



November 24, 1992

Ms. Eva Chu
Alameda County Health Agency
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Dear Ms. Chu:

This letter serves as a letter of transmittal for McLaren/Hart "September 1991 Quarterly Groundwater Monitoring and Interim Remediation Report, Former Alameda Service Station A-558, 7608 Amador Valley Blvd., Dublin California." This document was prepared at the request of the Alameda County Health Agency.

As requested, a copy of the Bill of Lading for transporting purged groundwater at the site to an oil recycler is also enclosed. If you have any questions regarding McLaren/Hart's recommendation for discontinuing the sampling of MW-1, please give us a call at (510) 521-5200. / 748-5620

Sincerely,

A handwritten signature in cursive script that reads "Campbell McLeod".

Campbell McLeod
Supervising Geoscientist

A handwritten signature in cursive script that reads "Clifton Davenport".

Clifton Davenport, CEG #1455
Principal Geoscientist

Enclosures

1123AMD1

**SEPTEMBER 1992 QUARTERLY GROUNDWATER MONITORING REPORT
FORMER ALAMEDA SERVICE STATION A-578
7608 AMADOR VALLEY BOULEVARD
DUBLIN, CALIFORNIA**

INTRODUCTION

This letter report presents the September 1992 quarterly groundwater monitoring results at the former Alameda Service Station A-578 near Target store T-328, located at 7608 Amador Valley Boulevard in Dublin, California. This report was prepared in accordance with McLaren/Hart's sampling plan entitled "Proposal and Cost Estimate to Conduct Quarterly Groundwater Sampling and Interim Remediation at the Target Store T-328 Dublin, California" dated September 10, 1992. This sample plan is in accordance with the recommendations made in the "June 1992 Quarterly Monitoring and Interim Recommendation Report" for the site. Recommendations included a schedule of six episodes of interim remediation and four sampling events between September 1992 and June 1993. This work was verbally approved by Ms. Eva Chu of the Alameda County Department of Health, Hazardous Materials division.

SCOPE OF WORK AND OBJECTIVES

The work associated with the September quarterly monitoring event included sampling six monitoring wells (MW-1 through MW-6) for petroleum-related hydrocarbons, and extraction of 400 gallons of impacted groundwater from monitoring well MW-6. 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 the wells is being conducted to monitor the lateral extent of petroleum hydrocarbons in the shallow groundwater beneath the site, while the removal of groundwater from MW-6 serves as interim remediation of impacted groundwater in the area of the former underground fuel tanks.

Groundwater Elevations

Groundwater surface elevations were measured prior to sampling and pumping activities on September 24, 1992, and are presented in Table 1 along with well construction details. This data was used to construct the September, 1992 groundwater contour map, presented as Figure 2. The inferred groundwater flow direction is generally toward the east and is apparently influenced by the presence of permeable materials in the excavation area and by previous groundwater extraction activities. This flow direction is generally consistent with the observed groundwater flow direction in June 1992. Based on the observed contour pattern, MW-2, and MW-4 appear to be downgradient of the former excavation area.

The static depth to groundwater ranges from 5.07 to 6.84 feet below ground surface or 334.57 to 335.53 feet above mean sea level. The average hydraulic gradient is approximately 0.010 feet/foot. The September water level measurements indicate that groundwater levels have decreased in five of the six wells since June 1992, ranging from 0.01 to 0.20 feet, with an average decrease of 0.14 feet. Groundwater level has risen 0.16 feet at MW-5 since June 1992. Historic groundwater elevation data are presented in Table 2.

Interim Remediation

Five interim remediation episodes have occurred at MW-6, four in conjunction with quarterly sampling. The first remediation event occurred on October 17 and 18, 1991, shortly after MW-6 was constructed. The last four episodes took place on December 30 and 31, 1991, March 26 and 27, 1992, June 23, and 24, 1992, and September 24 and 25, 1992.

During the previous four sampling episodes 220, 300, 400 and 400 gallons of groundwater were respectively extracted from MW-6, at a average pumping rate of 0.65 gpm. Depth to groundwater was measured at the six wells during each day of interim remediation, once before pumping started then again just before pumping stopped for the day. As shown on Table 3, the extraction of groundwater from MW-6 decreases the water level in each of the six wells.

Four hundred gallons of groundwater were extracted in September 1992, at an average pumping rate of approximately 0.63 gpm. Measurements presented on Table 3 reveal that water levels in MW-4 and MW-5 showed the greatest response to pumping (decreases of 0.32 and 0.43 feet, respectively) on the first day of this event. Measurements collected after the second day of pumping showed that MW-4 and MW-5 still exhibited the most response (decreases of 0.80 feet and 0.59 feet, respectively).

Monitoring Well Sampling Protocol

Groundwater samples were collected at MW-1, MW-3, and MW-5 on September 24, and at MW-2, MW-4 and MW-6 on September 25, 1992. Prior to sampling MW-1 through MW-5, four casing volumes were purged from each well using a centrifugal pump. During purging, the temperature, pH, electric conductivity, and turbidity were measured after each casing volume was removed. After all parameters had stabilized, with the turbidity below 5 NTU's, sampling was performed using a disposable bailer. At MW-6, in conjunction with the interim remediation 65 casing volumes were removed prior to sample collection and parameters were collected during the last four of these casing volumes. Sampling event data sheets are enclosed as Attachment I.

Groundwater samples were stored in a container filled with ice and delivered to McLaren Analytical Laboratory, 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 the California Department of Health (DHS) LUFT Manual Method for Total Petroleum Hydrocarbons as gasoline (TPH/G), and for benzene, toluene, ethylbenzene, 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.

Monitoring Well Sampling Results

Table 4 and Figure 3 present the analytical results of the groundwater samples collected during the September 1992 sampling event. Water samples collected at monitoring wells MW-1, MW-3, MW-4 and MW-5 did not contain concentrations of either TPH/G or BTEX at or above the reporting limit. The highest concentrations of petroleum chemicals were

detected in the sample from MW-6, which contained 480 ppb TPH/G, 28 ppb benzene, and 120 ppb ethylbenzene. Benzene was detected in groundwater samples from MW-2 at 1.3 ppb.

Analysis

For the second consecutive sampling event petroleum chemicals were not detected at MW-4. As shown on Table 4, prior to June and September 1992 petroleum chemicals had consistently been reported in the groundwater at MW-4.

The apparent decreasing trend in the concentration of petroleum chemicals detected at MW-6, first reported during June 1992 sampling was confirmed with the September 1992 analytical results. As shown on Table 4, the September analytical results for MW-6 represent the lowest chemical concentrations detected to date. The concentration of benzene (1.3 ppb) reported at MW-2 is the lowest concentration detected at this well in seven sampling events. MW-4 has not contained the chemicals of concern for two successive quarters. Therefore, it appears that there is a decreasing trend in the concentrations of petroleum chemicals in these three wells (MW-4, MW-6, MW-2).

The trip blank sample did not contain TPH/G or benzene, ethyl benzene or xylenes at concentrations at or above the reporting limits. However, concentrations of toluene at 0.36 ppb were detected in the trip blank. The analytical data sheets and chain-of-custody records for the groundwater samples are included as Attachment II.

The DHS Maximum Contaminant Levels (MCLs) for the analyzed compounds in drinking water include: 1 ppb benzene; 680 ppb ethylbenzene; and 1,750 ppb total xylenes. The Federal MCL for toluene is 1,000 ppb. There is no state action level for TPH/G. Benzene is present in monitoring wells MW-6 and MW-2 in concentrations in excess of its MCL. However, groundwater beneath the site is reportedly not used for drinking water or other beneficial uses, and the MCL concentrations are presented only for purposes of comparison.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are based on data collected to date:

- No free-floating petroleum product was observed in any of the wells.
- For the second consecutive time in seven sampling events petroleum chemicals were not detected at MW-4, installed adjacent to the former tank excavation.
- The analytical results from water samples collected at MW-6 were the lowest reported concentrations at this well to date. Based on the analytical data from the last two sampling events, concentrations in the well appear to be decreasing overall, implying that the interim remediation at the well is having some effect.

- The benzene concentration at MW-2 during this sampling event (1.3 ppb) is the lowest recorded to date.
- As shown on Figure 2, the apparent groundwater flow direction at the site is generally to the east, consistent with historic flow directions.
- Groundwater elevations in five of the six wells decreased an average of 0.14 feet since June 1992. The groundwater level at MW-5 rose 0.16 feet since the June sampling event.
- Based on the analytical results from MW-3, no petroleum chemicals appear to be migrating in the groundwater onto the site from off-site locations.
- Based on historical analytical results from downgradient wells MW-2 and MW-5, chemicals of concern do not appear to be migrating towards MW-5. However, benzene is present in groundwater at MW-2.
- The interim groundwater remediation at MW-6 has removed a total of 1,720 gallons of groundwater and appears to be capable of lowering water levels at other wells on-site. During the last two quarters, the highest responses to pumping at MW-6 are exhibited at MW-4 and MW-5, although all wells on site appear to be influenced.

Future work currently planned at the site includes:

- The interim remediation program schedule will include monthly extraction of 200 gallons of groundwater from MW-6 in October and in November 1992. Four hundred gallons will be excavated from MW-6 during the December 1992 quarterly sampling event. The December quarterly report will evaluate the effectiveness of the monthly extraction program.
- As recommended in the June 1992 sampling report, the depth to groundwater at MW-1 will be measured but a groundwater sample will not be collected for analysis during future sampling events. This recommendation is based upon historic analytical and hydrogeologic data from seven sampling events indicating that the groundwater near MW-1 does not contain petroleum chemicals nor is the well in the downgradient direction of the former underground fuel tanks.

FIGURE 1
SITE LOCATION MAP
TARGET STORE T-328
DUBLIN, CA.

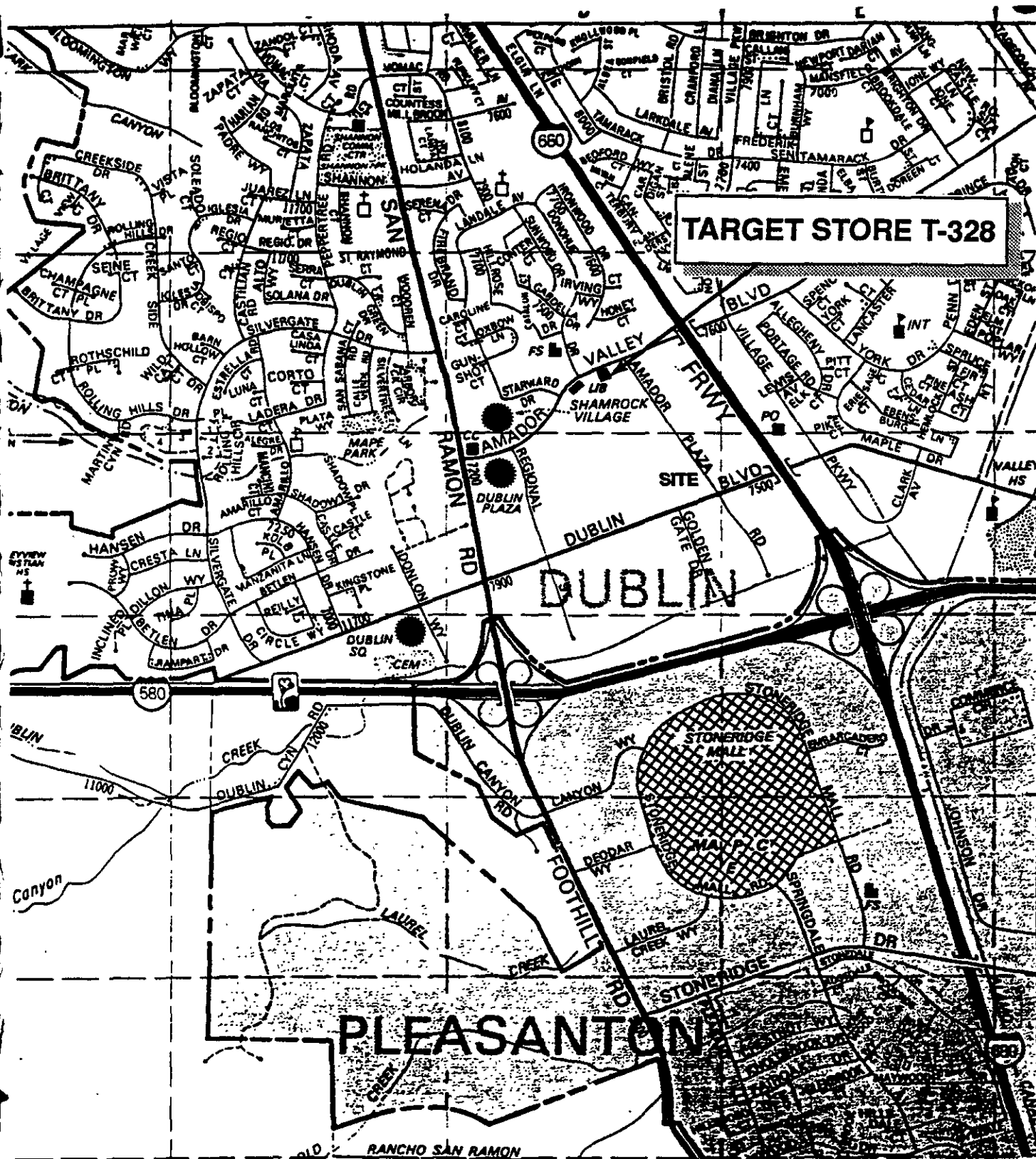


FIGURE 2
 GROUNDWATER CONTOUR MAP
 SEPTEMBER 24, 1992
 FORMER ALAMEDA SERVICE STATION A-578
 AMADOR VALLEY BOULEVARD

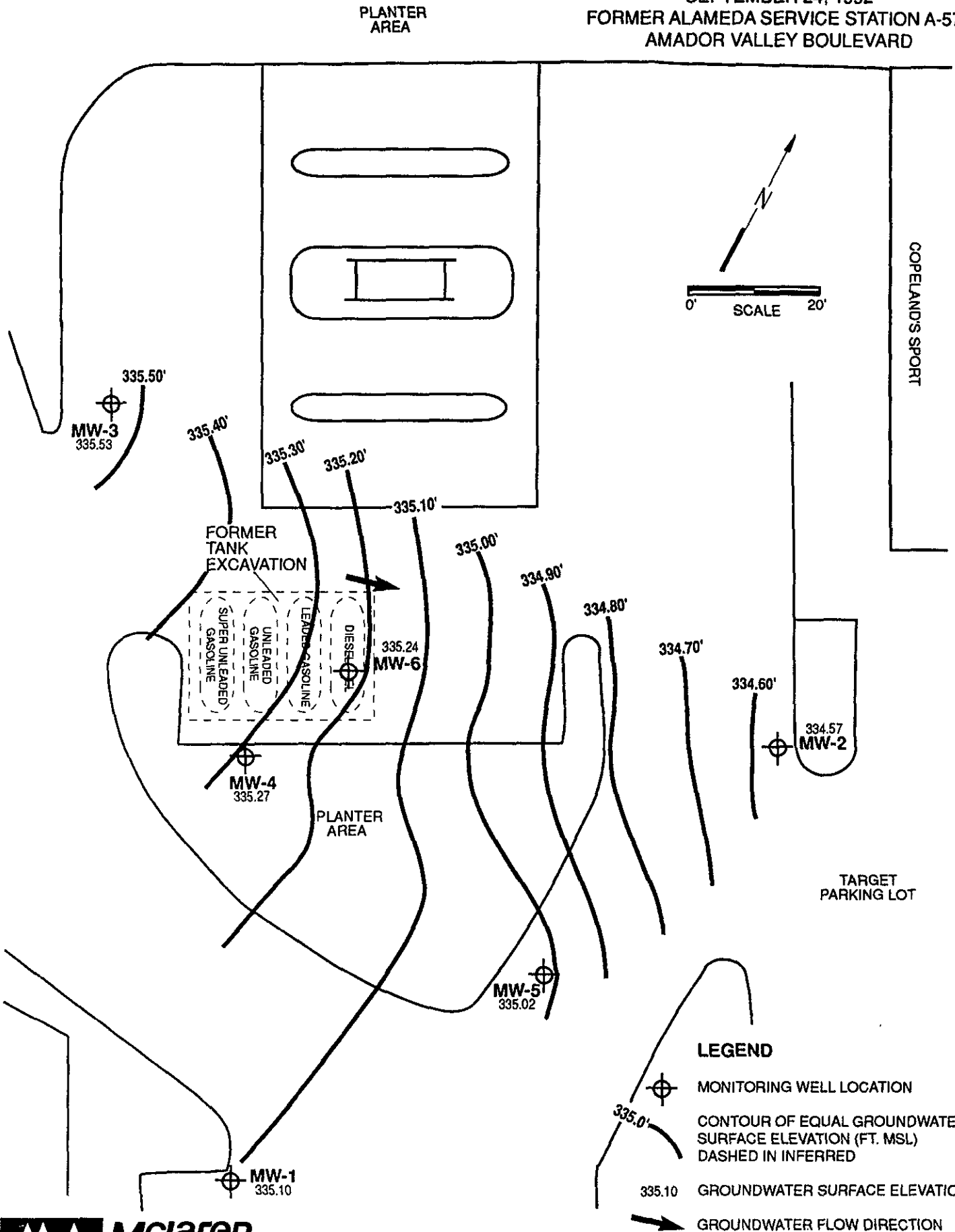
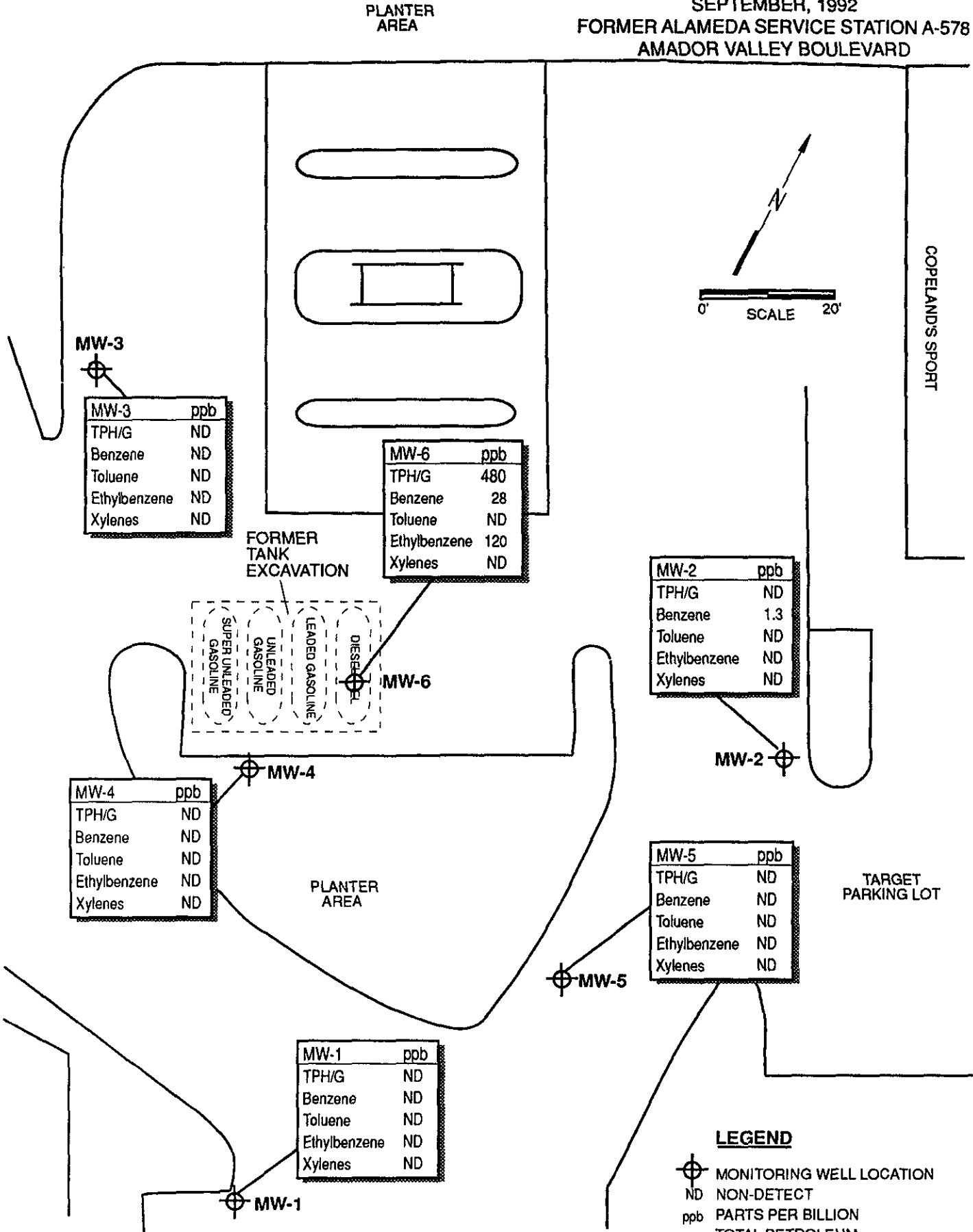


FIGURE 3
 GROUNDWATER MONITORING WELL
 CHEMICAL CONCENTRATIONS
 SEPTEMBER, 1992
 FORMER ALAMEDA SERVICE STATION A-578
 AMADOR VALLEY BOULEVARD



MW-3

MW-3	ppb
TPH/G	ND
Benzene	ND
Toluene	ND
Ethylbenzene	ND
Xylenes	ND

MW-6

MW-6	ppb
TPH/G	480
Benzene	28
Toluene	ND
Ethylbenzene	120
Xylenes	ND

MW-2

MW-2	ppb
TPH/G	ND
Benzene	1.3
Toluene	ND
Ethylbenzene	ND
Xylenes	ND

MW-4

MW-4	ppb
TPH/G	ND
Benzene	ND
Toluene	ND
Ethylbenzene	ND
Xylenes	ND

MW-5

MW-5	ppb
TPH/G	ND
Benzene	ND
Toluene	ND
Ethylbenzene	ND
Xylenes	ND

MW-1

MW-1	ppb
TPH/G	ND
Benzene	ND
Toluene	ND
Ethylbenzene	ND
Xylenes	ND

LEGEND

- ⊕ MONITORING WELL LOCATION
- ND NON-DETECT
- ppb PARTS PER BILLION
- TPH/G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

RJFS/Chemical Oil Companies
 Arrdr #3 Chem Cnc September
 REV: 11-04-92



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 9/24/92 (feet below grade)	GROUNDWATER ELEVATION 9/24/92 (MSL)
MW-1	5-20	340.30	335.30 - 320.30	340.20	5.10	335.10
MW-2	5-20	340.52	335.52 - 320.52	340.27	5.70	334.57
MW-3	5-20	341.67	336.67 - 321.67	341.00	5.47	335.53
MW-4	5-20	342.31	337.31 - 322.31	342.11	6.84	335.27
MW-5	5-20	340.52	335.52 - 320.52	340.09	5.07	335.02
MW-6	4.5-14.5	341.13	336.63-326.63	340.81	5.57	335.24

* Feet above mean sea level

TABLE 2

SUMMARY OF GROUNDWATER 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	2/28/91	5.00	335.20	
		6/14/91	5.53	334.67	-0.59
		9/26/91	5.97	334.23	-0.38
		12/30/91	5.50	334.70	0.47
		3/26/92	4.65	335.55	0.85
		6/23/92	4.92	335.28	-0.27
		9/24/92	5.10	335.10	-0.18
MW-2	340.27	2/28/91	5.46	334.81	
		6/14/91	5.90	334.37	-0.44
		9/26/91	6.54	333.73	-0.64
		12/30/91	5.83	334.44	0.71
		3/27/92	5.35	334.92	0.48
		6/23/92	5.69	334.58	-0.34
		9/24/92	5.70	334.57	-0.01
MW-3	341.00	2/28/91	5.61	335.39	
		6/14/91	5.40	335.60	0.21
		9/26/91	6.29	334.71	-0.89
		12/30/91	5.75	335.25	0.54
		3/26/92	4.58	336.42	1.17
		6/23/92	5.27	335.73	-0.69
		9/24/92	5.47	335.53	-0.20
MW-4	342.11	2/28/91	7.01	335.10	
		6/14/91	7.01	335.10	0.00
		9/26/91	7.81	334.30	-0.80
		12/30/91	7.17	334.94	0.64
		3/27/92	6.44	335.67	0.73
		6/23/92	6.70	335.41	-0.26
		9/24/92	6.84	335.27	-0.14
MW-5	340.09	6/14/91	5.81	334.28	
		9/26/91	5.92	334.17	-0.11
		12/30/91	5.52	334.57	0.40
		3/26/92	4.80	335.29	0.72
		6/23/92	5.23	334.86	-0.43
		9/24/92	5.07	335.02	0.16
MW-6	340.81	9/26/91	6.45	334.36	
		12/30/91	5.71	335.10	0.74
		3/27/92	5.03	335.78	0.68
		6/23/92	5.38	335.43	-0.35
		9/24/92	5.57	335.24	-0.19

* MSL = Mean Sea Level

TABLE 3

CHANGE IN GROUNDWATER ELEVATION AT MONITORING WELLS
DURING INTERIM REMEDIATION AT MW-6
FORMER ALAMEDA SERVICE STATION A-578
DUBLIN, CALIFORNIA

DATE	TIME	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6	
		Depth	Change	Depth	Change	Depth	Change	Depth	Change	Depth	Change	Depth	Change
10-17-91	1000	6.19	---	6.74	---	6.40	---	7.96	---	6.28	---	6.65	---
	1600	6.24	-0.05	6.80	-0.06	6.59	-0.19	8.10	-0.14	6.45	-0.17	11.26	-4.61
10-18-91	0900	6.24	-0.05	6.82	-0.08	6.55	-0.15	8.04	-0.08	6.40	-0.12	6.72	-0.07
	1600	6.28	-0.09	6.84	-0.10	6.64	-0.24	8.13	-0.17	6.48	-0.20	12.80	-6.15
12-30-91	0800	5.50	---	5.83	---	5.75	---	7.17	---	5.52	---	5.72	---
12-31-91	1500	5.69	-0.19	6.00	-0.17	5.83	-0.08	7.29	-0.12	5.68	-0.16	7.36	-1.65
3/26/92	1000	4.65	---	5.35	---	4.58	---	6.44	---	4.80	---	5.03	---
	1500	4.82	-0.17	5.43	-0.08	5.01	-0.43	6.70	-0.26	5.15	-0.35	12.72	-7.69
3/27/92	0845	4.74	-0.09	5.41	-0.06	4.95	-0.37	6.52	-0.08	5.01	-0.21	5.10	-0.07
	1400	4.80	-0.15	5.48	-0.13	5.04	-0.46	6.72	-0.28	6.11	-1.31	13.12	-8.07
6/23/92	0930	4.92	---	5.69	---	5.27	---	6.70	---	5.23	---	5.38	---
	1830	5.04	-0.12	5.82	-0.13	5.38	-0.11	6.95	-0.25	5.39	-0.16	13.70	-8.32
6/24/92	0900	5.04	-0.12	5.76	-0.07	5.33	-0.06	6.84	-0.14	5.34	-0.11	5.48	-0.10
	1130	5.09	-0.17	5.79	-0.10	5.38	-0.11	6.95	-0.25	5.39	-0.16	9.77	-4.39
9/24/92	0845	5.10	---	5.70	---	5.47	---	6.84	---	5.07	---	5.57	---
	1530	5.33	-0.23	5.91	-0.21	5.68	-0.21	7.16	-0.32	5.50	-0.43	13.50	-7.93
9/25/92	0705	5.35	-0.25	5.98	-0.28	5.69	-0.22	7.14	-0.30	5.53	-0.46	5.79	-0.22
	1005	5.42	-0.32	6.07	-0.37	5.76	-0.29	7.64	-0.80	5.66	-0.59	13.50	-7.93

*NOTE: Changes in water elevation are measured from the initial depth to groundwater on 10/17/91, 12/30/91, 3/26/92, 6/23/92 and 9/24/92
Groundwater was pumped from MW-6 at approximately 0 63 GPM during June 1992.

TABLE 4

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

<u>WELL DESIGNATION</u>	<u>DATE</u>	<u>TPH/G</u>	<u>TPH/D</u>	<u>BENZENE</u>	<u>TOLUENE</u>	<u>ETHYL BENZENE</u>	<u>TOTAL XYLENES</u>
MW-1	2/91	<50	<0.5	<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
	6/92	<50	---	<0.3	<0.3	<0.3	<0.3
	9/92	<50	---	<0.3	<0.3	<0.3	<0.3
	MW-2	2/91	50	<0.5	2.0	0.8	1.1
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
MW-3		2/91	<50	<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
	6/92	<50	---	<0.3	<0.3	<0.3	<0.3
	9/92	<50	---	<0.3	<0.3	<0.3	<0.3
	MW-4	2/91	6,000	<0.5	680	<20	160
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
MW-5		6/91	<50	---	<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
	MW-6	9/91	2,300	---	760	11	360
10/91		1,900	---	230	<5	140	12.1
12/91		2,500	<0.5	360	<50 ^a	260	<50 ^a
3/92		2,600	<0.5	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

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 dilutions to bring target analytes within linear working range of the GC.

--- = Not analyzed.

ATTACHMENT I
SEPTEMBER EVENT

PROJECT: TARGET DUBLIN EVENT: QUARTERLY SAMPLER: D. WATTS

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1	9	24	92	08	35	5.10	SWL	~ 2" STANDING H ₂ O IN VAULT E
2	MW-3				08	40	5.47		
3	MW-5				08	43	5.07		
4	MW-2				08	47	5.70		ALL WELLS ARE
5	MW-4				08	50	6.84		EQUIPPED WITH
6	MW-6				08	56	5.57	↓	P519 LOCKS AS
7	MW-1				15	20	5.33	SWL	OF 9/24/92.
8	MW-3				15	25	5.68		
9	MW-5				15	28	5.50		
10	MW-2				15	31	5.91		
11	MW-4				15	35	7.16		
12	MW-6	↓	↓	↓	15	38	13.50	↓	Pump Running
13									
14									
15									WELLS ARE NOW
16									EQUIPPED WITH 4"
17									"CHERNIE" PLUGS.
18									"MORRISON" PLUGS
19									WOULD LAST MUCH
20									LONGER.

CODES:

- *SWL - Static Water Level (Feet)
- *IWL - Instant Water Level; Non-Static (Feet)
- *OIL - Oil Level (Feet)
- *OWI - Oil/Water Interface (Feet)
- *MTD - Measured Total Depth (Feet)
- FLO - Flow Rate (Gallons/Minute)
- CUM - Cumulative (Gallons)
- HRS - Total (Hours)
- PSI - Pressure (psi)²
- pH - 1 to 14
- Ec - Conductivity (µm HOS)
- TMP - Temperature (°C)
- TRB - Turbidity (NTU)
- - - (Additional Code)

*All levels are depth from inner casing - describe any other reference points in comments column; when in doubt, describe reference point.
 Note in comments column if well is not: properly labeled, locked, or able to be locked. Describe corrective action.
 Note flooding of vault box, odor, access problems.
 *Negative pressure (Vacuum) psi = approx -(1/2 x mmHg)



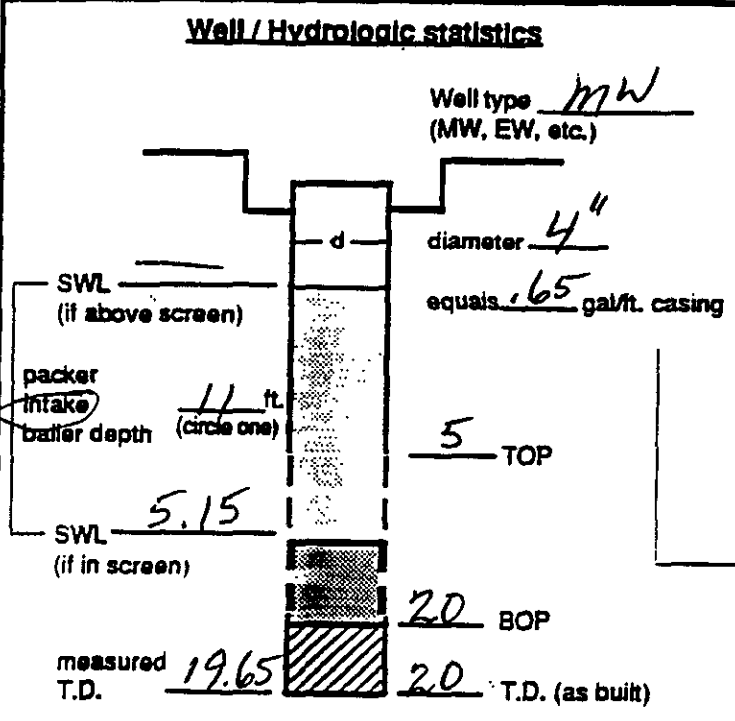
McLaren

SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-1

PROJECT TARGET DUBLIN EVENT QUARTERLY SAMPLER R. WATD DATE 9/24/92



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1010	1 GPM	
	1020	1 GPM	7.88
	1030	1 GPM	10.03
	1040	1 GPM	10.54
	1052	1 GPM	20.60
Stop	1056	↓	10.60
Sampled	1110		7.95
(Final IWL)	1115		6.62
Purge calculation			
<u>.65</u> gal/ft. <u>14.85</u> ft. = <u>9.75</u> gals <u>4/3</u> = <u>39</u> 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:
CENT. PUMP @ DISP. BAILER
USED DESIGN T.D. FOR PURGE CALCULATION.

Actual gallons purged	<u>40</u>
Actual volumes purged	<u>4</u>
Well yield (see below)	<u>MY</u>

50% RECOVERY: 12.57 80% RECOVERY: 8.12

COC #	<u>30253</u>
Sample I.D.	<u>214044-47</u>
Analysis	<u>TRIP (W/L)</u> <u>TRIP (W/L)</u> <u>TRIP (W/L)</u> <u>TRIP (W/L)</u>
Lab	<u>MAL</u>
	<u>214048-50</u>
	<u>214451</u>

Additional comments:

SAMPLE TURBIDITY: 0.81

Gallons purged	TEMP °C (°F) (circle one)	EC (µs/cm)	PH	TURBIDITY (NTU)
1. <u>10</u>	<u>72.3</u>	<u>1298</u>	<u>6.85</u>	<u>3.05</u>
2. <u>20</u>	<u>70.9</u>	<u>1224</u>	<u>7.01</u>	<u>1.92</u>
3. <u>30</u>	<u>70.7</u>	<u>1201</u>	<u>6.98</u>	<u>2.20</u>
4. <u>40</u>	<u>70.2</u>	<u>1193</u>	<u>7.01</u>	<u>3.55</u>
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

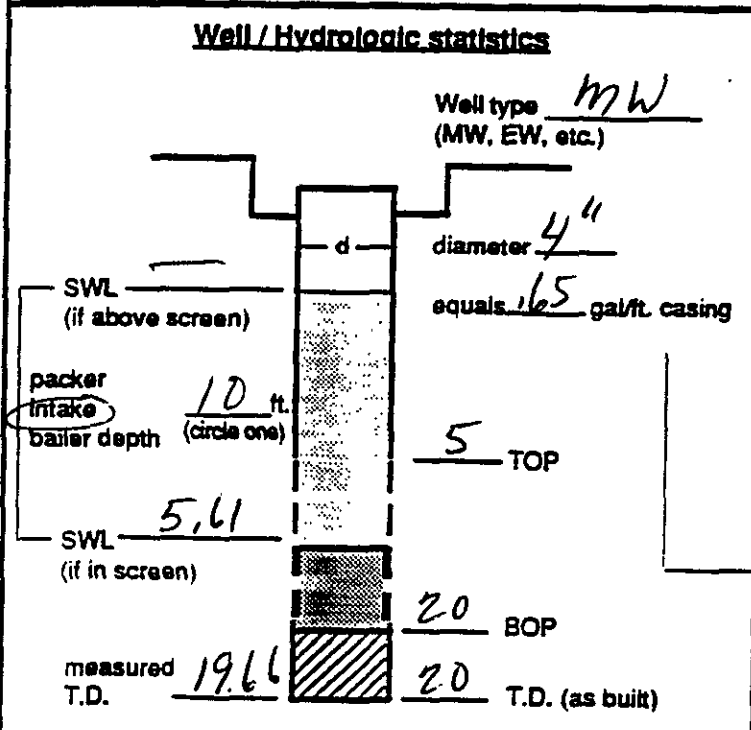
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McLaren

WELL OR LOCATION MW-3

PROJECT TARGET DUBLIN EVENT Quarterly SAMPLER D. WATTS DATE 9/24/92



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1200	.5 GPM	
	1220	.5 GPM	7.75
	1238	.75 GPM	8.42
	1250	.75 GPM	9.37
	1305	.75 GPM	9.44
Stop	1306	↓	9.44
Sampled	1310		7.83
(Final IWL)	1320		6.18

Purge calculation

.165 gal/ft. * 14.39 ft. = 2.38 gals $\frac{4}{3}$ = 3.17 gals.

SWL to BOP or one packer to BOP volume = 38 gals. (3 casings)

Head purge calculation (Airlift only)

gal/ft. * ft. = gals.

packer to SWL

Equipment Used / Sampling Method / Description of Event:
CENT. PUMP @ DISP. BAILEY
USED DESIGN T.D. FOR PURGE CALCULATION.

Actual gallons purged	<u>40</u>
Actual volumes purged	<u>4</u>
Well yield (see below)	<u>MY</u>
COC #	<u>30253</u>
Sample I.D.	<u>214452-55</u>
Analysis	<u>TTH-6 (LWFT)</u> <u>+ STOX (LWFT)</u>
Lab	<u>MAL</u>

50% RECOVERY: 12.80 80% RECOVERY: 8.48

Additional comments:

SAMPLE TURBIDITY: 0.87

Gallons purged *	TEMP °C (F) (circle one)	EC (us / cm)	PH	TURBIDITY (NTU)		
1. <u>10</u>	<u>78.1</u>	<u>1318</u>	<u>7.16</u>	<u>16.19</u>		
2. <u>19</u>	<u>75.8</u>	<u>1275</u>	<u>7.14</u>	<u>2.92</u>		
3. <u>29</u>	<u>73.2</u>	<u>1262</u>	<u>7.13</u>	<u>1.65</u>		
4. <u>38</u>	<u>73.8</u>	<u>1277</u>	<u>7.17</u>	<u>2.25</u>		
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. VL - Minimal recharge - unable to purge 3 volumes.



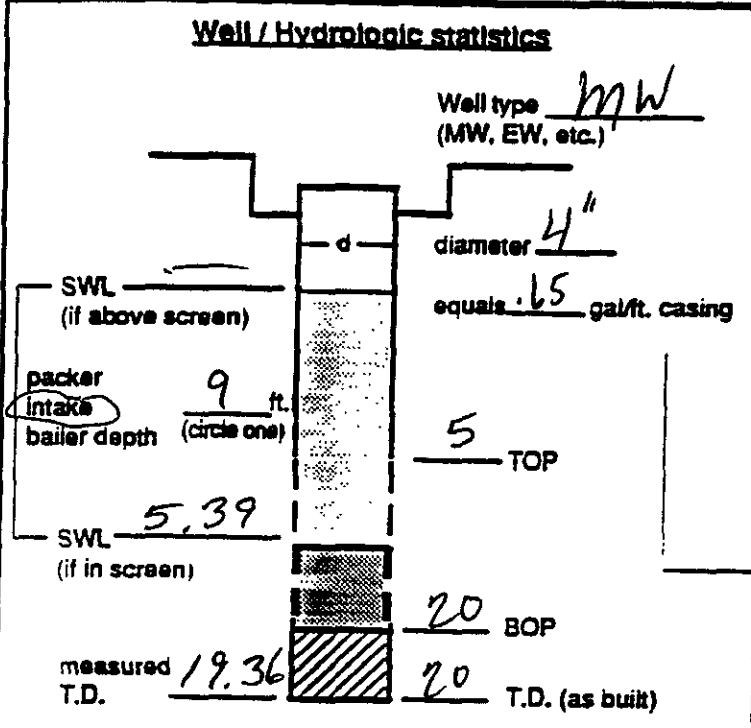
McLaren

SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-5

PROJECT TARGET DUBLIN EVENT Quarterly SAMPLER D. WATTS DATE 9/24/92



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1420	1 GPM	
	1430	1 GPM	7.42
	1440	1 GPM	7.46
	1450	1 GPM	8.35
	1458	1 GPM	8.44
Stop	1500	↓	8.44
Sampled	1505		6.75
(Final IWL)	1510		5.72
Purge calculation			
<u>.65</u> gal/ft. · <u>14.6</u> ft. = <u>9.5</u> gals ^{42%} <u>38</u> 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:
cent. Pump @ Disp. Bailer
USED DESIGN T.D. FOR PURGE CALCULATION,

50% RECOVERY: 12.69 80% RECOVERY: 8.31

Actual gallons purged	<u>38 +</u>
Actual volumes purged	<u>4 +</u>
Well yield (see below)	<u>MY</u>
COC #	<u>30253</u>
Sample I.D.	<u>214456-59</u>
Analysis	<u>TPH-0/mg/L</u>
Lab	<u>MAL</u>

Additional comments:

SAMPLE TURBIDITY: .50

Gallons purged *	TEMP °C (°F) (circle one)	EC (us / cm)	PH	TURBIDITY (NTU)
1. <u>10</u>	<u>73.9</u>	<u>1122</u>	<u>7.19</u>	<u>1.54</u>
2. <u>19</u>	<u>71.9</u>	<u>1171</u>	<u>7.12</u>	<u>.76</u>
3. <u>28</u>	<u>70.2</u>	<u>1155</u>	<u>7.16</u>	<u>.75</u>
4. <u>38</u>	<u>69.9</u>	<u>1156</u>	<u>7.19</u>	<u>.96</u>
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.

PROJECT: <u>TARGET DUB</u>		EVENT: <u>Quarterly</u>		SAMPLER: <u>D. WATTS</u>					
NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1	9	25	92	06	56	5.35	SWL	
2	MW-3				06	59	5.69		
3	MW-5				07	03	5.53		
4	MW-2				07	06	5.98		
5	MW-4				07	09	7.14		
6	MW-6				07	14	5.79		
7	MW-1				10	05	5.42		
8	MW-3				10	07	5.76		
9	MW-5				10	09	5.66		
10	MW-2				10	10	6.07		
11	MW-4				10	12	7.64		
12	MW-6	▽	▽	▽	10	14	13.50	▽	Pump Running
13									
14									NEED TO BRING
15									ANOTHER 55-GAL
16									DRUM ON SITE
17									FOR SPARE.
18									
19									
20									

CODES:

*SWL - Static Water Level (Feet)
 *IWL - Instant Water Level; Non-Static (Feet)
 *OIL - Oil Level (Feet)
 *OWI - Oil/Water Interface (Feet)
 *MTD - Measured Total Depth (Feet)
 FLO - Flow Rate (Gallons/Minute)
 CUM - Cumulative (Gallons)

HRS - Total (Hours)
 PSI - Pressure (psi)²
 pH - 1 to 14
 Ec - Conductivity (µm HOS)
 TMP - Temperature (°C)
 TRB - Turbidity (NTU)
 _____ (Additional Code)

*All levels are depth from inner casing - describe any other reference points in comments column; when in doubt, describe reference point.

Note in comments column if well is not: properly labeled, locked, or able to be locked. Describe corrective action. Note flooding of vault box, odor, access problems.

*Negative pressure (Vacuum) psi ≈ approx $-(1/2 \times \text{mmHg})$



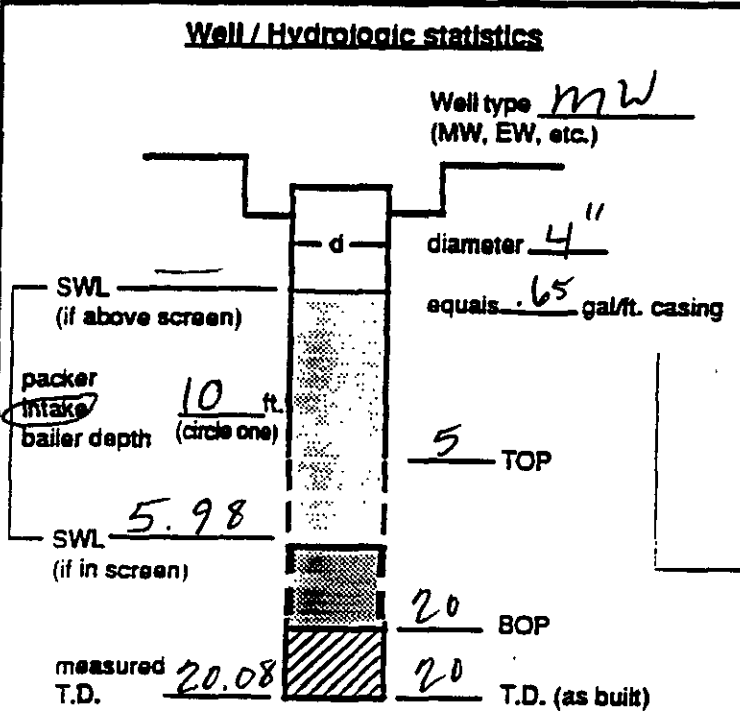
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SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-2

PROJECT TARGET DUBUQUE EVENT QUARTERLY SAMPLER D. WATTS DATE 9/25/92



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	0750	1 GPM	
	0800	1 GPM	8.34
	0809	1 GPM	8.60
	0818	1 GPM	8.78
	0827	1 GPM	8.86
Stop	0829	↓	8.86
Sampled	0835		7.85
(Final IWL)	0840		6.56

Purge calculation
.65 gal/ft. · 14.10 ft. = 9.25 gals ~~4.5~~ = 37 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:
CENT. Pump @ Disp. BOILER
USED MEASURED T.D. FOR PURGE CALCULATION.

Actual gallons purged	<u>37+</u>
Actual volumes purged	<u>4+</u>
Well yield (see below)	<u>MY</u>
COC #	<u>30253</u>
Sample I.D.	<u>214460-63</u>
Analysis	<u>TPH-6 / UNPT + BTEX / LWET</u>
Lab	<u>MAL</u>

50% Recovery: 13.03 80% Recovery: 8.80

Additional comments:
(SLIGHT PETROLEUM ODOR)
SAMPLE TURBIDITY: 1.56

Gallons purged	TEMP °C (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)
1. <u>10</u>	<u>71.8</u>	<u>1134</u>	<u>7.11</u>	<u>1.50</u>
2. <u>19</u>	<u>70.6</u>	<u>1139</u>	<u>7.14</u>	<u>1.90</u>
3. <u>28</u>	<u>69.2</u>	<u>1172</u>	<u>7.15</u>	<u>1.22</u>
4. <u>37</u>	<u>70.0</u>	<u>1145</u>	<u>7.09</u>	<u>1.94</u>
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.



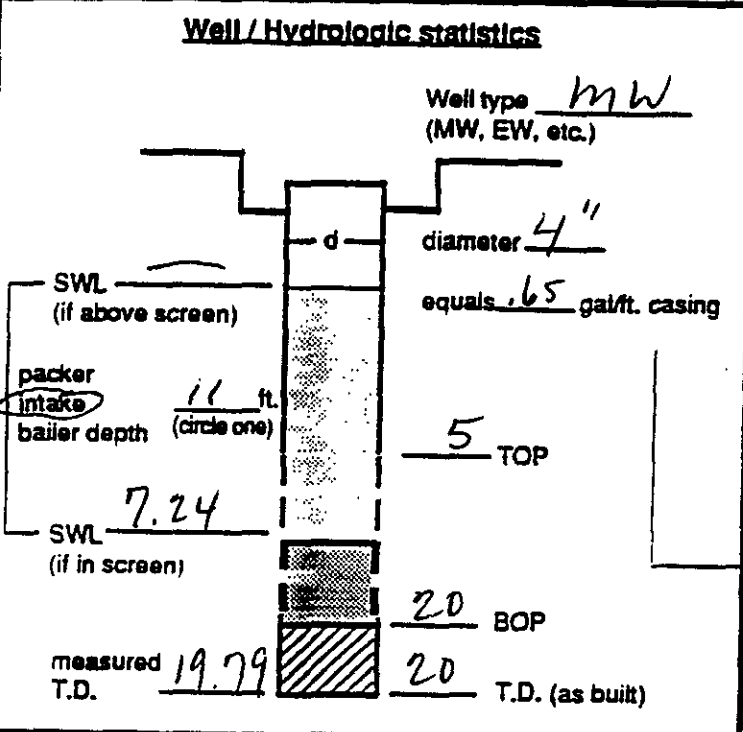
McLaren

SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-4

PROJECT TARGET DUBLIN EVENT Quarterly SAMPLER D. WATT DATE 9/25/92



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	0920	1 GPM	
	0929	1 GPM	9.35
	0936	1 GPM	9.60
	0945	1 GPM	9.71
	0954	1 GPM	9.82
Stop	0959	↓	9.82
Sampled	1020		7.85
(Final IWL)	1025		7.35

Purge calculation
 $.65 \text{ gal/ft.} \cdot 12.76 \text{ ft.} = 8.5 \text{ gals} \cdot 2 = 34 \text{ gals.}$

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:
CENT. Pump @ Disp. BAILEY
USED DESIGN T.D. FOR PURGE CALCULATION.

Actual gallons purged 35+
 Actual volumes purged 4+
 Well yield ⊕ MY
 (see below)

50% RECOVERY: 13.62 80% RECOVERY: 9.79

COC # 30253
 Sample I.D. 214464-67 Analysis TDH - 6 (uM) + STX (uM) Lab MAL

Additional comments:
SAMPLE TURBIDITY: 1.33

Gallons purged *	TEMP °C (F) (circle one)	EC (us / cm)	PH	TURBIDITY (NTU)
1. 9	73.3	931	7.04	5.35
2. 16	71.3	924	7.11	3.23
3. 25	72.8	959	7.21	1.70
4. 34	73.5	958	7.24	1.51
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

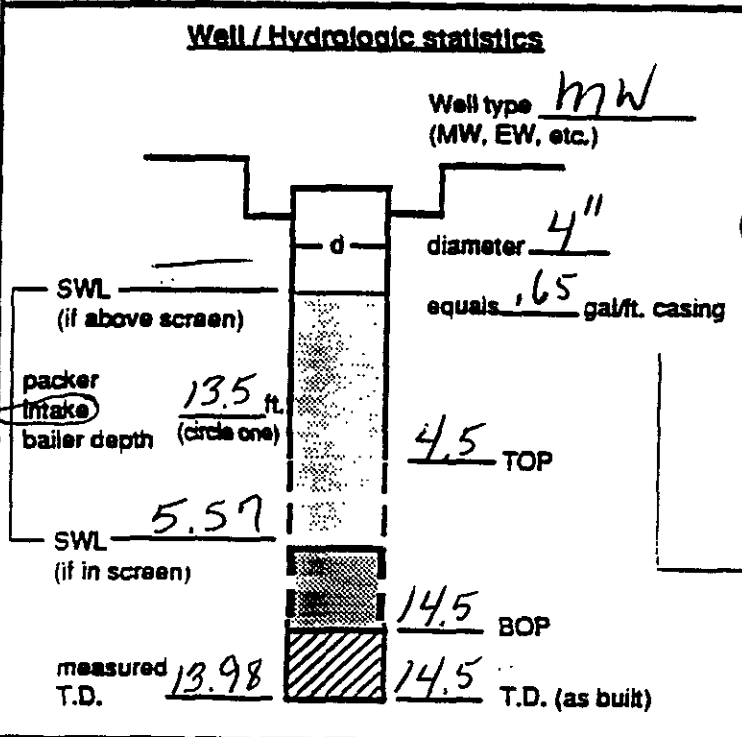
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McLaren

WELL OR LOCATION MW-6

PROJECT TARGET DUBIN EVENT Quarterly SAMPLER D. WATTS DATE 9/24/92



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	0930		
STOP	1630	.75 gpm	13.50
(Re-start)	0730	.75 gpm	5.79
	1030	.50 gpm	13.50
Stop	1035		13.50
Sampled	1105		5.91
(Final IWL)	1109		5.85
Purge calculation			
.65 gal/ft. * 8.93 ft. = 5.81 gals 8.93 23.24 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:
CENT. Pump @ Disp. BAILER
USED DESIGN T.D. FOR PURGE CALCULATION.

Actual gallons purged	<u>450+</u>	
Actual volumes purged	<u>78+</u>	
Well yield (see below)	⊕ <u>MY</u>	
COC #	<u>30253</u>	
Sample I.D.	Analysis	Lab
<u>214468-71</u>	<u>TPH-6 (WET) + BTEX (WET)</u>	<u>mal</u>

50% Recovery: 10.03 80% Recovery: 6.73

Additional comments:
(MODERATE PETROLEUM ODOUR)
SAMPLE TURBIDITY: 2.85

Gallons purged *	TEMP °C RE (circle one)	EC (us / cm)	PH	TURBIDITY (NTU)		
1. 360	75.0	1052	7.39	1.88		
2. 380	75.5	1061	7.37	2.20		
3. 400	76.0	1080	7.36	1.45		
4. 420	75.8	1090	7.34	0.98		
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.

ATTACHMENT II



Date: October 5, 1992
LP #: 6540

Campbell McLeod
McLaren/Hart
1135 Atlantic Avenue
Alameda, CA 94501

Dear Mr. McLeod:

Enclosed are the laboratory results for the seven samples submitted by you to the McLaren Analytical Laboratory on September 26, 1992, for the project Target Dublin.

The analysis you requested is:

EPA 8020 (BTEX) and TPH/G (7 - Water)

The report consists of the following sections:

1. A copy of the Chain-of-Custody
2. Quality Control Definitions and Report
3. Abbreviations and Comments
4. Analytical results
5. Copy of final billing submitted to accounting.

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

Thank you for choosing McLaren Analytical Laboratory. 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,

A handwritten signature in cursive script, appearing to read 'Shakoora Azimi'.

Shakoora Azimi
Laboratory Manager/Principal Scientist

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS: A method blank (MB) is a laboratory generated sample free of any contamination. The method blank assesses the degree to which the laboratory operations and procedures cause false-positive analytical results for your samples.

LABORATORY CONTROL SPIKES

The LCS Program:

The laboratory control spike is a well-characterized matrix (organic pure type II water for water samples and contamination-free sand for soil samples) which is spiked with certain target parameters, and analyzed in duplicate at approximately 5% of the sample load, in order to assure the accuracy and precision of the analytical method.

Control limits for accuracy and precision are different for different methods and may vary with the different sample matrices. They are based on laboratory average historical data and EPA limits which are approved by the Quality Assurance Department.

(DC3-CN6540)



QUALITY CONTROL REPORT

METHOD BLANK

Method: Mod. EPA 8020 (BTEX) & TPH/G
Units: ug/L (ppb)

Date Analyzed: 09/28/92

<u>Analyte</u>	<u>Reporting Limit</u>	<u>Concentration</u>
Benzene	0.30	BRL
Toluene	0.30	BRL
Ethyl Benzene	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



QUALITY CONTROL REPORT

METHOD BLANK

Method: Mod. EPA 8020 (BTEX) & TPH/G
Units: ug/L (ppb)

Date Analyzed: 09/29/92

<u>Analyte</u>	<u>Reporting Limit</u>	<u>Concentration</u>
Benzene	0.30	BRL
Toluene	0.30	BRL
Ethyl Benzene	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



**Laboratory Control Sample/Laboratory Control Sample Duplicate
Method 8020**

LP#: 6540

Analyst: TL

Spike Sample ID: LCS/LCSW-22

Date Of Analysis: 09/24/92

Spike ID Code: W-1-577

Column: DBWax

Surrogate ID Code: W-1-610

Instrument #: 6

Matrix: Water Units: ug/L

EPA METHOD	COMPOUNDS	(a)	(b)	(c)	(d)	(e)	(f)	(g)	ACCEPTANCE LIMITS	
		SAMPLE CONC.	SPIKE CONC.	SAMPLE + SPIKE CONC.	SPIKE REC.%	SAMPLE DUP. + SPIKE CONC.	SPIKE DUP. REC. %	RPD%	% REC.	RPD
8020	Chlorobenzene	0	4.0	3.9	98	3.9	98	0	80 - 120	≤20
8020	Benzene	0	4.0	4.0	100	4.0	100	0	80 - 120	≤20
8020	Ethyl Benzene	0	4.0	4.1	102	4.1	102	0	80 - 120	≤20

$$\text{Spike Recovery} = d = ((c-a)/b) \times 100$$

$$\text{Spike Duplicate Recovery} = f = ((e-a)/b) \times 100$$

$$\text{Relative Percent Difference} = g = (|c-e|)/((c+e) \times .5) \times 100$$

EPA METHOD	SURROGATE COMPOUNDS	DET.	(h)	(i)	(j)	(k)	(l)	ACCEPTANCE LIMITS
			SUR. SPIKE CONC.	SAMPLE + SUR. SPIKE CONC.	SUR. REC. %	SAMPLE DUP. + SUR.SPIKE CONC.	SUR. DUP. RECOVERY %	% REC.
8020	a,a,a,-Trifluorotoluene	PID	4.0	4.1	102	4.2	105	80 - 120

$$\text{Surrogate \% Recovery} = j = (i/h) \times 100$$

$$\text{Surrogate Dup \% Recovery} = l = (k/h) \times 100$$



**Laboratory Control Sample/Laboratory Control Sample Duplicate
Total Petroleum Hydrocarbons/TPH-Gasoline**

Analyst: TL

LP#: 6540

Date of Analysis: 09/24/92

Spike Sample ID: LCS/LCSDW-18

Column: DB624

Spike ID Code: W-1-584

Instrument #: 6

Surrogate ID Code: W-1-610

Matrix: Water Units: ug/L

COMPOUNDS	(a)	(b)	(c)	(d)	(e)	(f)	(g)	ACCEPTANCE LIMITS	
	SAMPLE CONC.	SPIKE CONC.	SAMPLE + SPIKE CONC.	SPIKE REC. %	SAMPLE DUP. + SPIKE CONC.	SPIKE DUP. REC. %	RPD %	% REC.	RPD
Gas	0	100.	110.	110	100.	100	10	80 - 120	≤20

$$\text{Spike Recovery} = d = ((c-a)/b) \times 100$$

$$\text{Spike Duplicate Recovery} = f = ((e-a)/b) \times 100$$

$$\text{Relative Percent Difference} = g = (|c-e|)/((c+e) \times .5) \times 100$$

SURROGATE COMPOUNDS	(h)	(i)	(j)	ACCEPTANCE LIMITS
	SURROGATE SPIKE CONC.	SAMPLE + SURROGATE SPIKE CONC.	SURROGATE RECOVERY %	% REC.
a,a,a-Trifluorotoluene	4.0	4.6	115	80 - 120

$$\text{Surrogate \% Recovery} = j = (i/h) \times 100$$



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.

Values for total petroleum hydrocarbons gasoline were calculated based only on detected peaks.

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

(DC3-CN6540)



VOLATILE AROMATIC COMPOUNDS

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

Project Name: <u>Target Dublin</u>	Project Number: <u>04.0122606.000</u>
Sample Description: <u>Trip Blank</u>	Lab Project-ID Number: <u>6540-001</u>
Sample Number: <u>214045</u>	Date Sampled: <u>09/24/92</u>
Date Received: <u>09/26/92</u>	Date Analyzed: <u>09/28/92</u>

<u>ANALYTE</u>	<u>CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.30
Toluene	0.36	0.30
Ethyl Benzene	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

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	98	80 - 120
a,a,a-Trifluorotoluene (FID)	102	80 - 120

Comments:

Approved By: Cheyl Matterson J.M. Date: 10/5/92
Nancy McDonald, Quality Control Chemist

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

080492btxtphgw



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: 04.0122606.000

Sample Description: MW-1

Lab Project-ID Number: 6540-002

Sample Number: 214048

Date Sampled: 09/24/92

Date Received: 09/26/92

Date Analyzed: 09/28/92

<u>ANALYTE</u>	<u>CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.30
Toluene	BRL	0.30
Ethyl Benzene	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

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	102	80 - 120
a,a,a-Trifluorotoluene (FID)	102	80 - 120

Comments:

Approved By: Cheryl Matterson for N.M. Date: 10/5/92
 Nancy McDonald, Quality Control Chemist

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

080492btxtphgw



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: 04.0122606.000

Sample Description: MW-2

Lab Project-ID Number: 6540-005

Sample Number: 214460

Date Sampled: 09/25/92

Date Received: 09/26/92

Date Analyzed: 09/28/92

<u>ANALYTE</u>	<u>CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	1.3	0.30
Toluene	BRL	0.30
Ethyl Benzene	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

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	112	80 - 120
a,a,a-Trifluorotoluene (FID)	115	80 - 120

Comments:

Approved By: Cheryl Matterson for NM
 Nancy McDonald, Quality Control Chemist

Date: 10/5/92

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

080492btxtphgw



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: 04.0122606.000

Sample Description: MW-3

Lab Project-ID Number: 6540-003

Sample Number: 214452

Date Sampled: 09/24/92

Date Received: 09/26/92

Date Analyzed: 09/28/92

<u>ANALYTE</u>	<u>CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.30
Toluene	BRL	0.30
Ethyl Benzene	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

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	98	80 - 120
a,a,a-Trifluorotoluene (FID)	102	80 - 120

Comments:

Approved By: Cheryl Matterson for NM
 Nancy McDonald, Quality Control Chemist

Date: 10/5/92

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

080492btxtphgw



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: 04.0122606.000

Sample Description: MW-4

Lab Project-ID Number: 6540-006

Sample Number: 214464

Date Sampled: 09/25/92

Date Received: 09/26/92

Date Analyzed: 09/28/92

<u>ANALYTE</u>	<u>CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.30
Toluene	BRL	0.30
Ethyl Benzene	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

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	100	80 - 120
a,a,a-Trifluorotoluene (FID)	118	80 - 120

Comments: Non-target analytes are present on the chromatograph.

Approved By: *Cheryl Matterson for*
Nancy McDonald, Quality Control Chemist

Date: 10/5/92

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

080492btxtphgw



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: 04.0122606.000

Sample Description: MW-5

Lab Project-ID Number: 6540-004

Sample Number: 214456

Date Sampled: 09/24/92

Date Received: 09/26/92

Date Analyzed: 09/29/92

<u>ANALYTE</u>	<u>CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.30
Toluene	BRL	0.30
Ethyl Benzene	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

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	98	80 - 120
a,a,a-Trifluorotoluene (FID)	102	80 - 120

Comments:

Approved By: *Cheyl Matteson for NM*
 Nancy McDonald, Quality Control Chemist

Date: 10/5/92

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

080492btxtphgw



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: 04.0122606.000

Sample Description: MW-6

Lab Project-ID Number: 6540-007

Sample Number: 214469

Date Sampled: 09/25/92

Date Received: 09/26/92

Date Analyzed: 09/29/92

<u>ANALYTE</u>	<u>CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	28	3.0
Toluene	BRL	3.0
Ethyl Benzene	120	3.0
1,2-Xylene	BRL	3.0
1,3-Xylene	BRL	3.0
1,4-Xylene	BRL	3.0
Total Petroleum Hydrocarbons - Gasoline	BRL (a)	500

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	110	80 - 120
a,a,a-Trifluorotoluene (FID)	118	80 - 120

Comments: (a) Ethyl Benzene was omitted from the calculation since the ratio of Ethyl Benzene to Gasoline in the sample was much greater than that in the standard. By using Ethyl Benzene in the calculation, the Gasoline result would be biased high.

The sample was diluted 10 fold to bring target analytes within linear working range.

Approved By: Cheyl Matteson for NM Date: 10/5/92
Nancy McDonald, Quality Control Chemist

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

080492btxtphgw



VOLATILE AROMATIC COMPOUNDS

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

Project Name: <u>Target Dublin</u>	Project Number: <u>04.0122606.000</u>
Sample Description: <u>MW-6</u>	Lab Project-ID Number: <u>6540-007</u>
Sample Number: <u>214469</u>	Date Sampled: <u>09/25/92</u>
Date Received: <u>09/26/92</u>	Date Analyzed: <u>09/29/92</u>

<u>ANALYTE</u>	<u>CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	28	3.0
Toluene	BRL	3.0
Ethyl Benzene	120	3.0
1,2-Xylene	BRL	3.0
1,3-Xylene	BRL	3.0
1,4-Xylene	BRL	3.0
Total Petroleum Hydrocarbons - Gasoline	480 (a)	500

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	110	80 - 120
a,a,a-Trifluorotoluene (FID)	118	80 - 120

Comments: (a) The data is reported as an estimated concentration below the established reporting limit. (Revised 10/19/92)

The sample was diluted 10 fold to bring target analytes within linear working range.

Approved By: Cheryl Matterson for mm Date: 10/19/92
Nancy McDonald, Quality Control Chemist

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

080492btxtphgw





CHAIN OF CUSTODY RECORD

30253

To: MAL
 Address: 3083 GOLD CANAL DR.
RANCHO CORTADOVA, CA 95670

Project Name: TARGET DUBLIN
 Project Number: 04 0122606.000
 Project Location: (State) CA

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

Operator Name: D. WATTS
 Dispatched By: [Signature]
 Dispatched By: [Signature]
 Dispatched By: _____

Signature: [Signature]
 Date/Time: 9/25/92 1320
 Date/Time: _____
 Date/Time: _____

PPE Worn in Field: D
 Received By or Method of Shipment/shipment I.D.: [Signature] Date/Time: 9/25/92 1150
 Received By or Method of Shipment/shipment I.D.: COURTIER Date/Time: 9/25/92 1700
 Received By or Method of Shipment/shipment I.D.: _____ Date/Time: _____

- Common Analytical Methods**
- 413.1
 - 413.2
 - 418.1
 - 418.1 Short Method
 - 420.1
 - 502.2
 - 503E
 - 524.2
 - 601
 - 602
 - 604
 - 608
 - 610
 - 624
 - 625
 - 6010
 - 6015
 - 6015 Mod.
 - 6020
 - 6021
 - 6040
 - 6060
 - 6100
 - 6240
 - 6270
 - 6310
 - Alkalinity
 - BTEX
 - Chloride
 - CLP (see Side 2)
 - COD
 - Color
 - Conductivity
 - Cyanide
 - Flashpoint
 - Fluoride
 - General Mineral
 - Hex. Chromium
 - Ion Balance
 - Metals (write specific metal & method #)
 - Metals 6010*
 - Metals PP*
 - Metals Title 22:
 - TTL Level
 - STLC Level (see Side 2)
 - Nitrate
 - Nitrite
 - Org. Lead
 - Org. Mercury
 - Percent Moisture
 - Percent Solid
 - Perchlorate
 - pH
 - Phosphates
 - Phosphorus
 - Sulfate
 - Sulfides
 - TCLP:
 - VOA
 - Semivolatile Metals
 - Pesticide
 - TDS
 - Total Hardness
 - Total Solids
 - TPH/D
 - TPH/G
 - TSS
 - Turbidity

Sample Disposal (check one)
 Laboratory Standard
 Other

Level of QC (see Side 2)
 1 2 3 4
 5 6 7

*** ANALYSES REQUESTED**
 Write in Analysis Method →

SAMPLE INFORMATION

LABORATORY USE ONLY Lab ID	Sample ID Number	Date	Time	Description		Container(s)		Matrix Type	Pres. Type	TAT	ANALYSES REQUESTED
				Locator	Depth	#	Type				
	214044-47	9/24/92	1012	TRIP BANK	NA	4	V	H ₂ O	HCl	4	TPH-6/LUFT + BTEX/LUFT
	214048-50		1110	MW-1							
	214451										
	214452-55		1310	MW-3							
	214456-59		1505	MW-5							
	214460-63	9/25/92	0835	MW-2							
	214464-67		1020	MW-4							
	214468-71		1105	MW-6							

Additional Instructions/Comments:
ANALYSES: TPH-6/LUFT + BTEX/LUFT
MW 1-6 PRESERVATIVE: HCl + Na₂S₂O₃
 LABORATORY USE ONLY Sample Condition Upon Receipt: _____

Container Types: A=1 Liter Amber TAT (Analytical Turn Around Time)
 B=Brass Tube C=Cassette 1 = 24 hours 2 = 48 hours
 G=Glass Jar P=Polyethylene 3 = 1 week 4 = 2 weeks
 O=Other V=Voa Vial 0 = Other

SEND DOCUMENTATION AND RESULTS TO (Check one):
 Project Manager/Office: C. MCLEOD / ALABAMA
 Client Name: _____
 Company: _____
 Address: _____
 Phone: _____ FAX: _____

* Specify Total or Dissolved