVERY: 13.31
80% RECOVERY: 9.32 SAMPLE TURBIDITY: 4.91

	Gallons purged *	TEMP °C / °F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)	PID (PPM)	
1.	9	61.0	1110	6.82	7.83	0.0 (INIT.)	
2.	18	63.7	1020	6.74	3.61	0.0	
3.	27	63.9	930	6.91	1.87		
4.	36	63.5	890	7.03	2.25	0.0 (1140)	
5.							

* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop

MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.

VLY - Minimal recharge - unable to purge 3 volumes.

McLaren Hart

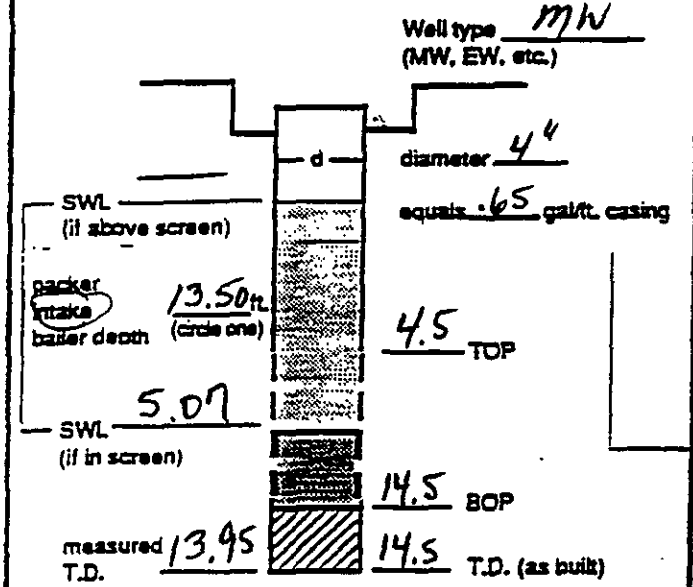
SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-6

PROJECT TARGET, DUBLIN EVENT Quarterly SAMPLER D. WATTS DATE 12/21/94

Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1152	.6 GPM	
	1202		7.73
	1212		9.32
	1222		11.31
	1234		13.25
Stop	1235		13.25
Sampled	1257		6.70
(Final IWL)	1303		5.86

Purge calculation

.65 gal/ft. * 9.43 ft. = 6.2 gals x 4 = 25 gals.

SWL to BOP or packer to BOP — one volume — purge volume-3 casings

Head purge calculation (Airlift only)

gal/ft. * ft. = gals.

packer to SWL

Equipment Used / Sampling Method / Description of Event:
CENTRIFUGAL PUMP USED TO PURGE.
DISPOSABLE BAILER USED TO SAMPLE.

PID READINGS TAKEN AT SOURCE.

Actual gallons purged 26

Actual volumes purged 4.2

Well yield ⊕ (see below) MY

COC # 11324

Sample I.D.	Analysis	Lab
263145-48	TPHG (8015) BTEX (8020)	MBT

Additional comments:
USED DESIGN T.D. FOR PURGE CALCULATION.

50% RECOVERY: 9.78

80% RECOVERY: 6.95 Sample Turbidity: 6.64

Gallons purged *	TEMP °C / (°F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)	PID (ppm)	
1. 6	58.6	740	6.87	42.0	0.0 (INIT.)	
2. 12	58.3	760	6.72	36.5	2.6	
3. 18	56.7	740	6.87	9.52		
4. 25	57.4	770	6.81	6.22	8.0 (1240)	
5.						

* Take measurement at approximately each casing volume purged.

⊕ HY- Minimal W.L. drop

MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.

VLY - Minimal recharge - unable to purge 3 volumes.

APPENDIX II

ANALYTICAL DATA SHEETS
AND
CHAIN-OF-CUSTODY RECORDS

MBT Environmental
Laboratories

3083 Gold Canal Drive
Rancho Cordova
CA 95670
Phone 916/852-6600
Fax 916/852-7292

Date: January 4, 1995
LP #: 10885

Brad Wright
McLaren/Hart Environmental Engineering
1135 Atlantic Avenue
Alameda, CA 94501

Dear Mr. Wright:

Enclosed are the laboratory results for the four samples submitted to MBT Environmental Laboratories on December 22, 1994, for the project *Target Dublin*.

The analysis requested is:

EPA 8020 (BTEX) and TPH/G (4 - Water)

The report consists of the following sections:

1. Cover Page
2. Copy of Chain-of-Custody
3. Quality Control Report
4. Analytical Results

Unless otherwise instructed by you, samples will be disposed of two weeks from the date of this letter.

Thank you for choosing MBT Environmental Laboratories. We are looking forward to serving you in the future. Should you have any questions concerning this analytical report or the analytical methods employed, please do not hesitate to call.

Sincerely,

Shakoora Azimi
Laboratory Director, Principal Scientist

ANALYTICAL REPORT

LABORATORY PROJECT (LP) NUMBER 10885

TARGET DUBLIN

The analyses performed by MBT Environmental Laboratories in this report comply with the requirements under the following certification/approval:

✓	CALIFORNIA:	Hazardous Waste, #1417 Waste Water, # 1417 Drinking Water, #1417	OKLAHOMA:	Hazardous Waste, #9318 Waste Water, #9318
	CONNECTICUT:	Waste Water, #PH0799	TENNESSEE:	Underground Storage Tank
	FLORIDA:	Environmental Water, #E87298	UTAH:	Hazardous Waste, #E-165 Waste Water, #E-165 Drinking Water, #E-165
	KANSAS:	Hazardous Waste, #E-1167 Waste Water, #E-192 Drinking Water, #E-192	WASHINGTON:	Hazardous Waste, #C048
	NEW HAMPSHIRE:	Waste Water, #253193-A	WISCONSIN:	Hazardous Waste, #999940920 Waste Water, #999940920
	NEW JERSEY:	Waste Water, #44818	USACOE:	Hazardous Waste Waste Water
	NEW YORK:	Hazardous Waste, #11241 Waste Water, #11241 CLP, #11241	AFCEE	

(CN10885)

MBT Environmental Laboratories
3083 Gold Canal Drive
Rancho Cordova
CA 95670
Phone 916/852-6600
Fax 916/852-7292

CHAIN OF CUSTODY RECORD 11524

SEE SIDE 2 FOR COMPLETE INSTRUCTIONS

Ship To: MBT
Address: 3083 GOLD CANAL DR. RANCHO CORDOVA, CA 95670

Project Name: TARGET, DUBLIN
Project Number: 04.0122637.001.001
Project Location: (State) CA

FOR LABORATORY USE ONLY
Laboratory Project #: 10885
Storage Refrigerator ID: 1
Storage Freezer ID:

Sampler Name: D. WATTS	Signature: D Watts		PPE Worn in Field: D	
Relinquished By: D Watts	Date/Time: 12/21/94 1700	Received By or Method of Shipment/Shipment I.D.: EXPRESS-IT	Date/Time: 12/21/94 1700	
Relinquished By: EXPRESS IT	Date/Time:	Received By or Method of Shipment/Shipment I.D.: [illegible]	Date/Time: 12/22/94 0875	
Relinquished By:	Date/Time:	Received By or Method of Shipment/Shipment I.D.	Date/Time	

Sample Disposal (check one)
- [X] Laboratory Standard
- [ ] Other

Level of QC (see Side 2): [X] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6A [ ] 6B [ ] 6C [ ] 6D [ ] 6E [ ] 6F [ ] 7 [ ] 8

Write in Analysis Method →

SAMPLE INFORMATION

ANALYSES REQUESTED

FOR LABORATORY USE ONLY Lab ID	Sample ID Number	Date	Time	Description: Locator	Description: Depth	Container(s): #	Container(s): Type	Matrix Type	Pres. Type	TAT	TPH/G (Luft)	BTEX (8020)
1 10885-001	263137-40	12/21/94	1040	Trip Blank	NA	4	V	H2O	HCl	3	X	X
2 -002	263141-44		1135	MW-4							X	X
3 -003	263145-48		1257	MW-6							X	X
4 -004	263051-54		1357	MW-2							X	X
5												
6												
7												
8												
9												
10												

Special Instructions/Comments:
(PLEASE RETURN COOLER ASAP)

Container Types: B=Brass Tube, C=Cassette, G=Glass Jar, O=Other ____, A=1 Liter Amber, P=Polyethylene, V=Voa Vial

TAT (Analytical Turn Around Time): 1 = 24 hours, 2 = 48 hours, 3 = 1 week, 4 = 2 weeks, 0 = Other ____

FOR LABORATORY USE ONLY Sample Condition Upon Receipt: REC. GOOD, SOME BUBBLES
263137, 38, AND 40 HAVE AIR BUBBLES.

SEND DOCUMENTATION AND RESULTS TO (Check one):
- [X] Project Manager/Office: BRAD WRIGHT/ALAMEDA
- [ ] Client Name:

Company:
Address:
Phone: 510-748-5697 FAX:

Common Analytical Methods
413.1
413.2 Long Method
413.2 Short Method
418.1 Long Method
418.1 Short Method
420.1
502.2
503E
503.1
524.2
601
602
604
608
610
624
625
8010
8015
8015 Mod.
8020
8021
8040
8080
8100
8150
8240
8270
8310
Acidity
Alkalinity
BTEX
Chloride
CLP (see Side 2)
COD
Color
Conductivity
Corrosivity
Cyanide
Flashpoint
Fluoride
General Mineral
Hex. Chromium
Ion Balance
Metals (write specific metal & method #)*
Metals 6010*
Metals PP*
Metals Title 22:
TTLC Level
STLC Level
(see Side 2)
Nitrate
Nitrite
Odor
Org. Lead
Org. Mercury
Percent Moisture
Percent Solid
Perchlorate
pH
Phosphates
Phosphorus
Sulfate
Sulfides
TCLP:
VOA
Semivoa
Metals
Pesticide
TDS
Total Hardness
Total Solids
TPH/D
TPH/G
TSS
Turbidity

* Specify Total or Dissolved

QUALITY CONTROL REPORT

METHOD BLANK

Method: Mod. EPA 8020 (BTEX) & TPH/G Date Analyzed: 12/28/94
Units: ug/L (ppb)

Analyte	Reporting Limit	Concentration
Benzene	0.30	BRL
Toluene	0.30	BRL
Ethylbenzene	0.30	BRL
1,2-Xylene	0.30	BRL
1,3-Xylene	0.30	BRL
1,4-Xylene	0.30	BRL
Total Petroleum Hydrocarbons - Gasoline	50	BRL

Surrogate	% Recovery	Acceptance Limits
Orthochlorotoluene (PID)	101	80 - 120
Orthochlorotoluene (FID)	108	80 - 120

(CN10885)

QUALITY CONTROL REPORT

METHOD BLANK

Method: Mod. EPA 8020 (BTEX) & TPH/G Date Analyzed: 12/29/94
Units: ug/L (ppb)

Analyte	Reporting Limit	Concentration
Benzene	0.30	BRL
Toluene	0.30	BRL
Ethylbenzene	0.30	BRL
1,2-Xylene	0.30	BRL
1,3-Xylene	0.30	BRL
1,4-Xylene	0.30	BRL
Total Petroleum Hydrocarbons - Gasoline	50	BRL

Surrogate	% Recovery	Acceptance Limits
Orthochlorotoluene (PID)	94	80 - 120
Orthochlorotoluene (FID)	101	80 - 120

(CN10885)

Laboratory Control Sample
Method 8020

LP#: 10885 Spike Sample ID: 1228-LCSW

Date Of Analysis: 12/28/94 Spike ID Code: W-1-1001

Column: DB WAX Surrogate ID Code: W-1-1006

Instrument #: 3 Matrix: Water Units: ug/L

EPA METHOD	COMPOUNDS	(a) SAMPLE CONC.	(b) SPIKE CONC.	(c) SAMPLE + SPIKE CONC.	(d) SPIKE REC.%	(e) SAMPLE DUP. + SPIKE CONC.	(f) SPIKE DUP. REC. %	(g) RPD%	ACCEPTANCE LIMITS % REC.	ACCEPTANCE LIMITS RPD
8020	Chlorobenzene	0	4.00	4.12	103	NA	NA	NA	69 - 131	≤20
8020	Benzene	0	4.00	3.91	98	NA	NA	NA	72 - 134	≤20
8020	Ethyl Benzene	0	4.00	3.82	96	NA	NA	NA	72 - 128	≤20

Spike Recovery = d = ((c-a)/b) x 100
Spike Duplicate Recovery = f = ((e-a)/b) x 100
Relative Percent Difference = g = (|c-e|)/((c+e) x .5) x 100

EPA METHOD	SURROGATE COMPOUNDS	DET.	(h) SUR. SPIKE CONC.	(i) SAMPLE + SUR. SPIKE CONC.	(j) SUR. REC. %	(k) SAMPLE DUP. + SUR.SPIKE CONC.	(l) SUR. DUP. RECOVERY %	ACCEPTANCE LIMITS % REC.
8020	Orthochlorotoluene	PID	4.00	3.80	95	NA	NA	80 - 120

Surrogate % Recovery = j = (i/h) x 100
Surrogate Dup % Recovery = l = (k/h) x 100

Laboratory Control Sample
Total Petroleum Hydrocarbons/TPH-Gasoline

LP#: 10885

Date of Analysis: 12/28/94 Spike Sample ID: 1228-LCSW

Column: RTX-VOA Spike ID Code: W-1-987

Instrument #: 3 Surrogate ID Code: W-1-1006

Matrix: Water Units: ug/L

COMPOUNDS	(a) SAMPLE CONC.	(b) SPIKE CONC.	(c) SAMPLE + SPIKE CONC.	(d) SPIKE REC. %	(e) SAMPLE DUP. + SPIKE CONC.	(f) SPIKE DUP. REC. %	(g) RPD %	ACCEPTANCE LIMITS % REC.	ACCEPTANCE LIMITS RPD
Gasoline	0	100	95	95	NA	NA	NA	100 - 127	≤20

Spike Recovery = d = ((c-a)/b) x 100
Spike Duplicate Recovery = f = ((e-a)/b) x 100
Relative Percent Difference = g = (|c-e|)/((c+e) x .5) x 100

SURROGATE COMPOUNDS	(h) SUR. SPIKE CONC.	(i) SAMPLE + SUR. SPIKE CONC.	(j) SUR. REC. %	(k) SAMPLE DUP. + SUR.SPIKE CONC.	(l) SUR. DUP. RECOVERY %	ACCEPTANCE LIMITS % REC.
Orthochlorotoluene	4.00	4.90	122[a]	NA	NA	80 - 120

Surrogate % Recovery = j = (i/h) x 100
Surrogate Dup % Recovery = l = (k/h) x 100

[a] Sample surrogate recovery is beyond acceptance limits. All other quality control is acceptable.

Matrix Spike/Matrix Spike Duplicate
Method 8020

LP#: 10885 Spike Sample ID: 10885-4 MS/MSD

Date Of Analysis: 12/28/94 Spike ID Code: W-1-1001

Column: DB WAX Surrogate ID Code: W-1-1006

Instrument #: 3 Matrix: Water Units: ug/L

EPA METHOD	COMPOUNDS	(a) SAMPLE CONC.	(b) SPIKE CONC.	(c) SAMPLE + SPIKE CONC.	(d) SPIKE REC.%	(e) SAMPLE DUP. + SPIKE CONC.	(f) SPIKE DUP. REC. %	(g) RPD%	ACCEPTANCE LIMITS % REC.	ACCEPTANCE LIMITS RPD
8020	Chlorobenzene	0	4.00	3.96	99	3.98	100	1	69 - 131	≤20
8020	Benzene	0	4.00	4.88	122	4.58	114	6	72 - 134	≤20
8020	Ethyl Benzene	0	4.00	4.09	102	4.02	100	2	72 - 128	≤20

Spike Recovery = d = ((c-a)/b) x 100
Spike Duplicate Recovery = f = ((e-a)/b) x 100
Relative Percent Difference = g = (|c-e|)/((c+e) x .5) x 100

EPA METHOD	SURROGATE COMPOUNDS	DET.	(h) SUR. SPIKE CONC.	(i) SAMPLE + SUR. SPIKE CONC.	(j) SUR. REC. %	(k) SAMPLE DUP. + SUR.SPIKE CONC.	(l) SUR. DUP. RECOVERY %	ACCEPTANCE LIMITS % REC.
8020	Orthochlorotoluene	PID	4.00	3.85	96	3.69	92	80 - 120

Surrogate % Recovery = j = (i/h) x 100
Surrogate Dup % Recovery = l = (k/h) x 100

ABBREVIATIONS USED IN THIS REPORT

BRL	Below Reporting Limit
MB	Method Blank
MS	Matrix Spike
MSD	Matrix Spike Duplicate
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate
RPD	Relative Percent Difference
NS	Not Specified
NA	Not Applicable

COMMENTS

Test methods may include minor modifications of published EPA methods (e.g., reporting limits or parameter lists). Reporting limits are adjusted to reflect dilution of the sample when appropriate. Solids and waste are analyzed with no correction made for moisture content.

The reporting limits for BTEX meet those specified in the California LUFT Manual.

(CN10885)

VOLATILE AROMATIC COMPOUNDS

Analytical Method: Modified EPA 8020 (BTEX) and Total Petroleum Hydrocarbons Gasoline by LUFT
Preparation Method: EPA 5030

Project Name:	*Target, Dublin*	Project Number:	*040122637001001*
Sample Description:	*MW-2*	Lab Project-ID Number:	*10885-4*
Sample Number:	*263054*	Date Sampled:	*12/21/94*
Date Received:	*12/22/94*	Date Analyzed:	*12/29/94*

Analyte	Concentration ug/L (ppb)	Reporting Limit ug/L (ppb)
Benzene	BRL	0.30
Toluene	BRL	0.30
Ethylbenzene	BRL	0.30
1,2-Xylene	BRL	0.30
1,3-Xylene	BRL	0.30
1,4-Xylene	BRL	0.30
Total Petroleum Hydrocarbons - Gasoline	BRL	50

Surrogates	Percent Recovery	Acceptance Limits
Orthochlorotoluene	94	80 - 120
Orthochlorotoluene	98	80 - 120

Comments

The cover letter and enclosures are integral parts of this report.

Approved by: _____ Date: 1/4/95

063

MBT Environmental Laboratories

Master Builders Technologies

VOLATILE AROMATIC COMPOUNDS

Analytical Method: Modified EPA 8020 (BTEX) and Total Petroleum Hydrocarbons Gasoline by LUFT
Preparation Method: EPA 5030

Project Name:	*Target, Dublin*	Project Number:	*040122637001001*
Sample Description:	*MW-4*	Lab Project-ID Number:	*10885-2*
Sample Number:	*263141*	Date Sampled:	*12/21/94*
Date Received:	*12/22/94*	Date Analyzed:	*12/28/94*

Analyte	Concentration ug/L (ppb)	Reporting Limit ug/L (ppb)
Benzene	BRL	0.30
Toluene	BRL	0.30
Ethylbenzene	BRL	0.30
1,2-Xylene	BRL	0.30
1,3-Xylene	BRL	0.30
1,4-Xylene	BRL	0.30
Total Petroleum Hydrocarbons - Gasoline	BRL	50

Surrogates	Percent Recovery	Acceptance Limits
Orthochlorotoluene	107	80 - 120
Orthochlorotoluene	107	80 - 120

Comments

The cover letter and enclosures are integral parts of this report.

Non-target analytes are present on the chromatograph.

Approved by: _____ Date: 1/4/95

063

MBT Environmental Laboratories

Master Builders Technologies

VOLATILE AROMATIC COMPOUNDS

Analytical Method: Modified EPA 8020 (BTEX) and Total Petroleum Hydrocarbons Gasoline by LUFT
Preparation Method: EPA 5030

Project Name:	*Target, Dublin*	Project Number:	*040122637001001*
Sample Description:	*MW-6*	Lab Project-ID Number:	*10885-3*
Sample Number:	*263145*	Date Sampled:	*12/21/94*
Date Received:	*12/22/94*	Date Analyzed:	*12/28/94*

Analyte	Concentration ug/L (ppb)	Reporting Limit ug/L (ppb)
Benzene	BRL	0.30
Toluene	BRL	0.30
Ethylbenzene	1.3	0.30
1,2-Xylene	BRL	0.30
1,3-Xylene	BRL	0.30
1,4-Xylene	0.67	0.30
Total Petroleum Hydrocarbons - Gasoline	BRL	50

Surrogates	Percent Recovery	Acceptance Limits
Orthochlorotoluene	104	80 - 120
Orthochlorotoluene	100	80 - 120

Comments

The cover letter and enclosures are integral parts of this report.

Non-target analytes are present on the chromatograph.

Approved by: _____ Date: 1/4/95

063

VOLATILE AROMATIC COMPOUNDS

Analytical Method: Modified EPA 8020 (BTEX) and Total Petroleum Hydrocarbons Gasoline by LUFT
Preparation Method: EPA 5030

Project Name:	*Target, Dublin*	Project Number:	*040122637001001*
Sample Description:	*Trip Blank*	Lab Project-ID Number:	*10885-1*
Sample Number:	*263139*	Date Sampled:	*12/21/94*
Date Received:	*12/22/94*	Date Analyzed:	*12/28/94*

Analyte	Concentration ug/L (ppb)	Reporting Limit ug/L (ppb)
Benzene	BRL	0.30
Toluene	BRL	0.30
Ethylbenzene	BRL	0.30
1,2-Xylene	BRL	0.30
1,3-Xylene	BRL	0.30
1,4-Xylene	BRL	0.30
Total Petroleum Hydrocarbons - Gasoline	BRL	50

Surrogates	Percent Recovery	Acceptance Limits
Orthochlorotoluene	93	80 - 120
Orthochlorotoluene	99	80 - 120

Comments

The cover letter and enclosures are integral parts of this report.

Approved by: _____ Date: 1/4/95

063

MBT Environmental Laboratories

Master Builders Technologies