

LETTER OF TRANSMITTAL

Alamed Burband Parsipp Santa A Springf TO: <u>Hameda Cou</u> 80 Swan L Oakland	Cordova, CA 916.638.3696 da, CA 415.521.5200 k, CA 818.841.0889 any, NJ 201.503.7854 (Temp) Ana, CA 714.756.2667 field, MO 417.864.8811 Analy Dept. of Env. Heals Vary, Suite 206 [Mattached Under seper	Interim	RAVI ARULANANTHAM 1991 Quarterly ater Monitorine and Remediation Report
Shop drawing	s 🔲 Prints 🔲	Plans	mples Specifications
☐ Copy of letter	_		
		DECORIDE	
COPIES DATE	0 1 1601 6	DESCRIPTION	
2 3/25/92	December 1991 Qu	esterly bro	und water
	Montoring and	noterin A	emediation agost
	- torner Hames	a Service	Station A-3/8,
	7608 Amedor Va	elley Blood.	Puttin , (alifornia
	March 24, 1922	Regart	
THESE ARE TRANSMIT	TED as checked below:		
☐ For approval	☐ Approved as su	ubmitted	Resubmit copies for approval
☐ For your use	☐ Approved as no	oted	☐ Submit copies for distribution
☐ As requested	☐ Returned for co	prrections	Return corrected prints
For review and co			-
	19		· · · · · · · · · · · · · · · · · · ·
			* **
			•
	and the second s		• • • • • • • • • • • • • • • • • • • •
			.51
сору то:	Bord		
COPY IO:	15 5 (M	Soseman	y for Campbell McLeod
			(Signature)

92772 5771:35

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 REMEDIATION 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

Campbell McLeod

Supervising Geoscientist

Composel Ma Irod.

Clifton Davenport, CEG #1455

Phincipal Hydrogeologist

Enclosure

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:

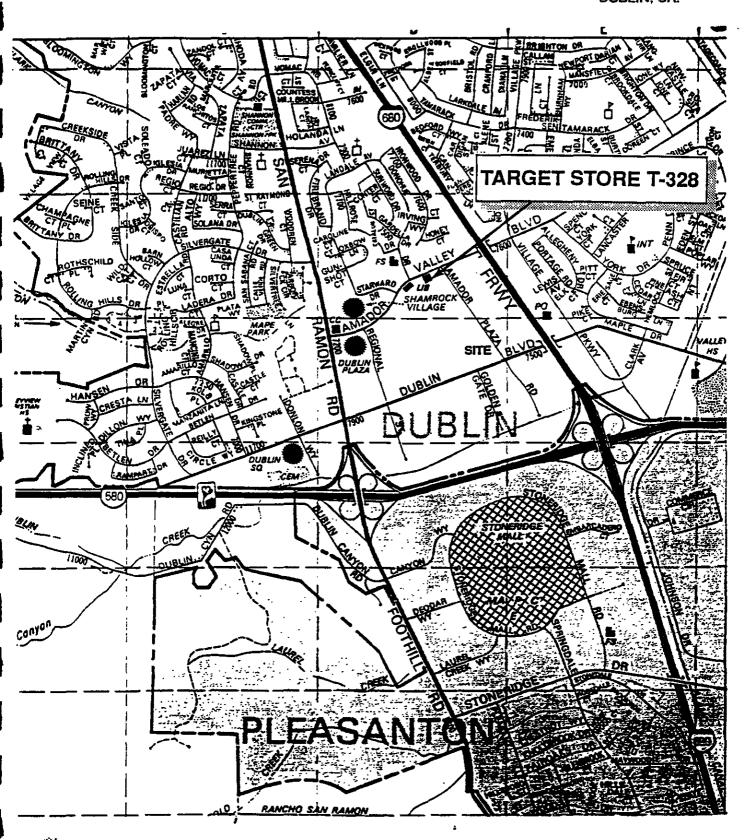
- No free-floating petroleum product was observed in any of the wells.
- The analytical results from water samples collected at MW-6 in October and December 1991 confirm the relatively high petroleum chemical concentrations of TPH/G, benzene and ethylbenzene reported in September 1991 sampling. However, 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.

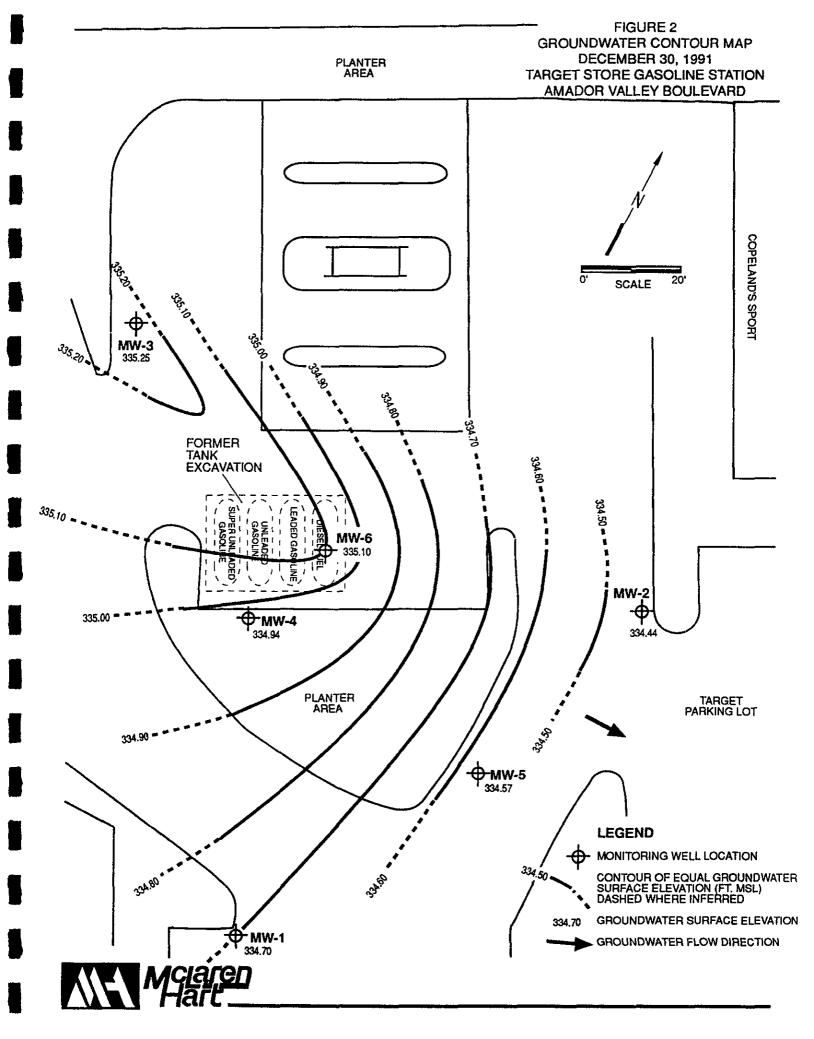
Based on the above conclusions, McLaren/Hart recommends:

- 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.

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







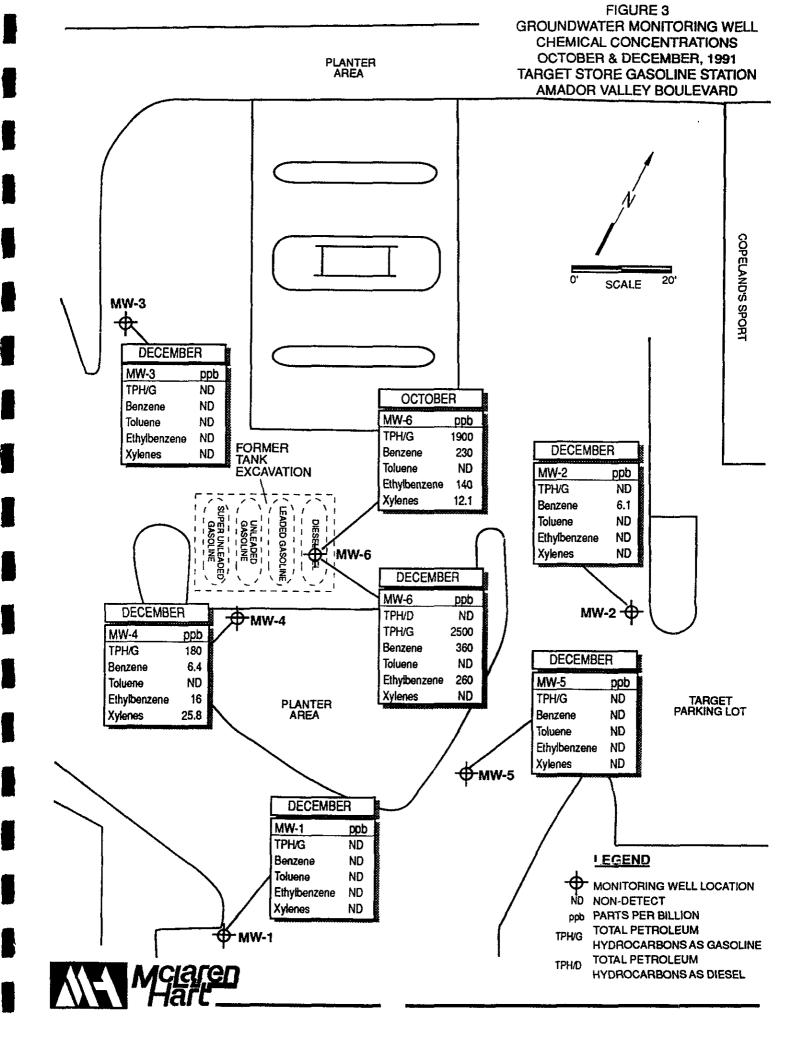


TABLE 1

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

INTERVAL (feet below grade)	GROUND SURFACE ELEVATION (MSL)*	SCREENED INTERVAL (MSL)	CASING ELEVATION (MSL)	STATIC WATER LEVEL 12/30/91 (feet below grade)	GROUNDWATER ELEVATION 12/30/91 (MSL)
5-20	340.30	335.30 - 320.30	340.20	5.50	334.70
5-20	340.52	335.52 - 320.52	340.27	5.83	334.44
5-20	341.67	336.67 - 321.67	341.00	5.75	335.25
5-20	342.31	337.31 - 322.31	342.11	7.17	334.94
5-20	340.52	335.52 - 320.52	340.09	5.52	334.57
4.5-14.5	341.13	336.63-326.63	340.81	5.71	335.10
	5-20 5-20 5-20 5-20 5-20	5-20 340.30 5-20 340.52 5-20 341.67 5-20 342.31 5-20 340.52	5-20 340.30 335.30 - 320.30 5-20 340.52 335.52 - 320.52 5-20 341.67 336.67 - 321.67 5-20 342.31 337.31 - 322.31 5-20 340.52 335.52 - 320.52	5-20 340.30 335.30 - 320.30 340.20 5-20 340.52 335.52 - 320.52 340.27 5-20 341.67 336.67 - 321.67 341.00 5-20 342.31 337.31 - 322.31 342.11 5-20 340.52 335.52 - 320.52 340.09	5-20 340.30 335.30 - 320.30 340.20 5.50 5-20 340.52 335.52 - 320.52 340.27 5.83 5-20 341.67 336.67 - 321.67 341.00 5.75 5-20 342.31 337.31 - 322.31 342.11 7.17 5-20 340.52 335.52 - 320.52 340.09 5.52

^{*} 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 (f
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

TABLE 3

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

		MW-1		MW-2		M	W-3	M	ſW-4	M	IW-5	М	W-6
DATE	TIME	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	gran	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

WELL DESIGNATION	DATE	TPH/G	TPH/D	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
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

DATE: 10/17/91

PRO	NECT: Targe	<u> </u>	_EVENT: _		SAI	MPLEA:
NO.	WELL OR LOCATION	DATE MOI DAIYR	TIME HR MIN	MEASUREMENT	CODE	COMMENTS
1	MW-1	10 17 91	10 00	6.19	SWL	Initial Sounding
2	MW-2		10 06	6.74		
3	NW-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	趣	
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	1	12 08	8.08		
11	MW-5		12 02	6.40	/	
12	MW-6		12 10	12.18	IWL	
13	NW-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 - OII 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 essing - 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 valid box, odor, scores problems.

^{*}Negative pressure (Vacuum) psi = apprex -(1/2 x mmHg)

- 1					_						DATE.
	PRO	DJECT: Targe	et	_ .		_ EV	ENT:	TPM/6- Remedia	tion	∟ SÆ	AMPLER: CGW
	NO.	WELL OR LOCATION	MO I	DATE	ΥA	T HA	ME	MEASUREMENT	- C	ODE	COMMENTS
	1	MW-1	10	17 9	7	16	00	6.24	\$	SU	DURING PLUMPING
-	2	MW-2				16	04	6.80	1	1	
	3	MW-3				16	06	6.59		T	
	4	MW-4				16	08	8.10			
	5	MW-5				16	02	6.45			
Ľ	6	MW-6			1	6	10	11.26		المار	
L	7										<i>y</i>
L	3	·									
Ľ								······································			
	0				T						
1	1										
1	2							·			
Ľ	3									\dashv	
1	4									\neg	
1:	5										
10	5									\dashv	
17	7									\top	
18	3								<u></u>	+	
19	1									+	
20										\top	
201	hee.				-					- 1	:

COD	EC.	
	Lu.	_

*SWL - Static Water Level (Feet)

*IWL - Instant Water Level; Non-Static (Feet)

*OIL - OII 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)

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

*Negative pressure (Vacuum) pst = approx -(1/2 x mmHg)

⁽Additional Code)

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

PRO	JECT: Targe	<u> </u>	_EVENT:	TPM6 Remediation	SAI	MPLER: CG-W
NO.	WELL OR LOCATION	DATE MOI DA IYR	TIME HA MIN	MEASUREMENT	CODE	COMMENTS
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	V	
7	MW-1		11 00	6.26	SWL	During Pumping
8	MW-2		11/04	6.82		
9	MW-3		11 06	6.6		
10	MW-4		11/08	3.11		
11	MW-5	·	11 02	6.46		
12	MW-6		11 10	12.88	IWL	
13	MW-)		12 00	6.26	SWL	
14	MW-2		12 04	6.82	1	
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						
CODE	B					

*SWL - Static Water Level (Feet)

*IWL - instant Water Level; Non-Static (Feet)

'OIL - OII Level (Feet)

*OWI - Oll/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 yout box, oder, access problems.

^{*}Negative pressure (Vacuum) psi a approx -(1/2 x mm/ig)

DATE: 10/18

PF	ROJECT:			_ EVI	ENT:			_ SA	AMPLER:
NC	14/51 0-	DA [*]	TE	TI	ME MIN	MEASUREMENT		ODE	
1	MW-1			13	00	6.27	2	WL	DURING-PHAPING
2	MW-2			13	24	6.82	 	1	
3	M-3			13	06	6.61			
4	MW-4			(3	08	8.12			
5	MW-S			13	02	6.47		,	
6	MW - 6			13	10	12.56	14	الا	
7	MW-1			14	00	6.27	Sh	1	
8	MN-5			14 (24	6,82	1		
9	MW-3		1	4	06	6.61			
10	MW-4		1	40	58	8.13			
11	MW-5			4 0	2	6.48		.	
12	MW -6		10	1/1	0	12.65	IW	4	
13	MW-1		1	5 0	00	6.28	Sh		
	MW-2	-	11	5 0	٠4	6.84			.:
	MW-3	-	11	50	6	6.62			
	W-4		15	5 0	8	8.14			
T	MW-5		1/5	50	2	6.48	1		
	MW-6		15	١٥	>	12.82	IW		
9									
0									

*SWL - Static Water Level (Feet)

*IWL - Instant Water Level; Non-Static (Feet)

*OIL - OII 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)

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)

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



DATE: 10/18/91

PRO	JECT:		_EVENT:		SAMPL	.ER:
NO.	WELL OR LOCATION	DATE MOI DA IYR	TIME HR MIN	MEASUREMENT	CODE	COMMENTS
1	NW-1	10/18/91	16 00	6.28	SWL	
2	MW-2		16 04	6.84	1	
3	NW-3		16 06	6.64		
4	MW-4		16 08	8.13		
5	MW-5 MW-6		16 02			
6	MW-6		16 10	12.80	liv_	
7						
8		!				
9						
10						
11						
12						
13	······································					
14						
15						
16	·····					
17						
18						
19	<u></u> -					
20						-
ODES	: sesse ov	tic Water i e			UDC Total	

*!WL - Instant Water Level; Non-Static (Feet)

*OIL - OII Level (Feet)

*OWI - OIVWater 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, zones problems.

^{*}Negative pressure (Vacuum) psi = approx -(1/2 x mmHg)

McLaren Mw.6

SAMPLING EVENT DATA SHEET

(fill out completely)

1111/-6 WELL OR LOCATION

Well type (MW, EW, etc.) Start pump / Begin 10.15 C.6 GPM 11.06 10.95 12.18 12.						L ON LO	CATIO	N	// 0
Well type (MW. EW. etc.) Start pump / Begin 10.5 0.6 GPM	PROJECT Target	DUBLIN E	VENT <u> </u>	Pemediation SAM	PLER	26W	DA1	ΓΕ <u> </u> Θ	117191
Well type (MW. EW. etc.) Color of the col	<u>Well / H</u>	lydrologic statis	tics	Act	ion	Time	Pum	p rate	<u>IWL</u> (low yield)
(MW, EW, etc.) 1030		Well to	VDe	Start pum	p / Begin	1015	0/	GOM	(1010)
SWL Gibbon screen Gibbon					<u> </u>		0.6	1	11.06
d diameter						†	} -		
SWL (if above screen) packer (if above screen) packer (if in screen) Swn (if in screen) Measured T.D. Equipment Used / Sampling Method / Description of Event: Centrifugal pump to purge a djusted flow rate until water level Stabilized, then continued pumping at a constant rate for 6 hours. C220 total gallons purged Additional comments: Sounded MW-1 thru MW-6 prior to purging.	<u></u>	4					 		
equals gal/fi. casing Stop 1615		diame	ter			7210			72.70
Sampled (Final IWL) Purge calculation gal/ft.* ft. = gals x 3 = gal SWL to BOP or one purge volume packer to BOP volume 3 casings Head purge calculation (Airlift only) gal/ft.* ft. = gals x 3 = gal SWL to BOP or one purge volume packer to BOP volume 3 casings Head purge calculation (Airlift only) gal/ft.* gals. packer to SWL Equipment Used / Sampling Method / Description of Event: Centrifugal pump to purge A djusted flow rate until water level Stabilized, then continued pumping at (see below) a constant rate for 6 hours. COC # Sample I.D. Analysis Lab Additional comments: Sounded MW-1 thru MW-6 prior	_	equals	s gal/ft. casii	ng					
Sampled (Final IWL) Purge calculation gal/ft. * ft. = gals x 3 = gal SWL to BOP or one purge volume 3 casings Head purge calculation (Alrift only) gal/ft. * ft. = gals x 3 = gal SWL to BOP or one purge volume 3 casings Head purge calculation (Alrift only) gal/ft. * ft. = gals x 3 = gal SWL to BOP or one purge volume 3 casings Head purge calculation (Alrift only) gal/ft. * ft. = gals T.D. (as built) Equipment Used / Sampling Method / Description of Event: Centrifugal pump to purge 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.			1	Stop	<u></u>	1615	 		11 9%
SWL to BOP or one purge volume SWL to BOP or one packer to BOP volume 3 casings	packer 14 ft	1880 m	ĺ	Sampled			 		11. 16
SWL to BOP or one purge volume SWL to BOP or one packer to BOP volume 3 casings	bailer depth (circle one)	4.5	•	(Final IWL)				
SWL to BOP or one purge volume 3 casings 14.5 BOP Head purce calculation (Airlift only) gal/ft. ft. gals. packer to SWL Equipment Used / Sampling Method / Description of Event: Centrifugal pump to purge Actual gallons purged Actual volumes purged Actual volumes purged Well yield Gree below)			·TOP						
SWL to BOP or one packer to BOP volume 3 casings 14.5 BOP Head purce calculation (Airlift only) gal/st. st. gals. packer to SWL Equipment Used / Sampling Method / Description of Event: Centrifugal pump to purge Actual gallons purged Actual volumes purged Actual volumes purged Well yield Stabilized, then continued pumping at a constant rate for 6 hours. COC # Sample I.D. Analysis Lab Additional comments: Sounded MW-1 thru MW-6 prior to purging.	SWL 6,65			gal/i	ft. * f	t. =	gals x 3	3 =	gais.
Head purge calculation (Airlift only) 14.5 T.D. (as built) gal/nt.*			<u> </u>		SWL to BOP packer to BO	or one P volum	18		
measured T.D. 14.5 T.D. (as built) gal/st. * ft. * gals. packer to SWL.			BOP						
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. COC # Sample I.D. Analysis Lab Additional comments: Sounded MW-1 thru MW-6 prior to purging.		14.5		gal			_	•	
Equipment Used / Sampling Method / Description of Event: Centrifugal pump to purge adjusted flow rate until water level Stabilized, then continued pumping at (see below) a constant rate for 6 hours. COC # Sample I.D. Analysis Lab Additional comments: Sounded MW-1 thru MW-6 prior to purging.	1.D. ———	1115	T.D. (as built)	l Mil					:
Centrifugal pump to purge adjusted flow rate until water level Stabilized, then continued pumping at a constant rate for 6 hours. COC # Sample 1.D. Analysis Lab Additional comments: Sounded MW-1 thru MW-6 prior to purging.	Equipment Used / Sar	mpling Method / C	econtion of Eve		pacter to c				
adjusted flow rate until water level Stabilized, then continued pumping at a constant rate for 6 hours. COC # Sample 1.D. Analysis Lab Additional comments: Sounded MW-1 thru MW-6 prior to purging.	0a. 1	I I	escription of Eve		Actual ga	llons purg	ed		
adjusted flow rate until water level Stabilized, then continued pumping at a constant rate for 6 hours. COC # Sample I.D. Analysis Lab Additional comments: Sounded MW-1 thru MW-6 prior to purging.	centrifugal pu	imp to pur	ze		Actual vo	lumae nur	and		
Stabilized, then continued pumping at a constant rate for 6 hours. [220 total gallons purged] Additional comments: Sounded MW-1 thru MW-6 prior to purging.	adjusted fla	worke had	Lil Labor	loval	ACIDAL VO	idines bui	yeu		
a constant rate for 6 hours. [220 total gallons purged] Additional comments: Sounded MW-1 thru MW-6 prior to purging.		de la	/	4		_			
Sample I.D. Analysis Lab	Stabilized, T	hen continu	ied pumping) at	(see belo	W)			
Additional comments: Sounded MW-1 thru MW-6 prior to purging.	a constant 1	rate tor 1	6 hours.		coc	#			
Sounded MW-1 thru MW-6 prior to purging.	220 total o	gallons pur	ged7		1		Analysi	<u>s</u> _	Lab
to purging.	Additional comments:			······································					
to purging.	Sounded M	W-1 thru	MW-C n	- ElDA	ļ 				
	to marian		2 p	. ,					
TEMP °C (°E	To purging	•			ļ.—				
TEMP °C 1°C					ļ				
TEMP °C '°C									
(circle one) (EC) PH TURBIDITY	Gallons purged *	TEMP °C /°F (circle one)		РН		TY			
1. (NTU)	1.		<u> </u>		(N10)				
2.									
3.	3.			<u> </u>					
4.	4.	<u> </u>							
5.	5.				 -				
*Take measurement at approximately each casing volume purged. **Description of the purge of the	approximately each		volumes duit by reducing	ring one sitting pump rate or	volume	s by returni		unabl	e to purge

SAMPLING EVENT DATA SHEET

<u>McLaren</u>

(fill out completely)

Micharell			WELL	OR LO	CATION	W-6
PROJECT Target DUBLIN	_ EVENT <u>TPH/6-</u> Re	enediation SAM	PLER	-6-lv	DATE/	0/18/91
Well / Hydrologic s	latistics	Act	ion	Ilme	Pump rate	
	Veli type	Start pum	p / Begin			
(MW, EW, etc.)					
		<u> </u>				
—d— d	iameter	<u> </u>		 		<u> </u>
- SWL						
(" ====================================	quaisgal/ft. casi					
packer	Į	Stop				
packer intake / // ft. baller depth (circle one)	45	Sampled (Final IWL)		·	
Julie deput	4,5 TOP	<u> </u>	` 	urge cal	culation	
SWL 6.72		gal/f	_		gals x 3 =	asle
(if in screen)		I 1	SWL to BOP o			
	.5		packer to BOP	volum		e volume- casings
	5 BOP	4.	Head pure	e calcul	ation (Airlift o	niv)
measured //	7.D. (as built)	gal	/ft. *ft.	, 4	_gals.	
			packer to SW	/L.		
Equipment Used / Sampling Metho		ent:	Actual gaile	ons purae	ed .	
centrifugal pump to po	ral.			• •		
adjusted flow rate to	01.000 1		Actual volu	mes purg	ged	
amount at a south	016 0-1M, +	rla	Well yield	_		
pumped at a const	and rate for		(see below))		
6 hours, Collected soil			, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
210 total gallons pu	rged. #F1	and #2	Sample I.			Lab
Additional comments:			185628-3			MAL
	1/2 //			5 802	0 /TPH(G) TE	3
Two Day total of	430 gallor	1.5	<u>Soil</u>			
Sounded MW-1 +hr	. 11/10/	·	48501		TPH(G-)	
purging 1	pri	on to	48502		1	
Gallons purged • TEMP °C /° (circle one)	F EC (µs/cm)	PH	TURBIDITY (NTU)	Y		
1. SAMPLE			6.50			
2.						
3.			<u> </u>			
4.						
5.				-		
* Take measurement at approximately each casing volume purged.	drop volumes dui	ring one sitting pump rate or	LY - Able to p volumes i	by returning	ng unab	ai recharge - le to purge imes.



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
- 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,

Anthony S. Wong, Ph.D.

Director, Laboratory/Managing Principal



CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Reinquished by: Separate and Prince Name: Reinquished by: Separate	CHAI Project Name:			CUSTODY				···		Laborato Storage i Storage i	ry Project No Refrigerator ID Freezer ID:	<u>5067</u> 12,8	Secured Yes
Recorded by Separate Na Presidential Fig. President Presid					ect #	· -			15 60.15			a chich	
Reinequilited by Repulses and Private Name Particulation by Separate and Private Name Reinequilitied by Separate and Private Name Reinequilities Name Re	Relinquished by (s	ignature and	Printed Name	Display CVII V	vulsh			F - 1				(Signature)	
SHIP TO: SHIP TO: SHIP TO: Method of Shipment Ecicle X Analysis(as) Requested Field X Shipment ID Sample ID Number Date Time Description Shipment ID Field X Shipment ID Shipment ID Shipment ID Shipment ID Sample ID Number Date Time Description Shipment ID Field X Fiel	_			TON I'V				1.11		Tul	Data	1/3/4/	11) . 4/3
SHIP TO: McLord And find Labrators McLord And McLord And find Labrators McLord And McLord And McLord And McLord McLord Analysis (et al. 1985) McContainer(s) FOR LABORATORY USE ONLY Sample Condition Upon Receipt Good (Lond Long) McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tupe, V-VOA Vial, An-1-Liner Amber G-Glass Jar, C-Cassente McContainer Types B-Brass Tup				,		TIXINET R	/4	Kath				-19-9/ Time	07.00
Number Date Time Description Selection Container(s) FOR LABORATORY USE ONLY 1 1550.29							ne and Printed Name)		2-1, 1010	CLAIR_	Date:	Time	11.300
Number Date Time Description See See See See See See See See See Se	McLaren Analy 11101 White R Rancho Cordor (916) 638-3696	ock Road a, CA 950		Fedex Shipment ID	Circle or Add Analysis(es) Requested		[[N. S.]					r eq uested u	ınder Special
Number Date Time Description See See See See See See See See See Se	Sample ID		Samo		STATE OF								
2 1856.29 3 1856.20 4 1856.31 4 1856.31 5 1857.32 5 1857.32 5 1857.32 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Date	7	Description	2160 100 VI					///	Container(s)	FOR LABORATO	ORVIISE ONI V
2 185629 (SPACE) 3 185620 (SPACE) 4 185631 (SPACE) 5 155632 (SPACE) 6 156433 (SPACE) 8 185635 (SPACE) 9 (SPACE) 9 (SPACE) 1 (SPACE) 1 (SPACE) 1 (SPACE) 2 (SPACE) 3 (SPACE) 4 185631 (SPACE) 4 185631 (SPACE) 5 155632 (SPACE) 6 156433 (SPACE) 6 15	1 185625	1415191	1700	M11-6	267 07 07 X	6/6/6/6/	\$/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	14/4/6/	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	/TAT			
3 1856-20 4 1856-31 5 1556-32 6 15 9 17 18 18 18 18 18 18 18 18 18 18 18 18 18	2 185629	,	1			++++	} 			4	1 V(HC1)	5067-8	201
4 185631 5 157632 6 15 1633 7 155634 8 155132 9 10 Charled 10 Sample Archive/Disposal Charled 10 Cher Contactory Standard 10 Other SEND DOCUMENTATION AND RESults TO (Check one) 12 Project Manager Office Company Analysis Canceled per Mark Christensen 10-21-91 Address Analysis Canceled per Mark Christensen 10-21-91 Address						╅	╆╌╂╼╏				1	· Y · · ·	4.
5 (5) 32 930 Trip 15 Land Analysis Canceled 7002 7 155 (34) (2004				, , , , , , , , , , , , , , , , , , , ,			 - - - 		 			/ .	T.
Special Instructions/Comments: [Rest Profession Standard Contains Conta			C	-	3	- - - - -						7	
TAT (Analytical Turn Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks Special Instructions/Comments: Places Professional 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 SEND DOCUMENTATION AND REsults TO (Check one) Project Manager Office SEND DOCUMENTATION AND REsults TO (Check one) Project Manager Office SEND DOCUMENTATION AND REsults TO (Check one) Analysis Canceled per Mark Christensen 10-21-91			7,50				nnally	SIS Canc	elect			1/	
Special Instructions/Comments: [Record for Expression of the container Types B-Brass Tube, V=VOA Vial, A=1-Liner Amber G=Glass Jar, C=Cassette O = Other SEND DOCUMENTATION AND RESULTS TO (Check one) Project Manager Office SEND DOCUMENTATION AND RESULTS TO (Check one) Project Manager Office SEND DOCUMENTATION AND RESULTS TO (Check one) Project Manager Office SEND DOCUMENTATION AND RESULTS TO (Check one) O = Other SEND DOCUMENTATION AND RESULTS TO (Check one) O = Oth				- Srake		 					-	. / /.	7
Special Instructions/Comments: Place Point Standard Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber G=Glass Jar. C=Cassette Other	<u> </u>			(SPARE)								. 17	
Special Instructions/Comments: Place Policy Sample Archive/Disposal Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber G=Glass Jar, C=Cassette Other	9	*-		(STAKE)	1					11	~		
Special Instructions/Comments: Place Policy Scape Archive/Disposal Cinturyses Listing Lend Viet heil: Sample Archive/Disposal Laboratory Standard O = Other SEND DOCUMENTATION AND RESULTS TO (Check one) FOR LABORATORY USE ONLY Sample Condition Upon Receipt Good Condition (77) 10-21-91 Analysis Contested per Mark Christensen 10-21-91 (77) 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 Send Condition (77) 10-21-91 Company Address	0										\		
SEND DOCUMENTATION AND RESULTS TO (Check one) Project Manager Office Project Manager Office Gentle 185635 Contain Air bubbles (F) Analysis Canceled per Mark Christensen 10-21-91 (R) Address		1											
			-		;			O = € SEND DOCUM Project Ma Client Nar Company	Other ENTATION AN anager Office _	ND RESULT	=1-Liter Ambe	er G=Glass Jar, C	=Cassette
		·										 Fav	-

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. 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.:

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

```
% Recovery of Spike(1) - % Recovery of Spike(2)
RPD = ----- x 100
(% Recovery of Spike(1) + % Recovery of Spike(2) )/2
```

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

Compound	Reporting <u>Limit</u>	Results of the MB
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



QUALITY CONTROL REPORT

METHOD BLANK

Method: TPH/G

ug/L (ppb) Units:

Date Analyzed: 10/28/91

Reporting Compound

<u>Limit</u>

Results of the MB

Total Petroleum Hydrocarbons -

Gasoline

50.

BRL



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

Analyst: <u>LEX</u>

Batch #: NA

Date Of Analysis: 10/23/91

Spike Sample ID: LCS/DW-28

Column: DBWAX

Spike ID Code: W1-352

Instrument #: GC3

Surrogate ID Code: W1-332

LP#: 5067

Matrix: Water Units: ug/L

	(a)	(b)	(c)	(d)	(e)	(f)	(g)		
COMPOUNDS	SAMPLE CONC.	SPIKE CONC.	SAMPLE + SPIKE CONC.	SPIKE REC.%	SAMPLE DUP. + SPIKE CONC.	SPIKE DUP. REC. %	RPD%	ACCEP LIMIT % REC.	
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

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

		(h)	(i)	(j)	(k)	(1)	
SURROGATE COMPOUNDS	DET.	SURROGATE SPIKE CONC.	SAMPLE + SURROGATE SPIKE CONC.	SURROGATE REC. %	SAMPLE DUP + SURROGATE SPIKE CONC.	SURROGATE DUP. RECOVERY %	ACCEPTANCE LIMITS
a,a,a,-Trifluorotoluene	PID	4.0	4.0	100	4.1	102	80 - 120

Surrogate % Recovery = $j = (i/h) \times 100$ Surrogate Dupe % Recovery = $l = (k/h) \times 100$

Comments:

8010-20W.91



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: <u>W1-327</u>

Instrument #: GC3

Surrogate ID Code: W1-332

Batch #: NA

Units: ug/L Matrix: Water

COMPOUNDS	(a) SAMPLE CONC.	(b) SPIKE CONC.	(c) SAMPLE + SPIKE CONC.	(d) SPIKE REC. %	(e) SAMPLE DUP. + SPIKE CONC.	(f) SPIKE DUP. REC. %	(g)	ACCEP LIMI % REC.	
Gas	NA	100.	120.	120	110.	110	9	80 - 120	≤20

	(h)	(i)	(j)	
SURROGATE COMPOUNDS	SURROGATE SPIKE CONC.	SAMPLE + SURROGATE SPIKE CONC.	SURROGATE RECOVERY %	ACCEPTANCE LIMITS % REC.
a,a,a-Trifluorotoluene	4.0	3.9	98	80 - 120

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

Comments:

tphg.w91



QUALITY CONTROL REPORT

METHOD BLANK

Method: TPH/G

Units: mg/Kg (ppm)

Compound

Date Analyzed: 10/24/91 Date Extracted: 10/23/91

Batch Number: 911023-1302

Reporting

<u>Limit</u>

Results of the MB

Total Petroleum Hydrocarbons -

Gasoline

1.0

BRL



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: W1-316

Instrument #: 3

Surrogate ID Code: W1-332

Batch #: 911004-1301

Units: mg/Kg Matrix: Soil

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	ACCEP LIMI	41
COMPOUNDS	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

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

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

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

Comments:	 					 		
	-			 -				_
			<u> </u>					
	 	7- 20			·····	 	···	



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. 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 Project

Name: Target Dublin Number: 122606

Sample Lab Project-

Description: MW-6 ID Number: _5067-001

Sample Date

Number: <u> 185630</u> Sampled: 10/18/91

Date Date

Received: 10/19/91 Analyzed: <u>10/28/91</u>

COMPOUND	ANALYTE CONCENTRATION ug/L (ppb)	REPORTING $\frac{\text{LIMIT}}{\text{ug/L}}$ (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	e 1900.	500.

Surrogates	Percent <u>Recovery</u>	Acceptance <u>Limits</u>
a,a,a-Trifluorotoluene	90	80 - 120
a,a,a-Trifluorotoluene	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.

Cheryl Matterson, Associate Chemist Approved By:

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

070191



ATTACHMENT II DECEMBER EVENT

PROJECT: Target Dublin EVENT: QUAVTERLY SAMPLER: CMS						
NO.	WELL OR LOCATION	DATE MO DA YR	TIME HR MIN	MEASUREMENT	CODE	COMMENTS
1	MW-1	128091	900	5. 50	SAVL.	
2	MW-2		853	5,93		
3	MW-3		840	575		
4	MW-4		348	7.17		
5	MW-5			5.52	/	
6	MW-6		0 45	5.71	<u> </u>	
7						
8						
9						
10						
11						F**
12				<u></u>	·	
13						
14						
15				**************************************		
16						
17						
18				·		
19						
20						

CODES:

*SWL - Static Water Level (Feet)

*IWL - Instant Water Level; Non-Static (Feet)

*OIL - OII 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 tabeled, tocked, or able to be locked. Describe corrective action. Note flooding of vault box, odor, access problems.

^{*}Negative pressure (Vacuum) psi a approx -(1/2 x mmHg)

HYDRODATA

DATE: 12-31-91

PRO	JECT: Tara	e	+		_ EVI	ENT: _	Soun	ting	SA	MPLER:	CM5
NO.	WELL OR LOCATION		DATE DA		TI HR	ME MIN	MEASUF	REMENT	CODE	(COMMENTS
1	MW-I	12	31	91	15	16	5.0	09	5WL	Afte	r extractio
2	MW-2	<u></u>				18		-		of 3D	Dgallons
3	MW-3				15	20	5.9	33		from	MW-6
4	MW-4				15	24	7.2	9			
5	MW-5		Ц				ち,し				
6	MW-6		\bigvee				7.3		V		
7											
8											
9											
10											
11											
12		<u> </u>									
13											
14											
15	·										
16	· · · · · · · · · · · · · · · · · · ·										
17					}						
18							 				
19	· · · · · · · · · · · · · · · · · · ·										·
20	i										

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)

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.

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

^{*}Negative pressure (Vacuum) psi = approx -(1/2 x mmHg)

McLaren

<u>McLaren</u>				WELL	OR LO	CATION $\underline{\hspace{1em}}$	<u>1W-1</u>
PROJECT_Tavae	Bublin EV	ENT SOM	pring sam	PLER	m5	_ DATE	7-30-91
Well / H	vdrologic statist	cs	Acti	on.	Ilme	Pump rate	(low yield)
	Well ty	Pe MW	Start pum	p / Begin	מוימ	1500k	
		W, etc.)			0:15	7	
						36PM	
L	diamet	4"					17.00
	1 1	·—		· .	· ··· · · · · · · · · · · · · · · · ·		<u></u>
(if above screen)	· equais.	. USgal/ft. casi	ng		17 22:5	1 1 2 2 2	<u> </u>
(ii doore sciesily	.	r	Stop	3 1	020	>159as	13.10
packer 9 "	r Ni na r		Sampled		040		15,10
intakett.			(Final IWL)	340	. < :	
Committee of the commit	5	TOP		P	urge cai	culation	
5.50			.05gal/	1. · 14.511.	9.40	$\frac{2}{\text{gals} \times 3} = \frac{2}{2}$	8.3gais.
(If in screen)				SWL to BOP or	one	our	je volume-
(II III SCIERII)				acker to BOP	volum		casings
	20	BOP		Head purg	e calcul	ation (Airlift	oniy)
measured 19,7	20	T.D. (as built)	gal	/ft: "ft:	-	_gais.	
1,0.		1.D. (as built)		packer to SW	n <u>t</u>		
Equipment Used / San	npting Method / D	escription of Ev	ent:	Actual gallo	De Dum	od 2	9
centrifuge	al used	to Dura	123	Actual yallo	nis purg		
				Actual volu	mes pur	ged <u>2</u>	
casing vi	nurres.	5000	0	Well yield	④	M	<u>Y</u>
baller us	sea 10	-ornpr		(see below)	_	•	
				COC #	7	2100105	5
				Sample I.	D	Analysis	Lab
		_		19103	ララマ	PHIA	MAL
Additional comments:				101021	7/0 +	BIEX)
8090=8	.40			19187		\	
	1-source	0.9 pg	31M	19103	<i>5</i> 7) _		
OVM -							
- Ale	thing 20	TR 0.4	ppm			V	V
Gallons purged *	TEMP °C (°F) (circle one)	EC (us / cm)	PH	TURBIDIT	Y		
1.	181.0	1920	7.04	345	,		
2. 8	435	1960	7.07	off sca	, d		
3. 29	63.5	19 40	7.04	Cffsa	lo		
4.							
5.		somol o	turbiditi	1.27.10			
* Take measurement at	⊕ HY- Minimai	MY - WL drop -		LY - Able to p		VLY - Mini	mai recharge -
approximately each	W.L. drop	volumes di	iring one sitting	volumes	by returni	ng una	ble to purge
casing volume purged.		cycling pur	g pump rate or no.	iater or n	ext day.	3 vc	iumes.

WCLaren				WELL	OR LO	CATION	100-2
PROJECT TOGE	+ Dublin EV	ENT QUOV+	erly SAM	PLER _C	mo	_ DATE 12	-30-9
Well / H	ydrologic statist	ics	Act	lon	Time	Pump rate	<u> WL</u> (low yield)
	Well ty	pe MW	Start pum	p / Begin	1100		1.
	(MW, I	EW, etc.)					
		A 11			····	76011	
		er_4"				ZGPM	
SWL (if above screen)	equals	· LOS gal/ft. casi	na				
(II above screen)			Stop	<u></u>	1115		1110
packer Intake It.	7.0 ma/		Sampled		145		14.18
bailer depth (circle one)	5		(Finat IWL) (0.15		
	i i i	ТОР	1,	14.7 F	urge cal	culation	
SWL 5.93	1	ļ	·US gain	t. • 19,17tt.	-9.2	gals x 3 = 2	- / Ogais.
(if in screen)				SWL to BOP on the sacker to BOP			e volume-
	20	80P				ation (Airlift	casings
measured 2D.)	20		gai	/ft. *ft	· · · · · · · · · · · · · · · · · ·		<u> 2111¥7</u>
T.D. <u>2011</u>	<u> </u>	T.D. (as built)		packer to SV			
Equipment Used / San	npling Method / D	escription of Eve	ent:	Actual gall	ODE DUKA	ed <u>2</u> 8	3
Centrifuge Purge 3 Disposalo	al pump	used-	+0			وس	
purae 3	cosino	Volum	res.	Actual volu	imes pur	ged	,
Disposalo	ole: booil	ier us	ed to	Well yield	_	<u>M</u>	<u> </u>
comple.				(see below		· · · · · · · · · · · · · · · · · · ·	
				COC #		DLeDlelo	
				Sample I		Analysis	Lab Lab
Additional comments:	···			1903		14/G.	NAC
8090 = 8	107 IWI			1963		BIEX	
0010 - 0				19102			
_ ==+	STURCE.	759 N	≥₩	19103	12_		
OVM Cat	ace thing	7500		ļ ————			-\
	TEMP °C (°F)					V	
Gallons purged *	(circle one)	EC (us / cm)	PH	TURBIDIT (NTU)	Υ		
1. 9	(83.1	2000	6.80	83			
2. 19	(85,5	2170	10.91	13.8			
3. 29	(2(0.0)	2200	6.92	4.0			
4.							
5.		sample	turbiditu	5.7			
Take measurement at approximately each	⊕ HY- Minimal W.L. drop	MY - WL drop - a	ble to purge 3 iring one sitting	LY - Able to	ourge 3 by returni		nai recharge - ple to purge
casing volume purged.		by reducing	pump rate or		ext day.		iumes.
	3	CACHOO DUE	300				

McLaren

McLaren				WELL C	R LO	CATION	<u>1W-3</u>
PROJECT TOYOCH	- Dublin EV	ENT QUA	terly sam	PLER CY	16	_ DATE 12	2-30-91
Well / H	ydrologic statist		Act	on I	lme	Pump rate	<u> WL</u> (low yield)
		pe	Start pum	p / Begin	240		
	(MW, E	EW, etc.)					
		. //	ļ		· · · · · · · · · · · · · · · · · · ·	0 0011	
•	diamet					2 GPM	<u> </u>
SWL ————————————————————————————————————		. USgalfit. casi	<u> </u>				
packer 1/2			Stop	12	555		1245
intake ft.	5	700	Sampled (Final IWL		20 180	w [*]	
5.75		10P	, Le Saur	t. • <u>[4.25</u> t. = 4	ge cal	culation gais x 3 = 2	7. 8 pais.
(if in screen)			1 .	SWL to BOP or	one		e volume-
(ii iii screen)	20			acker to BOP	volum		casings
		BOP				ation (Airlift o	<u>(yinc</u>
measured 19.7	<u>/////20</u>	T.D. (as built)	gal	/it.*ft:=		_gals.	
Contract the state of				packer to SWL		-	
Equipment Used / San	ent:	Actual gallons	s purge	$=$ d $\frac{2}{3}$	<u>1</u>		
centrifugal pump used to purge 3 casing volumes Disposable bailer used			TO 04	Actual volume	es pur	ged 3	<u>, </u>
purge 3		2010011			, ,	11 N	<u> </u>
DEPOSODE.	e B	erus		Well yield (see below)	⊕		
Sorripie.				COC #	22	Wololo	· · · · · · · · · · · · · · · · · · ·
				Sample I.D.		Analysis	Lab
A 1 2242 /		·		19633	2I	PH/4	MAL
Additional comments:	2 × 0.4(1			19034	<u>- </u>	-BIEX.	
8090=8	5.10 MVC			19631	≦ _		
~}	en vee	150	\sim	194316	£		
M/N/	source Pathing Zi		7				
Chief Die		one or	1 Hours				V
Gallons purged *	TEMP °C (F)	EC (us / cm)	PH	TURBIDITY (NTU)			
1. 9	(13.7	2240	7.07	10.6			
2. 18	105.5	2320	7.10	5.9			
3. 29	105,2	2340	7.12	7.1			
4.			1 1				
5.		Samao	turbidita	ろこ	1		
* Take measurement at	⊕ HY- Minimai	MY - WL drop - a	ible to purge 3	LY - Able to pur			nai recharge -
approximately each casing volume purged.	W.L. drop	volumes du	iring one sitting pump rate or	volumes by			ole to purge
casing volume purged.		cycling pun		later or nex	cay.	3 VO	umes.

(fill out completely)

McLaren

PROJECT TORGET DUDIN EVENT QUEVYEVILL SAMPLER CMG DATE 12/3/19							
	ydrologic statis		Act		īme	Pump rate	[WL (!ow vield)
	Well to	pe <u>MW</u>	Start pum	n / Begin	10	1	(iom Aleigi
	(MW,	EW, etc.)					
						2.5CP	M
ļ <u> </u>	diame	··· 4"					
_ swL	1 1						
(if above screen)	equals	USgalvit. cas	ing				
packer		ļ	Stop	9	, Z0		13.02
intakeft			Sampled		45		
bailer depth (circle one)	5	TOP	(Final IWL	```	22	:	
- w 7.17			.06gain	n. • <u>12,8</u> 7n. =	8.4	gals x 3 =	<u>25</u> gais.
(if in screen)				SWL to BOP or backer to BOP	one volum		ge volume- casings
	20	80P		Head purge	calcul	ation (Airlift	
теаsured 19.6	20	T.D. (as built)	gai	/ft_ *ft. =			•
1.0,		I.D. (as built)	.	packer to SWL			
Equipment Used / Sampling Method / Description of Event: Actual gallons purged 29							9
Centrifugal	pump u	ised to	purge	1	, -		
3 casing	volumes	o, Dispo	soble	Actual volum	es pur	=="	
3 casing bailer use	d to sam	iole.		Well yield	⊕	M	<u>Y</u>
Daller Olac	3 10 2-11	7		(see below)			
				COC #			
				Sample I.D	<u> </u>	Anatysis	Lab
Additional comments:				19654	<u> </u>	PH/G	MAL
80% = 0	712			19634		- BIEX	
8010=0	1. 10 IW			1963	19_		
1		0 1 -		194321	2 _	1	
OVM	Source	U.4 pp	~]				
brez	athing Zor	4011 F	2pm			V	V
Gallons purged *	TEMP °C /F	EC (us / cm)	PH	TURBIDITY (NTU)			
1. 8	56.2	2240	6.93	6.9			
2.	59.1	2160	6,96	3.5	T		
3. 25	(D.8)	2220	4.98	42.1	1		
4.			· •				
5.		somple:	turbicutu	4.3	1		
* Take measurement at	⊕ HY- Minimal	MY - WL drop - a	sble to purge 3	LY - Able to pur			mai recharge •
approximately each	W.L. drop		iring one sitting pump rate or	volumes by		-	ble to purge dumes.
casing volume purged.		cycling but		later or nex	t cay.	3 V C	willes.

McLaren McLaren

McLaren McLaren				WELL C	RLO	CATION	1W-5
PROJECT TOTAL	-Dublin E	entQuavt	evily sam	PLER	06	_ DATE 1	2-
Weil/H	ivdrologic statist	tics	Act	ion I	ime	Pump rate	(low yield)
		pe MW	Start pum	p / Begin	:06		(IOW VICIO
	(MW, I	EW, etc.)					
		1"					<u> </u>
		ter <u>4"</u>		·			
(if above screen)	equals	USgal/ft. cas	ing				
packer (a		1	Stop Sampled		20		9.82
intake ft.	5		(Final IWL		ろ <u>わ</u>	36	<u> </u>
		TOP		Pur	ge cal	culation	
Lsw 5,52			gal/f	i. 14.48i. =	94	gals x 3 =	-0 . Lgais.
(if in screen)		· 		SWL to BOP or packer to BOP	one volum		e volume- casings
	20	BOP		Head purge	calcul		
T.D.	20	T.D. (as built)	gal	/ft: *ft: <u></u>		_gais	
Equipment Head / See	malian Mashad / D			packer:to SWL.			
Equipment Used / San	I pump u	rescription of Ev	ent: Puvae	Actual gallons	s purge		
3 casing.	volumes,	Disposa	able	Actual volume	es purç		
centrifugas 3 casing bailer us	sed to a	sample	•	Well yield	⊕	M	<u> </u>
		,		(see below)			
				COC # Sample I.D.		Analysis	Lab
				196321	- 元	PH/A	NA/
Additional comments:				191032	フー	BIEX	
80% = 3	42 INC			19632			
- -	+ Source			19632	4		
	reathing z	i			 _		
Gallons purged *	(circle one)	(us / cm)	PH	TURBIDITY (NTU)			
1. 9	56.4	2040	7,22	18			
2. 18	58.6	2110	7.22	21			
3. 79	59.7	2190	7.17	1.2	<u> </u>		
4.			11 * 1* 1	0.5	 		
* Take measurement at	HY- Minimal	MY - WL drop -	Hurbidity	LY - Able to pur		VI V 145-5-	nai recharge -
approximately each	W.L. drop	volumes di	uring one sitting	volumes by	returnir	ng unak	ole to purge
casing volume purged.	•	by reducing	g pump rate or	later or next	day.	3 vo	iumes.

SAMPLING EVENT DATA SHEET (fill out completely)

McLaren

PROJECT TOYAL	t Dublin E	VENT QUO	rter lysam	IPLER	mo	_ DATE 12	2-30-9
Well/H	ydrologic statis	tics	Act	ion	Time	Pump rate	iWL (low yield)
		pe MW EW, etc.)	Start pum	np/Begin	745	12/20/91	
SWL (if above screen)	1 1	ter 4"	sing C		5:00 740	0.65 E 12/30/91 12/31/9 0.65 E	100 ga
packer 13 ft.			Stop Sampled (Final IWL		51D 545 7,20	12/3/10	
SWL 5.7	14.5 14.5		,US gain		urge cal	culation gais x 3 =	7.)(0 gais. e volume- easings
measured T.D. ————	14.5	T.D. (as built)	gal	Head purc Vit: "ft packes to SV	;:=: <u></u>	ation (Airlift o gais.	oniy)
Equipment Used / Sampling Method / Description of Event: Centrifugal pump used to purge Actual gallons purged 3 casing volumes. Disposable Actual volumes purged 53 bailer used. to sample. Well yield (see below)							D 3
8090 = 7.2	50 IWL			COC # Sample 1.		Analysis	
Additional comments: Started pur cycled pur OVM - 9.8	1963 1963 1963 1963	26 ± 27 = 28 = 29 T	PH/D				
Gallons purged *	TEMP °C (°F) (circle one)	EC (US/CIII)	PH	TURBIDIT (NTU)			
1.							
2. 3.							
4.							
5.		somple	Hurbidity				
* Take measurement at approximately each casing volume purged.	⊕ <u>HY-</u> Minimal W.L. drop	MY - WL drop - volumes o by reducin cycling pu	luring one sitting ng pump rate or	LY - Able to p volumes later or n	by returnir	ng unabi	ai recharge - le to purge umes.



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
- 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,

Authory S. Wong, Ph.D.

Director, Laboratory/Managing Principal

221065

Mclaren Hart

CHAIN OF CUSTODY RECORD

	CO 1	. <u></u>	000		ZZCU3J			
	,			roject No	USE ONLY S385 Secured			
	Sto	rage	Refr	igerator I				
	Sto	rage	Free	zer ID: _	No			
12	14	_6	2	ich	te shely			
		-		Date:	1-2-92 ime: \$1700			
1				Date:	13-92 Time: 1100			
				Date [.]	Time:			
Date: Time:								
/	//	/,	/,	//,	a) Identify specific metals			
		18	> /	//	requested under Special Instructions			
		% 4	/		manucions.			
(S)		(L)	_					
	JY)	γ /	<u></u>		- CONTARION TO CON			
\$ ⁶ /7	Y)	TAT	#	tainer(s) Type	FOR LABORATORY USE ONLY Lab ID			
\mathbf{x}		4	ï	V-UC	1.5885-1-01/			
\Diamond		+-	1	Y 110	1 200			
\Box	_	+	H		·			
Ŏ١		╅	${\sf H}$					
\Im	+	+	H		/202			
X I		十	H		7002/			
$\frac{X}{I}$		-	\vdash	├╌┼				
$\frac{\lambda}{ C }$	-	╁	${\mathbb H}$	 				
ᄊ		+	\vdash					
\dashv		٠,	\	1	1			
		¥	Y	L¥_	In the second se			
nes) e, V=		241 Vial,			8 hours 3 =1 week 4 = 2 weeks ober, G=Glass Jar, C=Cassette,			
	ND B	ESLI	TQ	– TO (Ched	ok anal			
ffice:	_		_13 M		11 McLead			
		مے			T T T T T T T T T T T T T T T T T T T			
1 -	1201/424							

Relinquished by: (Signature and Printed Name) Relinquished by: (Signature and Printed Name) Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: Time: SHIP TO: Method of Shipment: Circle or Add Analysis(es) IIIOI White Rock Road Runcha Conduca, CA 95670 (916) 638-3966 FAX (916) 638-2842 Sample ID Sample Description Number Date Time Description	Project Name: Taxaet Dublin Proj	ject #: 122(00) Sampler: COLETTE Shelly	Colotte Shelly
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: 73-92 Time: //oo Time: Received by: (Signature and Printed Name) Date: Time: SHHP TO: Method of Shipment: Circle or Add Analysis(es) Rill of Signature and Printed Name) Method of Shipment: Circle or Add Analysis(es) Requested Shipment ID: Sample ID Sample Description Number Date Time Time: T	Relinguisped by (Sygnature and Printed Name)		
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: Time: SHM**TO: Method of Shipment: Circle or Add Analysis(es) 11101 White Rock Road Runcho Cordova, CA 95670 (916) 638-3696 FAX (916) 638-2842 Shipment ID: Sample ID Sample Description Number Date Time Container(s) FOR LABORATORY USE ONLY 11 Apple Appl	Helinquished by: (Signature and Printed Name)		Date: - Time:
SHIP TO: Method of Shipment: Shipment ID: Shipment ID: Sample ID Sample ID Sample Description Number Date Time Description Description Number Date Time Description Description Number Date Time Description Description Description Number Date Description Descript	Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			Date: Time:
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	McLaren Analytical Laborarory 11101 White Rock Road Raincho Cordova, CA 95670 (916) 638-3696 FAX (916) 638-2842 Method of Shipment: FC + X Shipment ID:	Circle or Add Analysis(es) Requested Circle or Add Analysis(es) Reque	requested under Special
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number Date Time Description		Container(s) FOR LABORATORY USE ONLY
3 9 4 303 4 9 6 19 6 10 40 MW-1 5 19 6 207 7 19 6 19 208 8 19 19 308 9	2 19 10 30 2 / Space 3 19 10 30 3 / V V V V V V V V V V V V V V V V V V		4 VHC 5385-1001/
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:		Container Types. B=Brass Tube, V=VOA O = Other Other SEND DOCUMENTATION AND RE Project Manager/Office:	Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, ESULTS TO (Check one).
FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: SAMAES IN THAT, TEM. GOOD (RE) Company: MUSICAL AIR GURRALES (RE) Company: MUSICAL AIR GURRALES (RE) Address: 1125 At 1201 (AVC-, AVC-, AVC	FOR LABORATORY USE ONLY. Sample Condition Upon Rec PL302 T PL303 HAVE AIR GUSSIES (ESD)	Ceipt: SAMAES IN TACT, TEM. GOOD (SE) Company: MUTO Address: 112 At	en/Hart Jantic Ave, Alameda

Mc<u>laren</u> Hart

Mart Hart		FOR LABORATORY USE ONLY
CHAIN OF CUSTODY	RECORD	Laboratory Project No.: 5385 Secured Storage Refrigerator ID: 1, 4-20 Yes V No. No.
	ect #: 122L0D1 Sampler: COVEHECT	
Figure 199 by: Sopature and Pupped Name)	(Printed Name)	Dato
Helinquished 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:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: Time:
McLaren Analytical Laboratory 11101 White Rock Road Rancho Cordova, CA 95670 (916) 638-3696 FAX (916) 638-2842 Sample 1D Sample Description	Circle or Add Analysis(es) Requested Reques	a) Identify specific metals requested under Special Instructions
Number Date Time Description	\ <i>\\\$`\\$`\\$`\\$</i> \\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\	Container(s) FOR LABORATORY USE ONLY
196309 4304 1145 MINI-Z	18/8/8/8/8/8/8/8/X/X/X/X/X/X/X/X/X/X/X/X	TAT # Type Lab ID
		X 4 1 VHC 5385 - 003
3 (9103))	╏╌┼╶┼╶┤╶╎╶<mark>╳┤╶╎</mark>╶╎╴┤ ╶┤╶╏	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
4190312		X
		×
5 190313 1520 MW-3		X
61903A 1 500XE		
7191815		2
8 19103110V V V		2 V V V
9		
0		
FOR LABORATORY USE ONLY. Sample Condition Upon Recipes 13, 19634, AND REST. NAVE AND BUSINES (CON)	□ Laboratory Standard Container Types: B=Brass Tube ○ = Other SEND DOCUMENTATION Project Manager/Off eipt: SANGE IN THAT, TEAR, COOL (SC) □ Client Name:	nes) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, N AND RESULTS TO (Check one): fice:
The first broken and	Company:	Leven/Hart
	Address 1123	> Atlantic Ave Alamat
		521-5200 Fax:

Mclaren Hart

CHAIN OF CUSTODY RECORD

226067 FOR LABORATORY USE ONLY

CHAIN OF CUSTODY		Laboratory Project No.: 5385 Secured. Storage Refrigerator ID. 1,4-30 Yes V Storage Freezer ID: No							
Project Name: Tayaet Dublin Project #: 1221001 Sampler: COVETTE Great Name) OLETTE (Pronted Name) (Separate and Project Name) (Separate and Project Name)									
Relinquished by: (Squature and Printed Name) Relinquished by: (Squature and Printed Name) Relinquished by: (Squature and Printed Name)	Received by: (Signature and Printed Name) Received by: (Signature and Printed Name) Received by: (Signature and Printed Name)	Date: 12 92 Time: 1700							
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: Time:							
SHIP TO: McLaren Analytical Laboratory 11101 Whire Rock Road Rancho Curdova, CA 95670 (916) 638-3696 FAX (916) 638-2842 Sample ID Sample Description	Hequested 30 18 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	a) Identify specific metals requested under Special							
Sample ID Sample Description Number Date Time Description		Container(s) FOR LABORATORY USE ONLY							
1 196317 73191895 MW-4 2 196318 Space 3 196319 Space 4 196320 V V V 5 196321 930 MW-5 6 196322 Space 7 196323 Space 8 196324 V V V	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	TAT # Type Lab ID X A V HC 5385 7005							
Special Instructions/Comments: FOR LABORATORY USE ONLY. Sample Condition Upon Reference for Bubble (BB)	Container Types: B=Brass Tube O = Other SEND DOCUMENTATION Project Manager/Off Company Address:	NAND RESULTS TO (Check one): ICE. Canylocal Muleid Laven / Hart							



226058 FOR LABORATORY USE ONLY

16 /4

CHAIN OF CUSTODY	RECORD	Laboratory Project No.: 5385 Secured Storage Refrigerator ID: 7-4-20 Storage Freezer ID: No
Project Name: Tavget Dudin Proj	ect #: 1221001 Sampler: CORTEC	
Religinguished by Suprature and Printed Name (1)	(Printed Name)	Date: 2-97 Time: 1700
Relinquished by: (Signature and Printed Name)	Received by: Signature and Printed Name)	Date: //3/22 Time: //00
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
McLaren Analytical Laboratory 11101 White Rock Road Rancho Cordova, CA 95670 (916) 638-3696 FAX (916) 638-2842 Semile Description	Circle or Add Analysis(es) Requested Company of the	a) Identify specific metals requested under Special Instructions Container(s) FOR LABORATORY USE ONLY TAT # Type Lab ID
Sample ID Sample Description Number Date Time Description		Container(s) FOR LABORATORY USE ONLY
1/91035/4/91545 MW-LE		// TAT # Type Lab ID
2 19 18210 CANES	* * * * * * * * * * * * * * * * * * * 	A 1 VHC 5385 + 007
3/910377		\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
4 9 6 3 2 9	 	
5 19 12 329 NW-18	 	X
010120	┞╶┞┈┝┈┼┈┤┈╎┈╎╠ ┼╶┼╌┼╌┼┈┼┈┼┈┤	
190331 V V GORE	╏╒┡╒╫╒╃╒┩╒╏╒╇╒╇╒╇	MA MANAGEMENT
8		
9		<u> </u>
10		<u> </u>
10		<u> </u>
Special Instructions/Comments:	☐ Laboratory Standard Container Types: B=Brass Tuber O = Other SEND DOCUMENTATION Container Types: B=Brass Tuber O = Other SEND DOCUMENTATION Project Manager/O	nes) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks e, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, N AND RESULTS TO (Check one).
FOR LABORATORY USE ONLY. Sample Condition Upon Rec	eipt: SANALS IN TACT, IMP. 6000 (ASP) Client Name:	
	Company: MC	Laven/Hart
	Address: 113t	5 Atlantic Ave Alaned
	Phone:	521-5200 Fax

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. 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.:

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

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

METHOD BLANK

Method: TPH/D

Units: mg/L (ppm)

Date Analyzed: 01/09/92

Date Extracted: 01/06/92

Batch Number: 920106-1901

Reporting

<u>Limit</u>

Results of the MB

Total Petroleum Hydrocarbons -

Compound

Diesel

0.50

BRL



(DC1-CN5385)

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

	LP#: 5385							
Ana	alyst: <u>EB</u>					Batch #	: <u>92010</u>	6-2601
Date Of Ana	lysis: <u>01/</u>	08/92			Spike Sa	umple ID	:_LCSW/	LCSDW #21
Co	olumn: <u>DB-</u>			Spike	ID Code	: <u>W2-75</u>	6 W2-757	
Instrume	ent #: PGC	#4			Surrogate	ID Code	: <u>NA</u>	
						Matrix	: <u>Water</u>	Units:mg/L
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	ACCEPTANCE

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	ACCEPT LIMI	
COMPOUNDS	SAMPLE CONC.	SPIKE CONC.	SAMPLE + SPIKE CONC.	SPIKE REC. %	SAMPLE DUP. + SPIKE CONC.	SPIKE DUP, REC. %	RPD %	% 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 Date Analyzed: 01/07/92

Units: ug/L (ppb)

Compound	Reporting <u>Limit</u>	Results of the MB
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

METHOD BLANK

Method: Mod. EPA 8020 (BTEX) & TPH/G Date Analyzed: 01/09/92

Units: ug/L (ppb)

Compound	Reporting <u>Limit</u>	Results of the MB
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



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

Analyst: <u>LEX</u>

Date Of Analysis: 01/09/92

Column: DBWAX

Instrument #: 6

LP#: 5385

Batch #: NA

Spike Sample ID: LCS/LCSD W2

Spike ID Code: W-1-352

Surrogate ID Code: W-1-415

Matrix: Water Units: ug/L

		(a)	(b)	(c)	(d)	(e)	(f)	(g)		
EPA METHOD	COMPOUNDS	SAMPLE CONC.	SPIKE CONC.	SAMPLE + SPIKE CONC.	SPIKE REC.%	SAMPLE DUP. + SPIKE CONC.	SPIKE DUP. REC. %	RPD%	ACCEPTA LIMIT % REC.	
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	<u>≤</u> 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	<u>≤</u> 20
8020	Ethyl Benzene	NA	5.0	6.0	120	5.9	118	2	80 - 120	≤20

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

			(h)	(i)	(i)	(k)	(1)	
EPA METHOD	SURROGATE COMPOUNDS	DET.	SUR. SPIKE CONC.	SAMPLE + SUR. SPIKE CONC.	SUR. REC. %	SAMPLE DUP. + SUR.SPIKE CONC.	SUR. DUP. RECOVERY %	ACCEPTANCE LIMITS % REC.
8020	a,a,a,-Trifluorotoluene	PID	4.0	3.8	95	3.6	90	80 - 120

Surrogate % Recovery = $j = (i/h) \times 100$ Surrogate Dupe % Recovery = $1 = (k/h) \times 100$

Comments:



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

	(a)	(b)	(c) SAMPLE +	(d)	(e) SAMPLE DUP.	(f) SPIKE	(g)	ACCEP LIMI	
COMPOUNDS	SAMPLE CONC.	SPIKE CONC.	SPIKE CONC.	SPIKE REC. %	+ SPIKE CONC.	DUP. REC. %	RPD %	% REC.	RPD
Gas	NA	100.	94.	94	96.	96	2	80 - 120	≤20

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

	(h)	(i)	(j)	
SURROGATE COMPOUNDS	SURROGATE SPIKE CONC.	SAMPLE + SURROGATE SPIKE CONC.	SURROGATE RECOVERY %	ACCEPTANCE LIMITS % REC.
a,a,a-Trifluorotoluene	4.0	3.7	92	80 - 120

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

Comments:	 	·		
				
			<u> </u>	

tphg.w91



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. 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.



(DC1-CN5385)

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 Projec ID Number:	
Sample Number:	196304		Date Sampled:	12/30/91
Date Received:	01/03/92		Date Analyzed:	01/07/92
COMPOUND		ANALYT <u>CONCENTRA</u> ug/L (p	TION	REPORTINGLIMIT ug/L (ppb)
Benzene		BRL		0 50
Toluene		0.63		0.50 0.50
Ethyl Benzer	ne	BRL		0.50
1,2-Xylene		BRL		0.50
1,3-Xylene		BRL		0.50
1,4-Xylene		BRL		0.50
Total Petrol Gasoline	eum Hydrocarbons -	BRL		50.
		Percent		Acceptance
<u>Surrogates</u>		Recovery		Limits
a a a-Mrifly	orotoluene (PID)			
a,a,a-iiiiiu a.a.a-Triflu	orotoluene (FID)	92		80 - 120
~, ~, ~ 11111U	orocordene (trn)	9 2		80 - 120

Surrogates		Recovery	Acceptance Limits
a,a,a-Trifluorotoluene	(PID)	92	80 - 120
a,a,a-Trifluorotoluene	(FID)	92	80 - 120

Dilution: None

Comments:

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



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

Project		Project	
Name:	Target Dublin	Number:	122601

Sample Lab Project-

Description: MW-1 ID Number: 5385-002

Sample Date

Number: 196306 Sampled: 12/30/91

Date

Received: 01/03/92 Analyzed: 01/07/92

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

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

Dilution: None

Comments:

Approved By: Miss Phullips & CM Date: Market Cheryl Matterson, Associate Chemist

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



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:	122601
Sample Description: <u>MW-2</u>	Lab Projec ID Number	ct- : <u>5385-003</u>
Sample Number: <u>196311</u>	Date Sampled:	12/30/91
Date Received: <u>01/03/92</u>	Date Analyzed:	01/09/92
COMPOUND	ANALYTE CONCENTRATION ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
Benzene Toluene Ethyl Benzene 1,2-Xylene 1,3-Xylene 1,4-Xylene	6.1 BRL BRL BRL BRL BRL	0.50 0.50 0.50 0.50 0.50 0.50
Total Petroleum Hydrocarbons - Gasoline	BRL	50.
Surrogates	Percent Recovery	Acceptance <u>Limits</u>

Dilution: None

a,a,a-Trifluorotoluene (PID)

a,a,a-Trifluorotoluene (FID)

Comments:

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

92

102

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

070191

80 - 120

80 - 120



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

Project Project Name: Target Dublin Project Number: 122601

Sample Lab Project-

Description: MW-3 ID Number: 5385-004

Sample Date

Number: 196315 Sampled: 12/30/91

Date

Received: 01/03/92 Analyzed: 01/07/92

ANALYTE REPORTING COMPOUND CONCENTRATION LIMIT ug/L (ppb) 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 -BRL 50. Gasoline

Surrogates

Percent
Recovery
Acceptance
Limits

a,a,a-Trifluorotoluene (PID)
a,a,a-Trifluorotoluene (FID)

85
80 - 120
80 - 120

Dilution: None

Comments:

Approved By: Matterson, Associate Chemist Date: 115/92

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



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

Project Project Name: Target Dublin Number: 122601 Sample Lab Project-Description: MW-4 ID Number: <u>5385-005</u> Sample Date Number: <u>196319</u> Sampled: 12/31/91 Date Date Received: 01/03/92 Analyzed: 01/09/92 ANALYTE REPORTING COMPOUND CONCENTRATION LIMIT ug/L (ppb) 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 -180. 100. Gasoline Percent Acceptance Surrogates <u>Limits</u> Recovery 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: Marie Matterson, Associate Chemist Date: 11/5/92

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



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:	122601
Sample Description: <u>MW-5</u>	Lab Proje ID Number	ct- : <u>5385-006</u>
Sample Number: <u>196322</u>	Date Sampled:	12/31/91
Date Received: 01/03/92	Date Analyzed:	01/07/92
COMPOUND	ANALYTE CONCENTRATION ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
Benzene Toluene Ethyl Benzene 1,2-Xylene 1,3-Xylene	BRL BRL BRL BRL BRL	0.50 0.50 0.50 0.50 0.50
1,4-Xylene Total Petroleum Hydrocarbons - Gasoline	BRL BRL	0.50 50.
Surrogates	Percent <u>Recovery</u>	Acceptance Limits
<pre>a,a,a-Trifluorotoluene (PID) a,a,a-Trifluorotoluene (FID)</pre>	88 72 (a)	80 - 120 80 - 120

Dilution: None

(a) Sample surrogate compound was beyond quality control Comments:

limits. All other quality control is acceptable.

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

070191



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

Project Project Name: Target Dublin Number: 122601 Sample Lab Project-Description: MW-6 ID Number: <u>5385-007</u> Sample Date Number: <u> 196327</u> Sampled: 12/31/91 Date Date Received: 01/03/92 Analyzed: <u>01/09/92</u> REPORTING ANALYTE COMPOUND CONCENTRATION LIMIT ug/L (ppb) ug/L (ppb) Benzene 360. 50. Toluene BRL 50. Ethyl Benzene 260. 50. 1,2-Xylene 50. BRL 1,3-Xylene BRL 50. 1,4-Xylene BRL 50. Total Petroleum Hydrocarbons -2500. {a} 5000. Gasoline

Surrogates	Percent <u>Recovery</u>	Acceptance <u>Limits</u>
a,a,a-Trifluorotoluene	85	80 - 120
a,a,a-Trifluorotoluene	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 Matterson, Associate Chemist Date: 1/13/42

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



TOTAL PETROLEUM HYDROCARBONS

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

Project

Name: <u>Target Dublin</u> Number: 122601

Sample Lab Project-

Description: MW-6 ID Number: 5385-007

Sample Date

Number: 196329 Sampled: 12/31/91

Date

Received: 01/03/92 Extracted: 01/06/92

Date Batch

Analyzed: 01/09/92 Number: 920106-1901

PETROLEUM HYDROCARBONS

CONCENTRATION

mg/L (ppm)

mg/L (ppm)

Total Petroleum Hydrocarbons - BRL 0.50

Diesel

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: This Mullipo L C M
Cheryl Matterson, Associate Chemist

Date: 1/13/92

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

