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# LETTER OF TRANSMITTAL

DATE	3-25-92	JOB NO.	122601
ATTENTION	Dr. RAVI ARULANANTHAM		
RE:	December 1991 Quarterly Groundwater Monitoring and Interim Remediation Report		

TO: Alameda County Dept. of Env. Health  
80 Swan Way, Suite 200  
Oakland, CA 94621

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2	3/25/92	December 1991 Quarterly Groundwater Monitoring and Interim Remediation Report - Former Alameda Service Station A-578, 7608 Amador Valley Blvd., Dublin, California March 24, 1992 Report

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REMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

COPY TO: Jim Bosch

Rosemary for Campbell McLeod  
(Signature)

92 MAR 05 PM 11:35

**DECEMBER 1991 QUARTERLY  
GROUNDWATER MONITORING AND  
INTERIM REMEDIATION REPORT**

**FORMER ALAMEDA SERVICE  
STATION A-578  
7608 AMADOR VALLEY BLVD.  
DUBLIN, CALIFORNIA**

**MARCH 24, 1992**





March 24, 1992

Mr. Jim Bosch  
Environmental Manager  
Target Stores  
33 South Sixth Street  
Minneapolis, Minnesota 55440

Dear Mr. Bosch:

**DECEMBER 1991 QUARTERLY GROUNDWATER MONITORING AND INTERIM  
REMEDATION REPORT FOR FORMER ALAMEDA SERVICE STATION A-578  
LOCATED AT 7608 AMADOR VALLEY BOULEVARD, DUBLIN, CALIFORNIA**

Enclosed is the "Quarterly Groundwater Monitoring Report" for the former Alameda Service Station A-578 near Target store T-328 at 7608 Amador Valley Boulevard in Dublin, California. This report was prepared in accordance with McLaren/Hart's work plan entitled "Proposal and Cost Estimate to Conduct Quarterly Groundwater Sampling and Interim Remediation at the Target Store T-328 Dublin, California" dated September 4, 1991. The work plan was approved by the Alameda County Department of Environmental Health. This report also includes a summary of interim groundwater remediation activities that were conducted as specified in the letter entitled "Update of Schedule for Interim Groundwater Remediation at the Former Target Store T-328 Dublin, California" dated November 15, 1991.

If you have any questions or comments, please do not hesitate to call us at (510) 521-5200.

Sincerely

Handwritten signature of Campbell McLeod in cursive.

Campbell McLeod  
Supervising Geoscientist

Handwritten signature of Clifton Davenport in cursive.

Clifton Davenport, CEG #1455  
Principal Hydrogeologist

Enclosure

0120RN3

**DECEMBER 1991 QUARTERLY GROUNDWATER MONITORING REPORT  
FORMER ALAMEDA SERVICE STATION A-578  
7608 AMADOR VALLEY BOULEVARD  
DUBLIN, CALIFORNIA**

**INTRODUCTION**

This letter report presents the results of the December 1991 quarterly groundwater monitoring activities 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 work plan entitled "Proposal and Cost Estimate to Conduct Quarterly Groundwater Sampling and Interim Remediation at the Target Store T-328 Dublin, California" dated September 4, 1991 and approved by the Alameda County Department of Environmental Health. The new quarterly schedule for interim remediation was detailed in a letter entitled "Update of Schedule for Interim Groundwater Remediation at Former Target Store T-328 Dublin, California" dated November 15, 1991.

**SCOPE OF WORK AND OBJECTIVES**

The work associated with the December quarterly monitoring event included sampling six monitoring wells (MW-1 through MW-6) for petroleum-related hydrocarbons and the extraction of 300 gallons of impacted groundwater from monitoring well MW-6. Also discussed in this report is the extraction of 220 gallons of impacted groundwater from MW-6 and sampling of MW-6 in October 1991. A map showing the site location 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 aid in determining the lateral extent of petroleum hydrocarbons in the shallow groundwater beneath the site, while the removal of groundwater from MW-6 serves as an interim remediation of impacted groundwater in the area of the former underground fuel tank excavation.

**Groundwater Elevations**

Groundwater surface elevations were measured on December 30, 1991, and are presented in Table 1 along with well construction details. This data was used to construct the December 1991 groundwater contour map, presented as Figure 2. The inferred groundwater flow direction is generally toward the east, varying from northeast to southeast. This variation is a result of a relatively high level of groundwater in the former tank excavation. This flow direction is consistent with the observed groundwater flow direction in September 1991. Based on the observed contour pattern, MW-2 and MW-4 both appear to be downgradient of the former excavation area.

The depth to groundwater ranges from 5.50 to 7.17 feet below ground surface or 334.44 to

335.25 feet above mean sea level. The hydraulic gradient is approximately 0.009 feet/foot. The December water level measurements indicate that groundwater has risen in the six wells since September 1991 quarterly sampling, ranging from 0.40 to 0.74 feet, with an average rise of 0.58 feet. A summary of groundwater elevation data is presented in Table 2.

### **Interim Remediation**

Two interim remediation episodes have occurred at MW-6. The first groundwater remediation was conducted on October 17 and 18, 1991, shortly after MW-6 was constructed and the second was during the December 1991 quarterly sampling event. A maximum pumping rate of approximately 0.69 gpm was achieved at MW-6 and a total of 220 gallons were extracted in October 1991. Groundwater elevations were measured prior to commencement of pumping on October 17 and 18 1991, and then every two hours during pumping. These measurements are presented on Table 3. As shown on Table 3, it appears that the water levels in wells MW-3, MW-5 and MW-4 show the greatest drawdown (0.24, 0.20 and 0.17 feet, respectively) after pumping was completed on December 18, 1991.

On December 30 and 31, 1991, during the quarterly sampling event, 300 gallons of groundwater were extracted from MW-6. Groundwater elevations were measured prior to commencement of pumping, and again immediately upon completion. These measurements are also presented on Table 3. Wells MW-1, MW-2 and MW-5 showed the greatest response to pumping (0.19, 0.17 and 0.16 feet, respectively) during this event.

### **Monitoring Well Sampling**

Groundwater samples were collected at MW-6 on October 18, at MW-1, MW-2, and MW-3 on December 30, and at MW-4, MW-5, and MW-6 on December 31, 1991. Prior to sampling MW-1 through MW-5, three casing volumes were purged from each well using a centrifugal pump and the temperature, pH, electric conductivity, and turbidity were measured after each casing volume was removed. These parameters had stabilized, with the turbidity below 100 NTU, before sampling was performed using a disposable bailer. At MW-6 more than 39 casing volumes were removed prior to sample collection in both October and December 1991.

The groundwater samples were stored in a container filled with ice and delivered to McLaren/Hart 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. Additionally, a groundwater sample was collected in December 1991 at MW-6 for TPH diesel analysis by DHS LUFT method. This analysis was performed as stipulated in the November 15, 1991 letter because 78 ppm of diesel was detected in drill cuttings from the borehole drilled for MW-6. Trip blanks

were included in the shipments to the laboratory to be analyzed for TPH/G and BTEX.

### **Monitoring Well Sampling Results**

Table 4 presents the analytical results of the groundwater samples collected during the December 1991 sampling event as well as the October 1991 sampling of MW-6. Figure 3 also presents the reported chemical concentrations at each monitoring well.

#### October 1991

Water samples collected at monitoring well MW-6 after the initial groundwater removal did not contain concentrations of toluene at or above the reporting limit. Benzene, ethylbenzene and xylenes were detected at 230 parts per billion (ppb), 140 ppb, and 12.1 ppb, respectively. TPH/G was detected at a concentration of 1,900 ppb.

#### December 1991

Water samples collected at monitoring wells MW-1, MW-3, 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 2,500 ppb TPH/G, 360 ppb benzene, and 260 ppb ethylbenzene. Benzene, ethylbenzene, and xylenes were detected in groundwater from MW-4 at 6.4 ppb, 16 ppb, and 25.8, respectively. Benzene was detected in groundwater samples from MW-2 at 6.1 ppb. TPH/Diesel was not detected in the sample from MW-6.

#### Analysis

Benzene and ethylbenzene concentrations reported at MW-4 have decreased from those detected in the September 1991 sampling event, from 100 to 6.4 ppb and 45 to 16 ppb respectively. However, the TPH/G and total xylene concentrations have increased from <50 to 180 ppb and 8.1 to 25.8 ppb, respectively. Never the less, as shown on Table 2, there appears to be an overall decreasing trend in chemical concentration at MW-4 since measurements began in February 1991.

The October and December 1991 analytical results reported at MW-6 generally confirm the relatively high concentration of petroleum chemicals (TPH/G, benzene, ethylbenzene) reported in September. However, the concentration levels reported at MW-6 for benzene and total xylenes in October (230 and 12.1 ppb respectively) and December (360 and <50 ppb respectively) have decreased from those reported in September (760 and 236 ppb respectively).

The trip blank sample did not contain TPH/G or BTEX at concentrations at or above the reporting limits. However, toluene was detected in the trip blank at 0.63 ppb. 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 these compounds in drinking water include: 5 ppb benzene; 2,000 ppb toluene; 680 ppb ethylbenzene; and 1,750 ppb total xylenes. The Federal MCL for toluene is 100 ppb. There is no state action level for TPH/G. Benzene is present in monitoring wells MW-2, MW-4, and MW-6 in concentrations in excess of its MCL. However, groundwater beneath the site is apparently 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 the data collected to date:

- No free-floating petroleum product was observed in any of the wells.
- The analytical results from water samples collected at MW-6 in October and December 1991 confirm the relatively high petroleum chemical concentrations of TPH/G, benzene and ethylbenzene reported in September 1991 sampling. However, the reported concentration levels of benzene and total xylenes do appear to have decreased in December 1991 at MW-6.
- No TPH/Diesel concentrations were reported at MW-6.
- The December 1991 analytical data from MW-4 indicate that benzene and ethylbenzene concentrations have decreased, whereas TPH/G and total xylene concentrations have increased since the September sampling event. However, there appears to be a general decreasing trend in chemical concentrations in the groundwater at MW-4 between February and December 1991.
- As shown on Figure 2, the apparent groundwater flow direction at the site is generally to the east, varying from northeast to southeast, generally consistent with historic flow directions.
- Groundwater elevations in the six wells have risen an average of 0.58 feet since September 1991.
- Based on the analytical results from MW-3, no petroleum chemicals appear to be migrating in the groundwater beneath the site from off site locations.

- Based on the analytical results from MW-1 and MW-5, no petroleum hydrocarbons are present in the groundwater in a crossgradient direction southeast of the former tank excavation.
- The interim groundwater remediation at MW-6 appears to be capable of lowering water levels at other wells on-site. Additional evaluation of future pumping events will be necessary to establish whether consistent trends can be determined.

Based on the above conclusions, McLaren/Hart recommends:

- Quarterly monitoring of all six wells should be continued. Analysis of TPH/Diesel should be conducted as proposed at monitoring well MW-6 for the next quarter (March 1992) to confirm the December 1991 analytical results. At that time the data will be evaluated to determine if additional testing is required.
- Groundwater extraction from MW-6 in the area of the tank excavation should be continued in conjunction with quarterly monitoring as proposed.

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

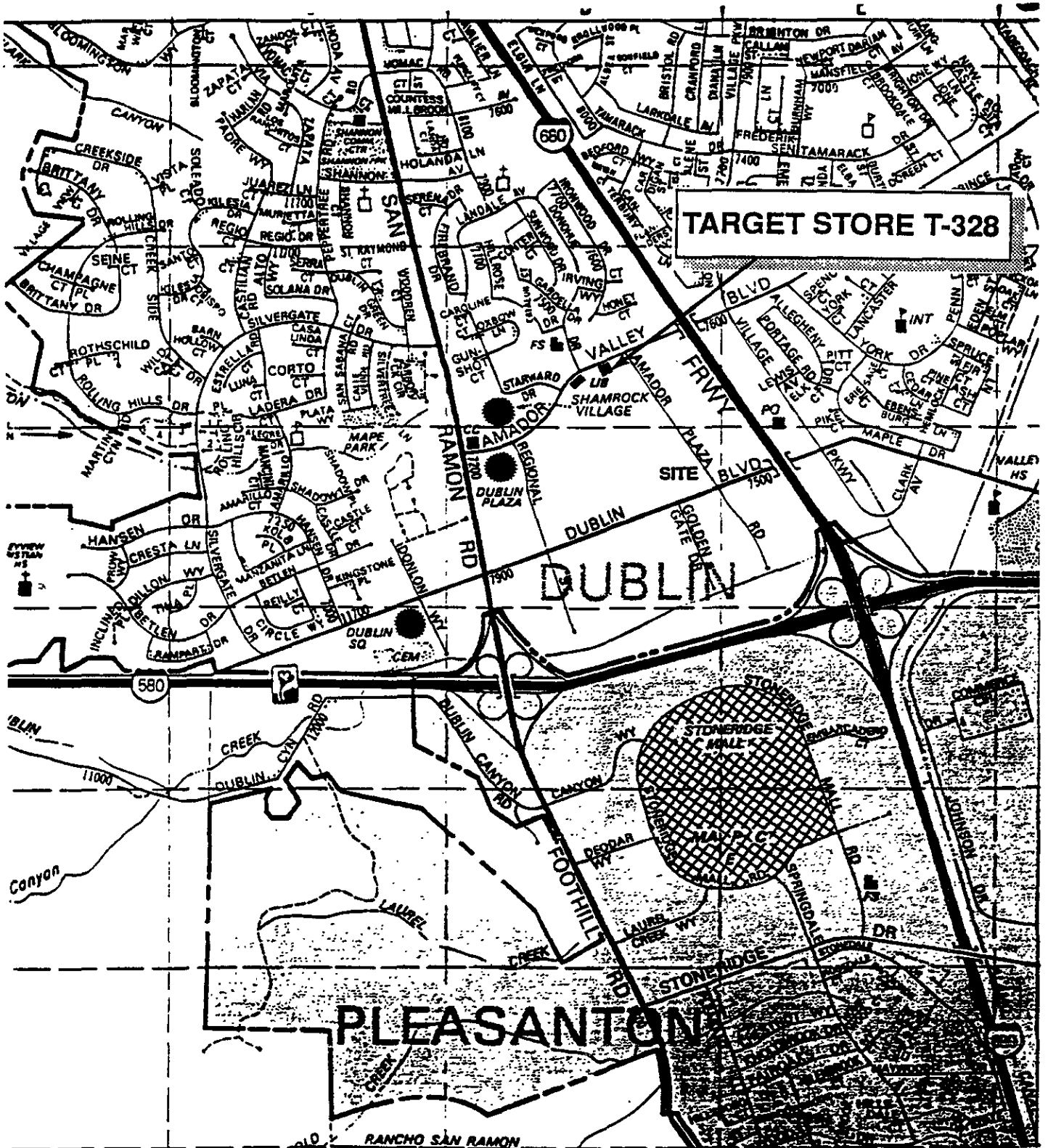


FIGURE 2  
GROUNDWATER CONTOUR MAP  
DECEMBER 30, 1991  
TARGET STORE GASOLINE STATION  
AMADOR VALLEY BOULEVARD

PLANTER AREA

COPELAND'S SPORT

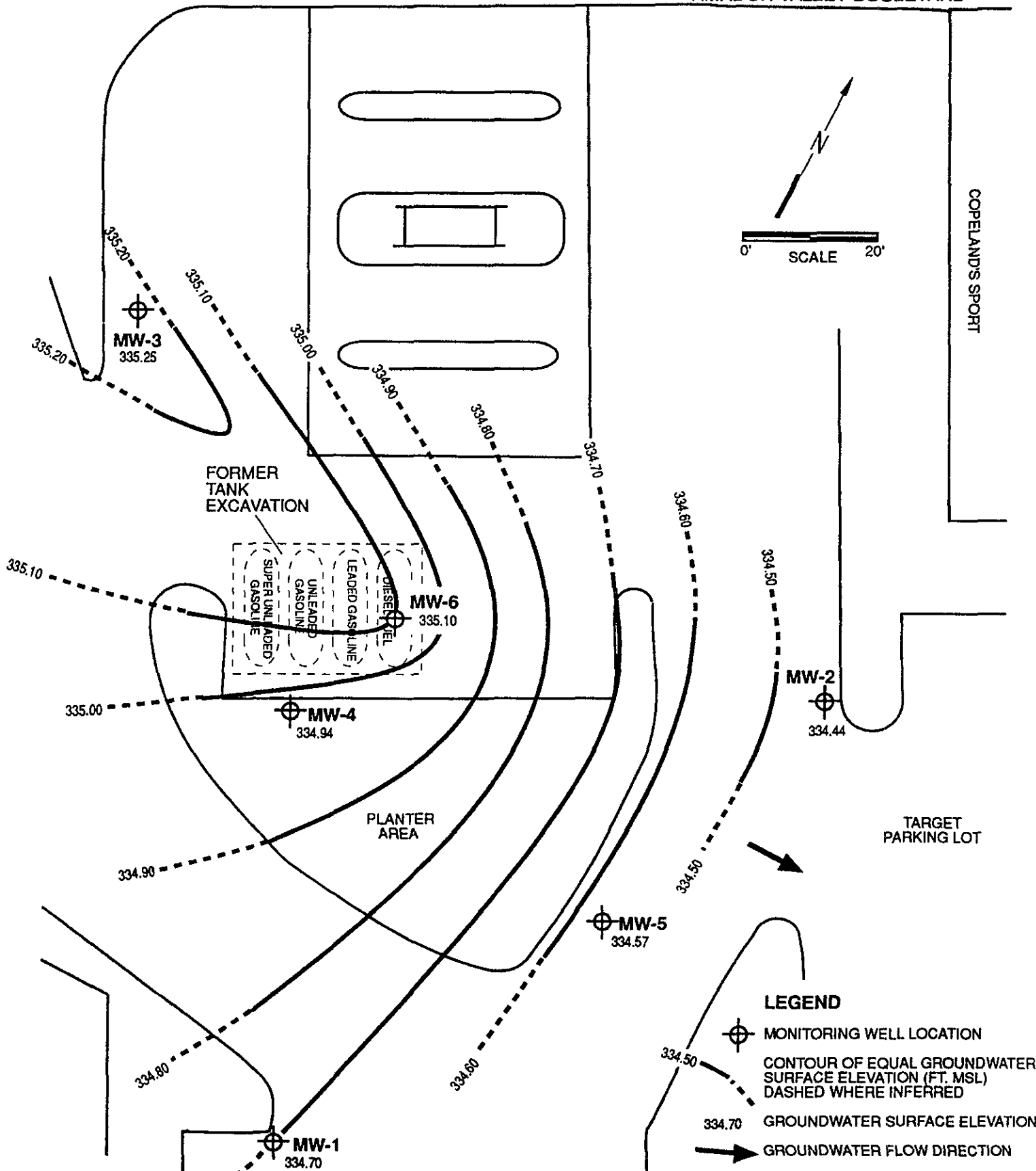
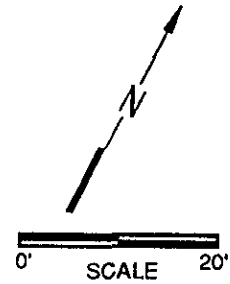


FIGURE 3  
 GROUNDWATER MONITORING WELL  
 CHEMICAL CONCENTRATIONS  
 OCTOBER & DECEMBER, 1991  
 TARGET STORE GASOLINE STATION  
 AMADOR VALLEY BOULEVARD

PLANTER AREA

COPELAND'S SPORT



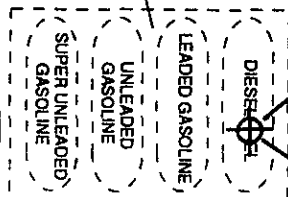
MW-3

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

OCTOBER	
MW-6	ppb
TPH/G	1900
Benzene	230
Toluene	ND
Ethylbenzene	140
Xylenes	12.1

DECEMBER	
MW-2	ppb
TPH/G	ND
Benzene	6.1
Toluene	ND
Ethylbenzene	ND
Xylenes	ND

FORMER  
TANK  
EXCAVATION



MW-6

DECEMBER	
MW-6	ppb
TPH/D	ND
TPH/G	2500
Benzene	360
Toluene	ND
Ethylbenzene	260
Xylenes	ND

DECEMBER	
MW-4	ppb
TPH/G	180
Benzene	6.4
Toluene	ND
Ethylbenzene	16
Xylenes	25.8

MW-4

PLANTER AREA

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

TARGET  
PARKING LOT

MW-5

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

MW-1

**LEGEND**

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

TABLE 1

WELL CONSTRUCTION DETAILS AND GROUNDWATER SURFACE ELEVATIONS  
 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 12/30/91 (feet below grade)	GROUNDWATER ELEVATION 12/30/91 (MSL)
MW-1	5-20	340.30	335.30 - 320.30	340.20	5.50	334.70
MW-2	5-20	340.52	335.52 - 320.52	340.27	5.83	334.44
MW-3	5-20	341.67	336.67 - 321.67	341.00	5.75	335.25
MW-4	5-20	342.31	337.31 - 322.31	342.11	7.17	334.94
MW-5	5-20	340.52	335.52 - 320.52	340.09	5.52	334.57
MW-6	4.5-14.5	341.13	336.63-326.63	340.81	5.71	335.10

\* Feet above mean sea level

TABLE 2

SUMMARY OF GROUNDWATER ELEVATION DATA  
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
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
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
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
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
MW-6	340.81	9/26/91	6.45	334.36	
		12/30/91	5.71	335.10	0.74

\* MSL = Mean Sea Level

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TABLE 3

CHANGE IN GROUNDWATER ELEVATION AT MONITORING WELLS  
 DURING INTERIM REMEDIATION AT MW-6  
 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	---
	1200	6.22	-0.03	6.78	-0.04	6.57	-0.17	8.08	-0.12	6.40	-0.12	12.18	5.53
	1400	6.24	-0.05	6.80	-0.06	6.58	-0.18	8.10	-0.14	6.44	-0.16	13.06	6.41
	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
	1100	6.26	-0.07	6.82	-0.08	6.61	-0.21	8.11	-0.15	6.46	-0.18	12.88	-6.23
	1200	6.26	-0.07	6.82	-0.08	6.62	-0.22	8.12	-0.16	6.47	-0.19	12.54	-5.89
	1300	6.27	-0.08	6.82	-0.08	6.61	-0.21	8.12	-0.16	6.47	-0.19	12.56	-5.91
	1400	6.27	-0.08	6.82	-0.08	6.61	-0.21	8.13	-0.17	6.48	-0.20	12.65	-6.00
	1500	6.28	-0.09	6.84	-0.10	6.62	-0.22	8.14	-0.18	6.48	-0.20	12.82	-6.17
	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

\*NOTE: Changes in water elevation are measured from the initial depth to groundwater on 10/17/91 or 12/30/91. Groundwater was pumped from MW-6 at approximately 0.7 GPM.

TABLE 4

ANALYTICAL RESULTS OF GROUNDWATER SAMPLES (ppb)  
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
MW-2	2/91	50	<0.5	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
MW-3	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
MW-4	2/91	6,000	<0.5	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
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
MW-6	9/91	2,300	--	760	11	360	236
	10/91	1,900	--	230	<5	140	12.1
	12/91	2,500	<0.5	360	<50*	260	<50*

\* = The analysis was run at a 1:100 dilution to bring Target analytes within linear working range of the GC.

-- = Not analyzed.

**ATTACHMENT I**  
**OCTOBER EVENT**





McLaren

HYDRODATA

DATE: 10/17/91

PROJECT: Target EVENT: \_\_\_\_\_ SAMPLER: \_\_\_\_\_

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1	10	17	91	10	00	6.19	SWL	Initial Sounding
2	MW-2				10	06	6.74		
3	MW-3				10	08	6.40		
4	MW-4				10	10	7.96		
5	MW-5				10	04	6.28		
6	MW-6				10	12	6.65	<del>SWL</del>	
7	MW-1				12	00	6.22		DURING PUMPING
8	MW-2				12	04	6.78		
9	MW-3				12	06	6.57		
10	MW-4				12	08	8.08		
11	MW-5				12	02	6.40	✓	
12	MW-6				12	10	12.18	IWL	
13	MW-1				14	00	6.24	SWL	
14	MW-2				14	04	6.80		
15	MW-3				14	06	6.58		
16	MW-4				14	08	8.10		
17	MW-5				14	02	6.44	✓	
18	MW-6		✓		14	10	13.06	IWL	
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)<sup>2</sup>
- 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, seepage problems.

\*Negative pressure (Vacuum) psi is approx -1/2 x mmHg

# HYDRODATA

 DATE: 10/17/9

 PROJECT: Target EVENT: TPH/6 Remediation SAMPLER: CGW

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1	10	17	97	16	00	6.24	<del>SWL</del>	DURING PUMPING
2	MW-2				16	04	6.80		
3	MW-3				16	06	6.59		
4	MW-4				16	08	8.10		
5	MW-5				16	02	6.45	↓	
6	MW-6				16	10	11.26	IWL	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
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)<sup>2</sup>
  - 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

HYDRODATA

DATE: 10/18/91

PROJECT: Target EVENT: TPM/G Remediation SAMPLER: CG-W

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1	10	18	91	9	40	6.24	SWL	Initial sounding
2	MW-2				9	46	6.82		prior to pumping
3	MW-3				9	48	6.55		
4	MW-4				9	50	8.04		
5	MW-5				9	44	6.40		
6	MW-6				9	50	6.72		
7	MW-1				11	00	6.26	SWL	During pumping
8	MW-2				11	04	6.82		
9	MW-3				11	06	6.61		
10	MW-4				11	08	8.11		
11	MW-5				11	02	6.46		
12	MW-6				11	10	12.88	IWL	
13	MW-1				12	00	6.26	SWL	
14	MW-2				12	04	6.82		
15	MW-3				12	06	6.62		
16	MW-4				12	08	8.12		
17	MW-5				12	02	6.47		
18	MW-6				12	10	12.54	IWL	
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)<sup>2</sup>
- 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)



# HYDRODATA

DATE: 10/10/9

PROJECT: \_\_\_\_\_ EVENT: \_\_\_\_\_ SAMPLER: \_\_\_\_\_

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1				13	00	6.27	SWL	DURING PUMPING
2	MW-2				13	04	6.82		
3	MW-3				13	06	6.61		
4	MW-4				13	08	8.12		
5	MW-5				13	02	6.47	↓	
6	MW-6				13	10	12.56	IWL	
7	MW-1				14	00	6.27	SWL	
8	MW-2				14	04	6.82		
9	MW-3				14	06	6.61		
10	MW-4				14	08	8.13		
11	MW-5				14	02	6.48	↓	
12	MW-6				14	10	12.65	IWL	
13	MW-1				15	00	6.28	SWL	
14	MW-2				15	04	6.84		↓
15	MW-3				15	06	6.62		
16	MW-4				15	08	8.14		
17	MW-5				15	02	6.48	↓	
18	MW-6				15	10	12.82	IWL	
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)<sup>2</sup>
- 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)



PROJECT: \_\_\_\_\_ EVENT: \_\_\_\_\_ SAMPLER: \_\_\_\_\_

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1	10	18	91	16	00	6.28	SWL	
2	MW-2				16	04	6.84		
3	MW-3				16	06	6.64		
4	MW-4				16	08	8.13		
5	MW-5				16	02	6.48	↓	
6	MW-6				16	10	12.80	IWL	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
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)<sup>2</sup>
  - 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.  
<sup>1</sup>Negative pressure (Vacuum) psi = approx -(1/2 x mmHg)



McLaren

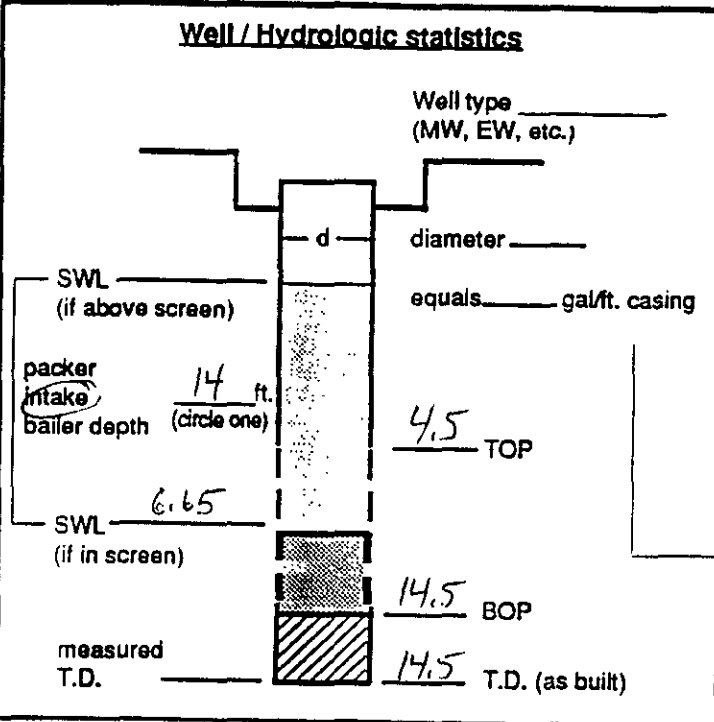
420 from MW-6

# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-6

PROJECT Target DUBLIN EVENT TPH/G Remediation SAMPLER CGW DATE 10/17/91



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1015	0.6 GPM	
	1030		11.06
	1045		12.39
	1210		12.18
Stop	1615		11.96
Sampled			
(Final IWL)			

**Purge calculation**

\_\_\_\_\_ gal/ft. \* \_\_\_\_\_ ft. = \_\_\_\_\_ gals x 3 = \_\_\_\_\_ 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 to purge  
adjusted flow rate until water level stabilized, then continued pumping at a constant rate for 6 hours.

220 total gallons purged

Actual gallons purged	_____
Actual volumes purged	_____
Well yield (see below)	⊕ _____
COC #	_____
Sample I.D.	Analysis _____ Lab _____
	_____
	_____
	_____
	_____

Additional comments:

Sounded MW-1 thru MW-6 prior to purging.

Gallons purged *	TEMP °C/°F (circle one)	EC (µs/cm)	PH	TURBIDITY (NTU)		
1.						
2.						
3.						
4.						
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

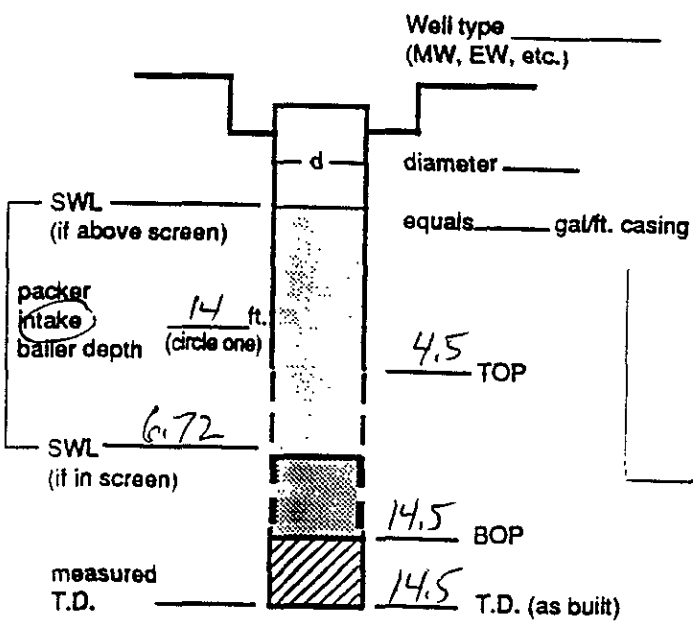
# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-6

PROJECT Target DUBLIN EVENT TPH/6 Remediation SAMPLER CGW DATE 10/18/91

### Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin			
Stop			
Sampled (Final IWL)			
<b>Purge calculation</b>			
_____ gal/ft. * _____ ft. = _____ gals x 3 = _____ gals.			
SWL to BOP or packer to BOP		one volume	purge volume- 3 casings
<b>Head purge calculation (Airlift only)</b>			
_____ gal/ft. * _____ ft. = _____ gals.			
_____ packer to SWL			

Equipment Used / Sampling Method / Description of Event:

Centrifugal pump to purge adjusted flow rate to 0.6 GPM, then pumped at a constant rate for 6 hours. Collected soil sample from barrels labeled 210 total gallons purged. #1 and #2

Actual gallons purged	_____
Actual volumes purged	_____
Well yield (see below) ⊕	_____
COC #	_____
Sample I.D.	_____
Analysis	_____
Lab	_____
185628-31	8020/TPH(G) MAL
185632-5	8020/TPH(G) TB
Soil	
48501	TPH(G)
48502	↓

Additional comments:

Two day total of 430 gallons

Sounded MW-1 thru MW-6 prior to purging

Gallons purged *	TEMP °C/°F (circle one)	EC (µs/cm)	PH	TURBIDITY (NTU)		
1. <u>SAMPLE</u>				<u>6.50</u>		
2.						
3.						
4.						
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.



Date: October 30, 1991  
LP #: 5067

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

Dear Mr. McLeod:

Enclosed are the laboratory results for the four samples submitted by you to the McLaren Analytical Laboratory on October 19, 1991, for the project *Target Dublin*.

The analyses you requested are:

- EPA 8020 & TPH/G (1 - Water)
- TPH/G (1 - Soil - Composite)
- Archive (1)

The report consists of the following sections:

1. A copy of the chain of custody
2. Quality Control Definitions and Report
3. 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 that reads 'Anthony S. Wong'.

Anthony S. Wong, Ph.D.  
Director, Laboratory/Managing Principal





pg 1/2

# CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No 5067 Secured  
 Storage Refrigerator ID: 12,8 Yes   
 Storage Freezer ID: \_\_\_\_\_ No

Project Name: Target DUBLIN Project # 122666 Sampler: Chris Walsh  
 Relinquished by: (Signature and Printed Name) Chris Walsh Received by: (Signature and Printed Name) Ecota  
 Relinquished by: (Signature and Printed Name) Fed Ex Received by: (Signature and Printed Name) Ruthless Fontenik Date: 10/19/91 Time: 15:45  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) Ruthless Fontenik Date: 10-19-91 Time: 09:00  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) logged by Date: 10-21-91 Time: 11:30 am  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

SHIP TO:  
 McLaren Analytical Laboratory  
 1101 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 638-3696  
 FAX (916) 638-2842

Method of Shipment: FedEx  
 Shipment ID: 121410530

Circle or Add Analysis(es) Requested
601/8010 (Halogenated Volatiles GC)
602/8020 (Aromatic Volatiles GC)
604/8040 (Phenols GC)
608/8080 (Pesticides/PCB GC)
610/8100 (PNA GC)
624/8240 (Volatiles GC/MS)
625/8250 (BNA GC/MS)
TPH/G (Gasoline GC)
418 1 (IR)
8015 Modified (GC)
Metals: Total a
Metals: Soluble a
Fluoride/Perchlorate
Chloride/pH
TDS/Percent Solid
Specific Conductivity (EC)

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description		Description	Analysis Requested													TAT	Container(s) FOR LABORATORY USE ONLY					
	Date	Time		601/8010	602/8020	604/8040	608/8080	610/8100	624/8240	625/8250	TPH/G	418 1 (IR)	8015 Modified	Metals: Total a	Metals: Soluble a	Fluoride/Perchlorate		Chloride/pH	TDS/Percent Solid	Specific Conductivity (EC)	#	Type	Lab ID
1	185625	14/18/91	17cc	MLV-G	X																4	1	V(HCl) 5067-001
2	185624			(SPARE)																			
3	185630			(SPARE)																			
4	185631			(SPARE)																			
5	185632		9:30	Trip Blank	X																		
6	185633			(SPARE)																			
7	185634			(SPARE)																			
8	185635			(SPARE)																			
9																							
10																							

Special Instructions/Comments: Please perform SC20/TPH(G) analysis using Luff method.  
 Sample Archive/Disposal  
 Laboratory Standard  
 Other \_\_\_\_\_

TAT (Analytical Turn Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks  
 Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber G=Glass Jar, C=Cassette  
 O = Other \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO (Check one)  
 Project Manager/Office Campbell Medical Division  
 Client Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone ( ) \_\_\_\_\_ Fax \_\_\_\_\_

FOR LABORATORY USE ONLY Sample Condition Upon Receipt Good Condition (G) 10-21-91  
Sample 185635 contains Air bubbles (X)  
Analysis Canceled per Mark Christensen 10-21-91 (X)

## QUALITY CONTROL DEFINITIONS

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**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. The method blank results associated with your samples are attached.

### 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. The results of the laboratory control spike associated with your samples are attached.

Accuracy is measured using percent recovery, i.e.:

$$\text{Percent Recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using the relative percent difference (RPD) from duplicate tests, i.e.:

$$\text{RPD} = \frac{\% \text{ Recovery of Spike}_{(1)} - \% \text{ Recovery of Spike}_{(2)}}{(\% \text{ Recovery of Spike}_{(1)} + \% \text{ Recovery of Spike}_{(2)})/2} \times 100$$

Control limits for accuracy and precision are different for different methods. They may also 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-CN5067)



QUALITY CONTROL REPORT

---

METHOD BLANK

Method: EPA 8020  
Units: ug/L (ppb)

Date Analyzed: 10/28/91

<u>Compound</u>	<u>Reporting Limit</u>	<u>Results of the MB</u>
Benzene	0.50	BRL
Toluene	0.50	BRL
Chlorobenzene	0.50	BRL
Ethyl Benzene	0.50	BRL
1,2-Xylene	0.50	BRL
1,3-Xylene	0.50	BRL
1,4-Xylene	0.50	BRL
1,2-Dichlorobenzene	0.50	BRL
1,3-Dichlorobenzene	0.50	BRL
1,4-Dichlorobenzene	0.50	BRL

(DC3-CN5067)



QUALITY CONTROL REPORT

---

METHOD BLANK

Method: TPH/G  
Units: ug/L (ppb)

Date Analyzed: 10/28/91

<u>Compound</u>	<u>Reporting Limit</u>	<u>Results of the MB</u>
Total Petroleum Hydrocarbons - Gasoline	50.	BRL

(DC3-CN5067)



**QUALITY CONTROL REPORT**

**McLaren Analytical Laboratory  
Spike/Spike Duplicate Recovery  
Method 8010 (Modified)/8020**

LP#: 5067

Analyst: LEX

Batch #: NA

Date Of Analysis: 10/23/91

Spike Sample ID: LGS/DW-28

Column: DBWAX

Spike ID Code: W1-352

Instrument #: GC3

Surrogate ID Code: W1-332

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
1,1 - Dichloroethane	NA	NA	NA	NA	NA	NA	NA	80 - 120	≤20
1,1,1 - Trichloroethane	NA	NA	NA	NA	NA	NA	NA	80 - 120	≤20
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	80 - 120	≤20
Chlorobenzene	NA	5.0	5.4	108	5.5	110	2	80 - 120	≤20
Benzene	NA	5.0	5.4	108	5.6	112	4	80 - 120	≤20
Ethyl Benzene	NA	5.0	5.5	110	5.7	114	4	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	DET.	(h)	(i)	(j)	(k)	(l)	ACCEPTANCE LIMITS
		SURROGATE SPIKE CONC.	SAMPLE + SURROGATE SPIKE CONC.	SURROGATE REC. %	SAMPLE DUP + SURROGATE SPIKE CONC.	SURROGATE DUP. RECOVERY %	
a,a,a,-Trifluorotoluene	PID	4.0	4.0	100	4.1	102	80 - 120

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

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

Comments:



**QUALITY CONTROL REPORT**

**McLaren Analytical Laboratory  
Spike/Spike Duplicate Recovery  
Total Petroleum Hydrocarbons/TPH-Gasoline**

Analyst: LEX LP#: 5067  
 Date of Analysis: 10/23/91 Spike Sample ID: LCS/D W-23  
 Column: DBWAX Spike ID Code: W1-327  
 Instrument #: GC3 Surrogate ID Code: W1-332  
 Batch #: NA Units: ug/L Matrix: Water

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	NA	100.	120.	120	110.	110	9	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	3.9	98	80 - 120

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

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



QUALITY CONTROL REPORT

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METHOD BLANK

Method: TPH/G  
Units: mg/Kg (ppm)

Date Analyzed: 10/24/91  
Date Extracted: 10/23/91  
Batch Number: 911023-1302

<u>Compound</u>	<u>Reporting Limit</u>	<u>Results of the MB</u>
Total Petroleum Hydrocarbons - Gasoline	1.0	BRL



**QUALITY CONTROL REPORT**

**McLaren Analytical Laboratory  
Spike/Spike Duplicate Recovery  
Total Petroleum Hydrocarbons/TPH-Gasoline**

Analyst: TL

LP#: 5067

Date of Analysis: 10/07/91

Spike Sample ID: LCSS-17/LCSDS

Column: DB5

Spike ID Code: WL-316

Instrument #: 3

Surrogate ID Code: WL-332

Batch #: 911004-1301

Units: mg/Kg Matrix: Soil

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	NA	5.0	5.9	118	5.1	102	14	75 - 125	≤25

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

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

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

SURROGATE COMPOUNDS	(h)	(i)	(j)	ACCEPTANCE LIMITS
	SURROGATE SPIKE CONC.	SAMPLE + SURROGATE SPIKE CONC.	SURROGATE RECOVERY %	% REC.
a,a,a-Trifluorotoluene	0.0040	0.0032	80	75 - 125

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

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





## ABBREVIATIONS USED IN THIS REPORT

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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

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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. Blank results are reported in the Case Narrative.

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

Results are reported on the attached data sheets.

(DC3-CN5067)



VOLATILE AROMATIC COMPOUNDS

Analytical Method: EPA 8020 and  
 Total Petroleum Hydrocarbons Gasoline by LUFT  
 Preparation Method: EPA 5030

Project Name: Target Dublin

Project Number: 122606

Sample Description: MW-6

Lab Project-ID Number: 5067-001

Sample Number: 185630

Date Sampled: 10/18/91

Date Received: 10/19/91

Date Analyzed: 10/28/91

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	230. (a)	5.0
Toluene	BRL	5.0
Chlorobenzene	BRL	5.0
Ethyl Benzene	140. (a)	5.0
1,2-Xylene	6.8	5.0
1,3-Xylene	BRL	5.0
1,4-Xylene	5.3	5.0
1,2-Dichlorobenzene	BRL	5.0
1,3-Dichlorobenzene	BRL	5.0
1,4-Dichlorobenzene	BRL	5.0
Total Petroleum Hydrocarbons Gasoline	1900.	500.

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	90	80 - 120
a,a,a-Trifluorotoluene (FID)	85	80 - 120

Dilution: 1:10

Comments: (a) The data was reported from a different analytical run on 10/28/91 at a 10 fold dilution for which the associated standard was within daily calibration criteria.

Approved By: Chris Philbin for P M Date: 01/30/91  
 Cheryl Matterson, Associate Chemist

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

070191



**ATTACHMENT II**  
**DECEMBER EVENT**



PROJECT: Target Dublin EVENT: Quarterly SAMPLER: CMS

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1	12	30	91	9	00	5.50	FANL	
2	MW-2				8	53	5.83		
3	MW-3				8	40	5.75		
4	MW-4				8	48	7.17		
5	MW-5				9	07	5.52		
6	MW-6				8	45	5.71		
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
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)<sup>2</sup>
- 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)



PROJECT: <u>Target</u>		EVENT: <u>Sounding</u>				SAMPLER: <u>CMS</u>			
NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-1	12	31	91	15	16	5.69	SWL	After extraction of 300 gallons from MW-6
2	MW-2		1		15	18	6.00		
3	MW-3				15	20	5.83		
4	MW-4				15	24	7.29		
5	MW-5				15	25	5.68		
6	MW-6		✓		15	30	7.36	✓	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
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)<sup>2</sup>
- 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  $-1/2 \times \text{mmHg}$



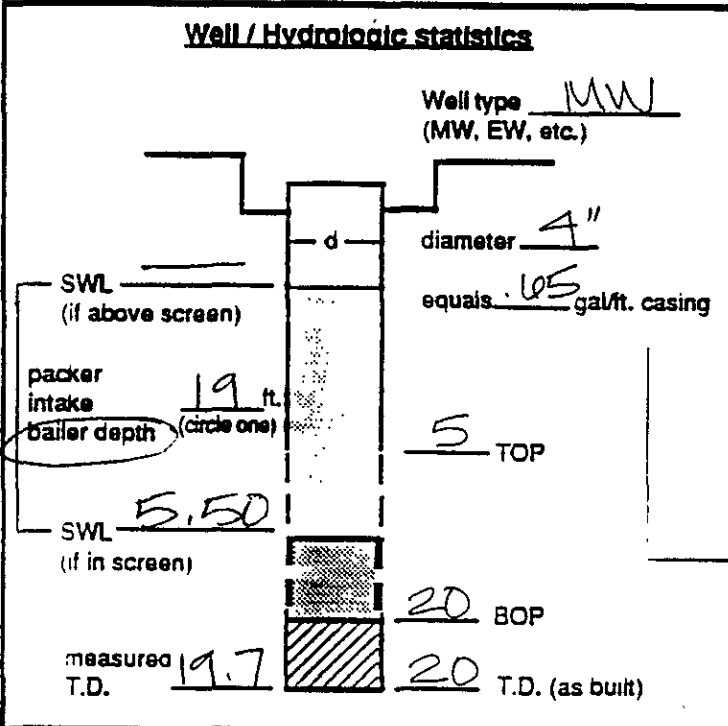
McLaren

# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-1

PROJECT Target Dublin EVENT Quarterly sampling SAMPLER CMS DATE 12-30-91



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	10:10	15 gpm	
	10:15		
		3 gpm	17.60
Stop	10:20	15 gpm	
Sampled	10:40		13.10
(Final IWL)	10:40		
<b>Purge calculation</b>			
<u>.65</u> gal/ft. * <u>14.5</u> ft. = <u>9.42</u> gals x 3 = <u>28.3</u> gals.			
SWL to BOP or one purge volume - packer to BOP volume 3 casings			
<b>Head purge calculation (Airlift only)</b>			
_____ gal/ft. * _____ ft. = _____ gals.			
_____ packer to SWL			

Equipment Used / Sampling Method / Description of Event:  
 centrifugal used to purge 3 casing volumes. Disposable bailer used to sample.

Actual gallons purged	<u>29</u>	
Actual volumes purged	<u>3</u>	
Well yield (see below)	<u>MY</u>	
COC #	<u>22100105</u>	
Sample I.D.	Analysis	Lab
<u>1910305</u>	<u>TPH/G</u>	<u>MAL</u>
<u>1910306</u>	<u>+BTEX</u>	
<u>1910307</u>		
<u>1910308</u>		

Additional comments:  
80% = 8.40  
OVM at source 0.9 ppm  
breathing zone 0.4 ppm

Gallons purged *	TEMP °C / °F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
<u>9</u>	<u>11.0</u>	<u>1920</u>	<u>7.04</u>	<u>34.5</u>		
<u>18</u>	<u>13.5</u>	<u>1960</u>	<u>7.07</u>	<u>off scale</u>		
<u>29</u>	<u>13.5</u>	<u>1940</u>	<u>7.04</u>	<u>off scale</u>		
<u>4.</u>						
<u>5.</u>				<u>sample turbidity 37.6</u>		

\* 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.



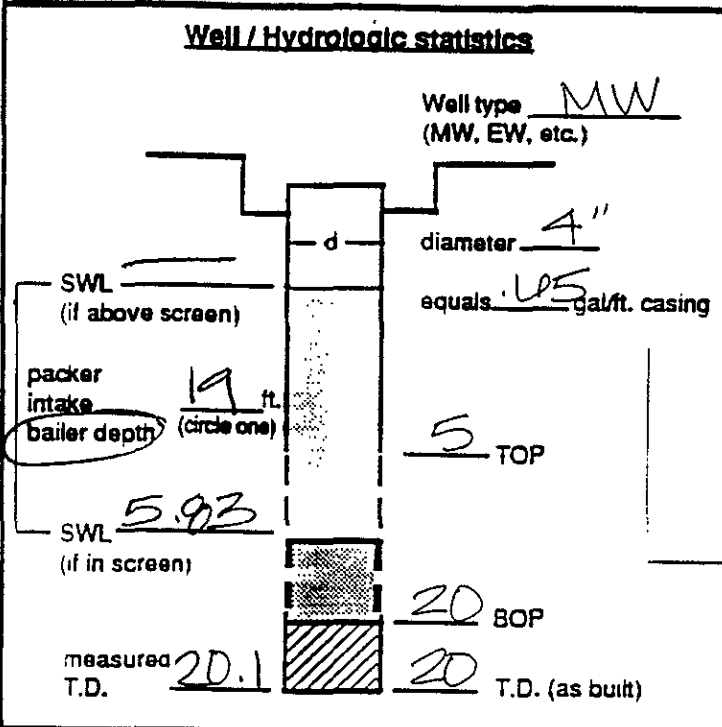
McLaren

# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-2

PROJECT Target Dublin EVENT Quarterly SAMPLER CMS DATE 12-30-91



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1100		
		2 GPM	
Stop	1115		14.18
Sampled	1145		
(Final IWL)	12.15		
<b>Purge calculation</b>			
<u>.65</u> gal/ft. * <u>19.17</u> ft. = <u>9.2</u> gals x 3 = <u>27.6</u> gals.			
SWL to BOP or packer to BOP		one volume	purge volume - 3 casings
<b>Head purge calculation (Airlift only)</b>			
_____ gal/ft. * _____ ft. = _____ gals.			
_____ packer to SWL.			

Equipment Used / Sampling Method / Description of Event:  
 Centrifugal pump used to purge 3 casing volumes. Disposable bailer used to sample.

Actual gallons purged	<u>28</u>
Actual volumes purged	<u>3</u>
Well yield (see below)	<u>MY</u>
COC #	<u>20101010</u>
Sample I.D.	Analysis Lab
<u>191309</u>	<u>TPH/G</u> <u>MAL</u>
<u>191310</u>	<u>+BTEX</u>
<u>191311</u>	
<u>191312</u>	

Additional comments:  
8090 = 8.67 IWL  
OVM ← at source 259 ppm  
breathing zone 0.9 ppm

Gallons purged *	TEMP °C (°F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)
1. <u>9</u>	<u>63.1</u>	<u>2080</u>	<u>6.80</u>	<u>8.3</u>
2. <u>18</u>	<u>65.5</u>	<u>2170</u>	<u>6.91</u>	<u>13.8</u>
3. <u>29</u>	<u>66.0</u>	<u>2200</u>	<u>6.92</u>	<u>4.8</u>
4.				
5.		<u>sample turbidity</u>		<u>5.7</u>

\* 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.



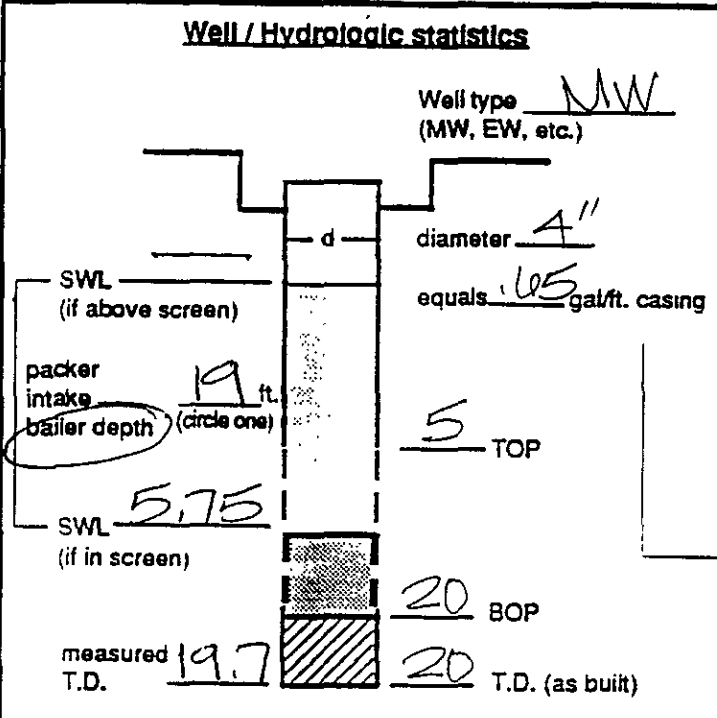
McLaren

# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-3

PROJECT Target Dublin EVENT Quarterly SAMPLER CMS DATE 12-30-91



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1240		
		2 GPM	
Stop	1255		1245
Sampled	1320		
(Final IWL)	6.80		
<b>Purge calculation</b>			
<u>.65</u> gal/ft. * <u>14.25</u> ft. = <u>9.3</u> gals x 3 = <u>27.8</u> gals.			
SWL to BOP or packer to BOP one volume purge volume- 3 casings			
<b>Head purge calculation (Airlift only)</b>			
_____ gal/ft. * _____ ft. = _____ gals.			
_____ packer to SWL			

Equipment Used / Sampling Method / Description of Event:  
 centrifugal pump used to purge 3 casing volumes. Disposable bailer used to sample.

Actual gallons purged	<u>29</u>
Actual volumes purged	<u>3</u>
Well yield (see below)	<u>MY</u>
COC # <u>2260106</u>	
Sample I.D.	Analysis Lab
<u>1910313</u>	<u>TPH/G MAL</u>
<u>1910314</u>	<u>TBTEX</u>
<u>1910315</u>	
<u>1910316</u>	

Additional comments:  
8096 = 8.0 IWL  
OVM ← at source 1.5 ppm  
breathing zone 0.7 ppm

Gallons purged *	TEMP °C (°F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. <u>9</u>	<u>13.7</u>	<u>2240</u>	<u>7.07</u>	<u>10.6</u>		
2. <u>18</u>	<u>15.5</u>	<u>2320</u>	<u>7.10</u>	<u>5.9</u>		
3. <u>28</u>	<u>15.2</u>	<u>2340</u>	<u>7.12</u>	<u>7.1</u>		
4.						
5.						
				<u>sample turbidity 3.2</u>		

\* 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.





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# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-4

PROJECT Target Dublin EVENT Quarterly SAMPLER CMS DATE 12/31/91

Well / Hydrologic statistics		Action	Time	Pump rate	IWL (low yield)
Well type <u>MW</u> (MW, EW, etc.)		Start pump / Begin	<u>8:10</u>		
diameter <u>4"</u> equals <u>.05</u> gal/ft. casing				<u>2.5 GPM</u>	
SWL (if above screen)		Stop	<u>8:20</u>		<u>13.02</u>
packer intake		Sampled	<u>8:45</u>		
bailer depth (circle one)	<u>5</u> TOP	(Final IWL)	<u>7.32</u>		
SWL (if in screen)	<u>7.17</u>	<b>Purge calculation</b> <u>.05</u> gal/ft. * <u>12.8</u> ft. = <u>0.4</u> gals x 3 = <u>25</u> gals.			
measured T.D.	<u>19.8</u>	SWL to BOP or packer to BOP one volume purge volume- 3 casings			
	<u>20</u> BOP	<b>Head purge calculation (Airlift only)</b> _____ gal/ft. * _____ ft. = _____ gals.			
	<u>20</u> T.D. (as built)	_____ packer to SWL.			

Equipment Used / Sampling Method / Description of Event:  
Centrifugal pump used to purge 3 casing volumes. Disposable bailer used to sample.

Actual gallons purged	<u>29</u>
Actual volumes purged	<u>3</u>
Well yield (see below)	<u>MY</u>

COC #	Sample I.D.	Analysis	Lab
	<u>196317</u>	<u>TPH/G</u>	<u>MAC</u>
	<u>196318</u>	<u>+BTEX</u>	
	<u>196319</u>		
	<u>196320</u>		

Additional comments:  
80% = 9.76 IWL  
OVM < at source 0.4 ppm  
breathing zone 0.1 ppm

Gallons purged *	TEMP °C/(F) (circle one)	EC (us/cm)	PH	TURBIDITY (NTU)
<u>8</u>	<u>56.2</u>	<u>2260</u>	<u>6.93</u>	<u>6.9</u>
<u>17</u>	<u>59.1</u>	<u>2160</u>	<u>6.96</u>	<u>3.5</u>
<u>25</u>	<u>60.8</u>	<u>2220</u>	<u>6.98</u>	<u>42.1</u>
		<u>sample turbidity</u>		<u>4.3</u>

\* 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

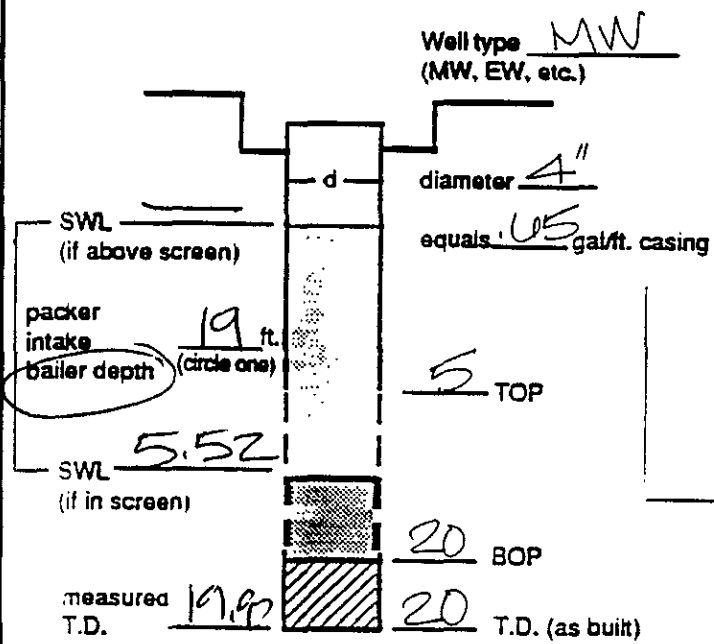
# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-5

PROJECT Target Dublin EVENT Quarterly SAMPLER CMS DATE 12-

### Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	9:06		
Stop	9:20		9.82
Sampled	9:30		
(Final IWL)	9:10		

**Purge calculation**  
0.5 gal/ft. \* 14.48 ft. = 9.4 gals x 3 = 28.2 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 3 casing volumes, Disposable bailer used to sample.

Actual gallons purged 30  
 Actual volumes purged 3  
 Well yield (see below)  $\oplus$  MY

COC #	Sample I.D.	Analysis	Lab
	<u>1910321</u>	<u>TPH/G</u>	<u>MAI</u>
	<u>1910322</u>	<u>+ BTEX</u>	
	<u>1910323</u>		
	<u>1910324</u>		

Additional comments:  
80% = 8.42 IWL  
at source  
CVM breathing zone

Gallons purged *	TEMP °C / (°F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. <u>9</u>	<u>56.4</u>	<u>2040</u>	<u>7.22</u>	<u>1.8</u>		
2. <u>18</u>	<u>58.6</u>	<u>2110</u>	<u>7.22</u>	<u>2.1</u>		
3. <u>28</u>	<u>59.7</u>	<u>2190</u>	<u>7.17</u>	<u>1.2</u>		
4.						
5.		<u>sample turbidity</u>		<u>2.0</u>		

\* Take measurement at approximately each casing volume purged.

$\oplus$  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.



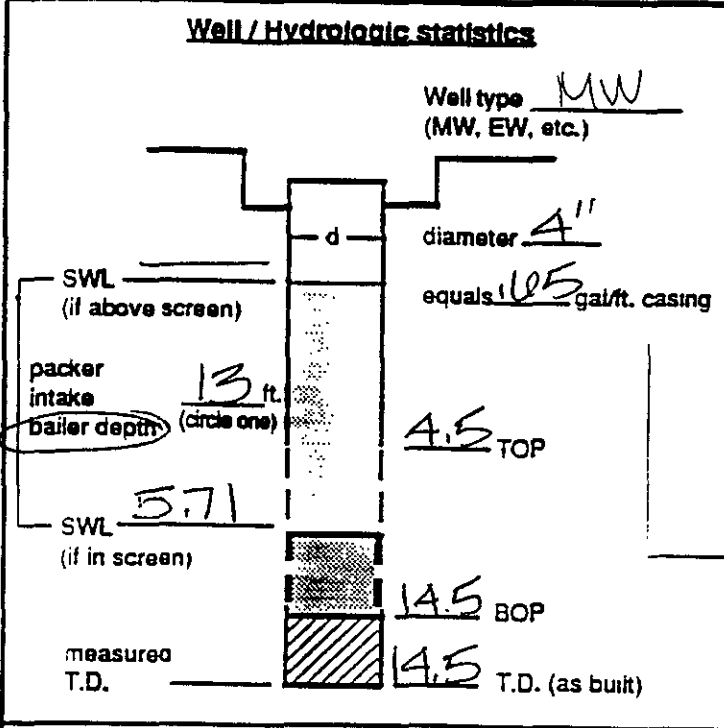
McLaren

# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-10

PROJECT Target Dublin EVENT Quarterly SAMPLER CMS DATE 12-30-91



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	9:45	12/30/91	
<u>cycled</u>		0.05 GPM	
<u>stop</u>	15:00	12/30/91	100 gal
<u>start</u>	7:40	12/31/91	
<u>cycled</u>		0.05 GPM	
Stop	15:10	12/31/91	
Sampled	15:45		
(Final IWL)	7:20		
<b>Purge calculation</b>			
<u>1.65</u> gal/ft. * <u>8.8</u> ft. = <u>5.7</u> gals x 3 = <u>17.16</u> gals.			
SWL to BOP or packer to BOP		one volume	purge volume - 3 casings
<b>Head purge calculation (Airlift only)</b>			
_____ gal/ft. * _____ ft. = _____ gals.			
_____ packer to SWL			

Equipment Used / Sampling Method / Description of Event:  
 centrifugal pump used to purge 3 casing volumes. Disposable bailer used. to sample.

80% = 7.50 IWL

Actual gallons purged	<u>300</u>
Actual volumes purged	<u>53</u>
Well yield (see below)	<u>MY</u>
COC #	_____
Sample I.D.	Analysis
<u>196325</u>	<u>TPH/G</u>
<u>196326</u>	<u>+BTEX</u>
<u>196327</u>	<u>↓</u>
<u>196328</u>	<u>↓</u>
<u>196329</u>	<u>TPH/D</u>
<u>196330</u>	<u>↓</u>
Lab	<u>MAI</u>

Additional comments:  
 Started pumping 12-30-91 9:45.  
 cycled pump due to low yield.  
 OVM - 9.8 at source  
 0.7 breathing zone

Gallons purged *	TEMP °C/°F (circle one)	EC (µs/cm)	PH	TURBIDITY (NTU)		
1.						
2.						
3.						
4.						
5.				<u>sample turbidity</u>		

\* 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.



Date: January 13, 1992  
LP #: 5385

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 January 3, 1992, for the project *Target Dublin*.

The analyses you requested are:

Mod. EPA 8020 (BTEX) & TPH/G (7 - Water)  
TPH/D (1 - Water)

The report consists of the following sections:

1. A copy of the chain of custody
2. Quality Control Definitions and Report
3. 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 that reads 'Anthony S. Wong'.

Anthony S. Wong, Ph.D.  
Director, Laboratory/Managing Principal



pg 1/4

220055

# CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY  
 Laboratory Project No.: 5385 Secured  
 Storage Refrigerator ID: 1, 4-20 Yes   
 Storage Freezer ID: \_\_\_\_\_ No

Project Name: Target Dublin Project #: 122601 Sampler: Colette Shelly Colette Shelly  
 Relinquished by: (Signature and Printed Name) Colette Shelly Colette Shelly Received by: (Signature and Printed Name) FedEx Date: 1-2-92 Time: 1700  
 Relinquished by: (Signature and Printed Name) FED EX Received by: (Signature and Printed Name) [Signature] Date: 1-3-92 Time: 1100  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SHIP TO:**  
 McLaren Analytical Laboratory  
 11101 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 638-3696  
 FAX (916) 638-2842

Method of Shipment: FedEx  
 Shipment ID: \_\_\_\_\_

Circle or Add Analysis(es) Requested	601/8010 (Halogenated Volatiles-GC)	602/8020 (Aromatic Volatiles-GC)	604/8040 (Phenols-GC)	608/8080 (Pesticides/PCB-GC)	610/8100 (PNA-GC)	624/8240 (Volatiles-GCMS)	625/8270 (BNA-GCMS)	TPH/G (Gasoline-GC)	418-1 (IR)	8015 (Diesel-GC)	Metals-Modified (GC)	Metals-Total a	Fluoride/Soluble a	Chloride/Perchlorate	TDS/Percent Solid	Specific Conductivity (EC)

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description		Description	Analysis Requested																Container(s)		FOR LABORATORY USE ONLY	
	Date	Time		601/8010	602/8020	604/8040	608/8080	610/8100	624/8240	625/8270	TPH/G	418-1	8015	Metals-Modified	Metals-Total	Fluoride	Chloride	TDS	Specific Conductivity	TAT	#	Type	Lab ID
1	1/2/92	700	Trip Blank																	4	1	V-HC	5385-001
2			spare																				
3																							
4																							
5		1040	MW-1																				
6			spare																				
7			BROKEN CHIPS																				
8																							
9																							
10																							

Special Instructions/Comments: \_\_\_\_\_  
 Sample Archive/Disposal:  
 Laboratory Standard  
 Other \_\_\_\_\_

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks  
 Container Types. B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO (Check one):  
 Project Manager/Office: Campbell McLeod  
 Client Name: \_\_\_\_\_  
 Company: McLaren/Hart  
 Address: 1135 Atlantic Ave, Alameda  
 Phone: (510) 521-5200 Fax: \_\_\_\_\_

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: SAMPLES IN TAT, TEMP. GOOD (P)  
P#302 & P#303 HAVE AIR BUBBLES (P)





# CHAIN OF CUSTODY RECORD

16 3/4

226067

FOR LABORATORY USE ONLY

Laboratory Project No.: 5385 Secured.  
 Storage Refrigerator ID: 1,4-20 Yes   
 Storage Freezer ID: \_\_\_\_\_ No

Project Name: Target Dublin Project #: 1221001 Sampler: colette shelley colette shelley  
 Relinquished by: (Signature and Printed Name) colette shelley Received by: (Signature and Printed Name) FedEx Date: 1/2/92 Time: 1700  
 Relinquished by: (Signature and Printed Name) FedEx Received by: (Signature and Printed Name) [Signature] Date: 1/3/92 Time: 1100  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

SHIP TO:  
 McLaren Analytical Laboratory  
 11101 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 638-3696  
 FAX (916) 638-2842

Method of Shipment: FedEx  
 Shipment ID: \_\_\_\_\_

Circle or Add Analysis(es) Requested

- 601/8010 (Halogenated Volatiles-GC)
- 602/8020 (Aromatic Volatiles-GC)
- 604/8040 (Phenols-GC)
- 608/8080 (Pesticides-GC)
- 610/8100 (PNA-GC)
- 624/8240 (Volatiles-GC/MS)
- 625/8270 (BNA-GC/MS)
- TPH/G (Gasoline-GC) LWET
- TPHD (Diesel-GC)
- #18.1 (IR)
- 8015 Modified (GC)
- Metals Total a
- Metals Soluble a
- Fluoride/Perchlorate
- Chloride/pH
- TDS/Percent Solid
- Specific Conductivity (EC)

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description		Description	Analysis Requested														Container(s)		FOR LABORATORY USE ONLY			
	Date	Time		601/8010	602/8020	604/8040	608/8080	610/8100	624/8240	625/8270	TPH/G	TPHD	#18.1	8015	Metals Total	Metals Soluble	Fluoride	Chloride	TDS	Specific	TAT	#	Type
1	1910317	2/2/91 845	MW-4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1	IVHC	5385-005
2	1910318		sparks	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
3	1910319			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
4	1910320			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
5	1910321	930	MW-5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			-006
6	1910322		sparks	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
7	1910323			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
8	1910324			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
9																							
10																							

Special Instructions/Comments: \_\_\_\_\_

Sample Archive/Disposal:  
 Laboratory Standard  
 Other \_\_\_\_\_

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks  
 Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO (Check one):  
 Project Manager/Office: Campbell McLeod  
 Client Name: \_\_\_\_\_  
 Company: McLaren/Hart  
 Address: 1135 Atlantic Ave, Alameda  
 Phone: 925 521 5200 Fax: \_\_\_\_\_

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: SAMPLES IN TAT, TEMP. GOOD - 100  
176323 HAS Air Bubble - 100



# CHAIN OF CUSTODY RECORD

10/4

226008

FOR LABORATORY USE ONLY  
 Laboratory Project No.: 5385 Secured Yes   
 Storage Refrigerator ID: 17420 Yes   
 Storage Freezer ID: \_\_\_\_\_ No

Project Name: Target Dublin Project #: 1221001 Sampler: Colette Shelly Colette Shelly  
 Relinquished by: (Signature and Printed Name) Colette Shelly Received by: (Signature and Printed Name) FedEx Date: 1-2-92 Time: 1700  
 Relinquished by: (Signature and Printed Name) FedEx Received by: (Signature and Printed Name) Paul [unclear] Date: 1/3/92 Time: 1100  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

SHIP TO:  
 McLaren Analytical Laboratory  
 11101 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 638-3696  
 FAX (916) 638-2842

Method of Shipment: FedEx  
 Shipment ID: \_\_\_\_\_

Circle or Add Analysis(es) Requested	801/8010 (Halogenated Volatiles-GC)	602/020 (Aromatic Volatiles-GC)	604/040 (Phenols-GC)	608/080 (Pesticides-GC)	610/100 (PNA-GC)	624/240 (Volatiles-PCB-GC)	625/220 (Volatiles-GC/MS)	TPHIG (BNA-GC/MS)	TPHID (Gasoline-GC/MS)	418-1 (IR)	8015 (Diesel-GC)	Metals-Total a	Metals-Soluble a	Fluoride/Perchlorate	Chloride/pH	TDS/P Percent Solid	Specific Conductivity (EC)	TRTEX
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a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description		FOR LABORATORY USE ONLY																				
	Date	Time	Description	TAT	#	Type	Lab ID																
1	1910325	1911545	MW-1e					X										X	A	1	VHL	5385-007	
2	1910326		cfare					X										X					
3	1910327							X										X					
4	1910328							X										X					
5	1910329		MW-1e					X										X					
6	1910330		cfare					X										X					
7																							
8																							
9																							
10																							

Special Instructions/Comments: \_\_\_\_\_  
 Sample Archive/Disposal:  
 Laboratory Standard  
 Other \_\_\_\_\_

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks  
 Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO (Check one).  
 Project Manager/Office: Campbell McLeod  
 Client Name: \_\_\_\_\_  
 Company: McLaren/Hart  
 Address: 1135 Atlantic Ave, Alameda  
 Phone: 510.521-5200 Fax \_\_\_\_\_

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: SAMPLES IN TACT, TEMP. GOOD



## QUALITY CONTROL DEFINITIONS

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**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. The method blank results associated with your samples are attached.

### 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. The results of the laboratory control spike associated with your samples are attached.

Accuracy is measured using percent recovery, i.e.:

$$\text{Percent Recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using the relative percent difference (RPD) from duplicate tests, i.e.:

$$\text{RPD} = \frac{\% \text{ Recovery of Spike}_{(1)} - \% \text{ Recovery of Spike}_{(2)}}{(\% \text{ Recovery of Spike}_{(1)} + \% \text{ Recovery of Spike}_{(2)})/2} \times 100$$

Control limits for accuracy and precision are different for different methods. They may also 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.

(DC1-CN5385)



QUALITY CONTROL REPORT

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METHOD BLANK

Method: TPH/D  
Units: mg/L (ppm)

Date Analyzed: 01/09/92  
Date Extracted: 01/06/92  
Batch Number: 920106-1901

<u>Compound</u>	<u>Reporting Limit</u>	<u>Results of the MB</u>
Total Petroleum Hydrocarbons - Diesel	0.50	BRL

(DC1-CN5385)



**QUALITY CONTROL REPORT**

**McLaren Analytical Laboratory**  
**Spike/Spike Duplicate Recovery**  
**Method 8015 - Modified**  
**Total Petroleum Hydrocarbons/TPH - Diesel**

LP#: 5385

Analyst: EB

Batch #: 920106-2601

Date Of Analysis: 01/08/92

Spike Sample ID: LCSW/LCSDW #21

Column: DB-1

Spike ID Code: W2-756 W2-757

Instrument #: PGC#4

Surrogate ID Code: NA

Matrix: Water Units: mg/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	RPD
Gasoline	NA	2.5	1.7	68	1.5	60	12	26 - 90	≤ 25
Diesel	NA	2.5	2.1	84	2.5	100	17	43 - 152	≤ 25

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

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

8015MSDR.W91



QUALITY CONTROL REPORT

METHOD BLANK

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

Date Analyzed: 01/07/92

<u>Compound</u>	<u>Reporting Limit</u>	<u>Results of the MB</u>
Benzene	0.50	BRL
Toluene	0.50	BRL
Ethyl Benzene	0.50	BRL
1,2-Xylene	0.50	BRL
1,3-Xylene	0.50	BRL
1,4-Xylene	0.50	BRL
Total Petroleum Hydrocarbons - Gasoline	50.	BRL



QUALITY CONTROL REPORT

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METHOD BLANK

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

Date Analyzed: 01/09/92

<u>Compound</u>	<u>Reporting Limit</u>	<u>Results of the MB</u>
Benzene	0.50	BRL
Toluene	0.50	BRL
Ethyl Benzene	0.50	BRL
1,2-Xylene	0.50	BRL
1,3-Xylene	0.50	BRL
1,4-Xylene	0.50	BRL
Total Petroleum Hydrocarbons - Gasoline	50.	BRL



**QUALITY CONTROL REPORT**

**McLaren Analytical Laboratory**  
**Spike/Spike Duplicate Recovery**  
**Method 8010 (Modified)/8020**

LP#: 5385

Analyst: LEX

Batch #: NA

Date Of Analysis: 01/09/92

Spike Sample ID: LCS/LCSD W2

Column: DBWAX

Spike ID Code: W-1-352

Instrument #: 6

Surrogate ID Code: W-1-415

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
8010	1,1 - Dichloroethane	NA	NA	NA	NA	NA	NA	NA	80 - 120	≤20
8010	1,1,1 - Trichloroethane	NA	NA	NA	NA	NA	NA	NA	80 - 120	≤20
8010	Trichloroethene	NA	NA	NA	NA	NA	NA	NA	80 - 120	≤20
8020	Chlorobenzene	NA	5.0	5.2	104	5.9	118	12	80 - 120	≤20
8020	Benzene	NA	5.0	5.7	114	5.9	118	2	80 - 120	≤20
8020	Ethyl Benzene	NA	5.0	6.0	120	5.9	118	2	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 %	
8020	a,a,a,-Trifluorotoluene	PID	4.0	3.8	95	3.6	90	80 - 120

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

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

Comments:



**QUALITY CONTROL REPORT**

**McLaren Analytical Laboratory**  
**Spike/Spike Duplicate Recovery**  
**Total Petroleum Hydrocarbons/TPH-Gasoline**

Analyst: LEX

LP#: 5385

Date of Analysis: 01/06/92

Spike Sample ID: LCS/LCSD W3

Column: DB624

Spike ID Code: W-1-389

Instrument #: 6

Surrogate ID Code: W-1-407

Batch #: NA

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	NA	100.	94.	94	96.	96	2	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	3.7	92	80 - 120

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

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



## ABBREVIATIONS USED IN THIS REPORT

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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

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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. Blank results are reported in the Case Narrative.

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

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

Results are reported on the attached data sheets.

(DGL-CN5385)





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: 122601

Sample Description: Trip Blank

Lab Project-ID Number: 5385-001

Sample Number: 196304

Date Sampled: 12/30/91

Date Received: 01/03/92

Date Analyzed: 01/07/92

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.50
Toluene	0.63	0.50
Ethyl Benzene	BRL	0.50
1,2-Xylene	BRL	0.50
1,3-Xylene	BRL	0.50
1,4-Xylene	BRL	0.50
Total Petroleum Hydrocarbons - Gasoline	BRL	50.

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	92	80 - 120
a,a,a-Trifluorotoluene (FID)	92	80 - 120

Dilution: None

Comments:

Approved By: Cheryl Matterson, Associate Chemist Date: 1/13/92

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

070191



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: 122601

Sample Description: MW-1

Lab Project-ID Number: 5385-002

Sample Number: 196306

Date Sampled: 12/30/91

Date Received: 01/03/92

Date Analyzed: 01/07/92

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.50
Toluene	BRL	0.50
Ethyl Benzene	BRL	0.50
1,2-Xylene	BRL	0.50
1,3-Xylene	BRL	0.50
1,4-Xylene	BRL	0.50
Total Petroleum Hydrocarbons - Gasoline	BRL	50.

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	90	80 - 120
a,a,a-Trifluorotoluene (FID)	92	80 - 120

Dilution: None

Comments:

Approved By: Chris Phillips & CM Date: 1/12/92  
 Cheryl Matterson, Associate Chemist

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

070191



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: 122601

Sample Description: MW-2

Lab Project-ID Number: 5385-003

Sample Number: 196311

Date Sampled: 12/30/91

Date Received: 01/03/92

Date Analyzed: 01/09/92

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	6.1	0.50
Toluene	BRL	0.50
Ethyl Benzene	BRL	0.50
1,2-Xylene	BRL	0.50
1,3-Xylene	BRL	0.50
1,4-Xylene	BRL	0.50
Total Petroleum Hydrocarbons - Gasoline	BRL	50.

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	92	80 - 120
a,a,a-Trifluorotoluene (FID)	102	80 - 120

Dilution: None

Comments:

Approved By: Chris Phillips for P.M. Date: 1/15/92  
 Cheryl Matterson, Associate Chemist

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

070191



**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: 122601

Sample Description: MW-3

Lab Project-ID Number: 5385-004

Sample Number: 196315

Date Sampled: 12/30/91

Date Received: 01/03/92

Date Analyzed: 01/07/92

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.50
Toluene	BRL	0.50
Ethyl Benzene	BRL	0.50
1,2-Xylene	BRL	0.50
1,3-Xylene	BRL	0.50
1,4-Xylene	BRL	0.50
Total Petroleum Hydrocarbons - Gasoline	BRL	50.

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	85	80 - 120
a,a,a-Trifluorotoluene (FID)	90	80 - 120

Dilution: None

Comments:

Approved By: Cheryl Phillipson CM Date: 1/15/92  
Cheryl Matterson, Associate Chemist

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

070191



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: 122601

Sample Description: MW-4

Lab Project-ID Number: 5385-005

Sample Number: 196319

Date Sampled: 12/31/91

Date Received: 01/03/92

Date Analyzed: 01/09/92

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	6.4	1.0
Toluene	BRL	1.0
Ethyl Benzene	16.	1.0
1,2-Xylene	12.	1.0
1,3-Xylene	5.0	1.0
1,4-Xylene	8.8	1.0
Total Petroleum Hydrocarbons - Gasoline	180.	100.

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	85	80 - 120
a,a,a-Trifluorotoluene (FID)	132 (a)	80 - 120

Dilution: The sample was diluted 2 fold to bring target analytes within linear working range.

Comments: (a) Sample surrogate compound was beyond quality control limits. All other quality control is acceptable.

Approved By: Cheryl Matterson, Associate Chemist Date: 1/13/92

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

070191



**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: 122601

Sample Description: MW-5

Lab Project-ID Number: 5385-006

Sample Number: 196322

Date Sampled: 12/31/91

Date Received: 01/03/92

Date Analyzed: 01/07/92

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	BRL	0.50
Toluene	BRL	0.50
Ethyl Benzene	BRL	0.50
1,2-Xylene	BRL	0.50
1,3-Xylene	BRL	0.50
1,4-Xylene	BRL	0.50
Total Petroleum Hydrocarbons - Gasoline	BRL	50.

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	88	80 - 120
a,a,a-Trifluorotoluene (FID)	72 (a)	80 - 120

Dilution: None

Comments: (a) Sample surrogate compound was beyond quality control limits. All other quality control is acceptable.

Approved By: Cheryl Matterson, C.M. Date: 1/13/92  
Cheryl Matterson, Associate Chemist

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

070191



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: 122601

Sample Description: MW-6

Lab Project-ID Number: 5385-007

Sample Number: 196327

Date Sampled: 12/31/91

Date Received: 01/03/92

Date Analyzed: 01/09/92

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Benzene	360.	50.
Toluene	BRL	50.
Ethyl Benzene	260.	50.
1,2-Xylene	BRL	50.
1,3-Xylene	BRL	50.
1,4-Xylene	BRL	50.
Total Petroleum Hydrocarbons - Gasoline	2500. (a)	5000.

<u>Surrogates</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
a,a,a-Trifluorotoluene (PID)	85	80 - 120
a,a,a-Trifluorotoluene (FID)	100	80 - 120

Dilution: The sample was diluted 100 fold to bring target analytes within linear working range.

Comments: (a) Reported as an estimated concentration below the established reporting limit.

Approved By: Cheryl Phillipis for C.M. Date: 1/13/92  
 Cheryl Matterson, Associate Chemist

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

070191



TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Diesel by LUFT  
Preparation Method: Modified LUFT {a}

Project Name: Target Dublin Project Number: 122601  
Sample Description: MW-6 Lab Project- ID Number: 5385-007  
Sample Number: 196329 Date Sampled: 12/31/91  
Date Received: 01/03/92 Date Extracted: 01/06/92  
Date Analyzed: 01/09/92 Batch Number: 920106-1901

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> mg/L (ppm)	<u>REPORTING LIMIT</u> mg/L (ppm)
Total Petroleum Hydrocarbons - Diesel	BRL	0.50

Dilution: None

Comments: {a) Methylene chloride rather than carbon disulfide used for extraction.

The sample contains early eluting hydrocarbons in the C7 - C12 boiling point range.

Approved By: Cheryl Matterson, C.M. Date: 1/13/92  
Cheryl Matterson, Associate Chemist

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

072491

