McLaren Hart

92 JAN 31 AM 11:46

January 30, 1992

Mr. Larry Seto
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Dear Mr. Seto:

QUARTERLY GROUNDWATER MONITORING REPORT, EMERY BAY MARKETPLACE, EMERYVILLE, CALIFORNIA

Enclosed is the letter report "Quarterly Groundwater Monitoring Report, Emery Bay Marketplace, Emeryville, California," January 9, 1992. The report summarizes the quarterly groundwater monitoring activities performed at the Emery Bay Marketplace property during October 1991 in accordance with the "Work Plan for Groundwater Monitoring and Free Product Removal at the Marketplace Site, Emeryville, California," July 6, 1990 (Work Plan). The Work Plan was submitted to address recommendations made in the report "Groundwater Characterization, Emery Bay Marketplace," June 19, 1990.

If you have any questions, please call me.

Sincerely,

Julie S. Menack

Julie S. Menack, RG #4440
Supervising Hydrogeologist

Enclosure : (1)
cc/enc: Lynn Tolin

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1135 Atlantic Avenue, Alameda, CA 94501 (415) 521-5200 FAX (415) 521-1547

QUARTERLY GROUNDWATER MONITORING REPORT EMERY BAY MARKETPLACE EMERYVILLE, CALIFORNIA

JANUARY 9, 1992

McLaren Hart

McLaren Hart

January 9, 1992

Ms. Lynn Tolin
Christie Avenue Partners-JS
6475 Christie Avenue, Suite 500
Emeryville, California 94608

Dear Ms. Tolin:

QUARTERLY GROUNDWATER MONITORING REPORT, EMERY BAY MARKETPLACE, EMERYVILLE, CALIFORNIA

This letter report documents the results of the quarterly monitoring activities conducted at the Emery Bay Marketplace (Marketplace) property during October 1991. This is the fifth quarterly report submitted in accordance with the "Work Plan for Groundwater Monitoring and Free Product Removal at the Marketplace Site, Emeryville, California," July 6, 1990 (Work Plan) (McLaren, 1990b). The Work Plan was submitted to address recommendations made in the report "Groundwater Characterization, Emery Bay Marketplace," June 19, 1990 (Groundwater Characterization Report) (McLaren, 1990a).

It was determined in the Groundwater Characterization Report that a former asphalt refining plant, located on the northeast side of the site, may be a source of: 1) dissolved hydrocarbons detected in groundwater samples from monitoring wells located downgradient from the former refining plant location, and 2) separate-phase product observed in Well W-5 which is located near the former refining plant location.

The following activities have been completed as proposed in the Work Plan:

- Depths to groundwater were measured at all monitoring wells on a quarterly basis (July and October 1990; January, April, and October 1991) and the data were used to prepare groundwater elevation maps.

- Groundwater from six downgradient wells (wells W-7, W-13, W-14, W-19, W-20, and W-24) was sampled on a quarterly basis (July and October 1990; January, April, and October 1991) to verify that petroleum hydrocarbons in groundwater are confined to the Marketplace property and have not migrated off-site. Samples were analyzed for total petroleum hydrocarbons as diesel (TPH/D) and as motor oil (TPH/MO) by modified EPA Method 8015.

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- Free product was removed from well W-5 on a bi-weekly basis for four months from July through October 1990 and on a monthly basis between October 1990 and June 1991.

- Well W-10, which could not be used for sampling because of low groundwater recharge, was abandoned on October 1, 1990. The well abandonment activities are described in the Quarterly Report dated November 28, 1990 (McLaren/Hart, 1990b).

Based on the results of one year of groundwater monitoring, McLaren/Hart had recommended in the "Proposal and Cost Estimate for Continued Groundwater Monitoring at the Emery Bay Marketplace Site, Emeryville, California", October 9, 1991 (McLaren/Hart, 1991b) (Proposal) that two additional analyses (other than those specified in the Work Plan) should be performed on groundwater from certain wells during the fourth quarter 1991 groundwater monitoring event. These analyses have been completed in addition to the above-mentioned regular Work Plan activities as follows:

- Groundwater samples from wells W-7, W-19, W-20 and W-24, and a free product sample from Well W-5 were analyzed by the Hydrocarbon Fingerprinting Analysis (HFA) method for a qualitative indication of the type of hydrocarbons present. The motivation for this analysis was to determine: 1) whether hydrocarbons detected in Wells W-5, W-7 and W-19 were related to the former asphalt refining plant near Well W-5 or from different sources and 2) whether hydrocarbons detected in wells W-20 and W-24 in April 1991, if still present, are associated with the Marketplace site.

- Groundwater samples from wells W-20 and W-24 were analyzed for the volatile organic compound (VOC) hydrocarbon components benzene, toluene, xylenes, and ethylbenzene (BTXE) to determine if these components are in groundwater where TPH/MO was detected once, in April 1991.

This letter report presents the results of the depth to groundwater measurements and the groundwater quality sampling and analyses performed during the month of October, 1991. The data evaluation compares data collected during this quarter to historic data collected at the site. The activities associated with the free product removal from Well W-5, which was terminated in June 1991, are also summarized.

FIELD METHODS

Depths to groundwater in all existing wells at the Marketplace property were measured with a Solinist electronic water level indicator on October 25, 1991. A Marine Moisture Control

Company oil-water interface probe was used to measure depth to oil and depth to groundwater in wells where free product was present (Wells W-5 and W-16). Hydrologic data sheets with original field water level data are provided in Attachment A. A summary of historic depth to groundwater measurements, monitoring well surface casing elevations, and calculated groundwater surface elevations is presented in Table 1.

A peristaltic pump was used to purge groundwater prior to sampling with a disposable bailer on October 25, 1991. Groundwater was purged until a minimum of three casing volumes of groundwater were removed, turbidity readings were below 50 NTUs and temperature, conductivity and pH readings were stabilized. Groundwater samples were collected in one-liter amber bottles and 40 milliliter volatile organic analysis (VOA) bottles.

Groundwater samples from wells W-7, W-13, W-14, W-19, W-20, and W-24 were analyzed for TPH/D and TPH/MO by Modified EPA Method 8015 and samples from wells W-20 and W-24 were also analyzed for BTXE. These samples were sent under chain-of-custody to McLaren/Hart Analytical Laboratory (MAL) in Rancho Cordova, California. One travel blank and one replicate were sent as Quality Assurance (QA) samples. In addition, groundwater samples from wells W-7, W-19, W-20, and W-24 and a sample of product from well W-5 were sent for HFA to Friedman & Bruya, Inc. in Seattle, Washington. The analytical laboratory data sheets, QA laboratory results, chain-of-custody records, and sampling data sheets are included in Attachment B. The analytical results are summarized and presented with the historic analytical data on Table 2.

DATA EVALUATION

The data which are evaluated consist of: 1) groundwater surface elevations as determined by the October 25, 1991 depth to groundwater measurements, 2) groundwater flow directions as determined from the groundwater surface contour map that has been prepared based on the groundwater elevations, 3) groundwater quality data obtained in October 1991, and 4) removal of free product between July 1990 and June 1991.

Groundwater Elevations

The October 25, 1991 groundwater surface elevation contours for the artificial fill material beneath the site are presented in Figure 1. Elevations from the following wells were omitted from the preparation of groundwater surface elevation contours for the reasons described:

- Elevations from Wells W-15, W-16, and W-22 were not used to construct the map because these wells are completed in the native material below the artificial fill material.

- The groundwater elevation for Well W-5 was not used because the free product which occurs in this well is likely to affect the measured groundwater elevation.

- The elevation from Well W-7 was not used because it is significantly higher than elevations in adjacent wells. The higher elevation at Well W-7 has consistently been observed when water elevations have previously been measured. As discussed in the Groundwater Characterization Report, perched groundwater conditions may occur within the artificial fill material at this location.

Groundwater Flow Direction

The groundwater elevation map for wells completed in the native material is consistent with previous groundwater flow maps (McLaren, 1990a; McLaren/Hart, 1990a; McLaren/Hart, 1990b; McLaren/Hart, 1991a) and indicates that groundwater flows in a westerly to southwesterly direction, toward Christie Avenue. The April 3, 1991 water levels (McLaren/Hart, 1991a) were 0.5 to 2 feet higher than those measured in October 1991 at the end of the dry season. The higher water levels measured in April are a possible result of shallow recharge from precipitation during winter and early spring months. As discussed in the Groundwater Characterization Report (McLaren, 1990a), local variations in groundwater flow near Wells W-4 and W-8 may be caused by the slurry wall that is installed to a depth of 35 feet on the upgradient property.

Groundwater Quality

Groundwater samples were collected on October 25, 1991 from six wells on the downgradient side of the property (W-7, W-13, W-14, W-19, W-20, and W-24) and product was collected for analysis from the well W-5, located on the upgradient side of the property. The analytical results are shown in summary form on Figure 2. The following discussion focuses on the results of the analyses that pertain to the regular quarterly monitoring program called for in the Work Plan and those that pertain to the one time monitoring samples called for in the Proposal (McLaren/Hart, 1991b).

The purpose of the quarterly monitoring program as described in the Work Plan is to confirm that total petroleum hydrocarbons (TPH) are confined to the Marketplace property and have not migrated offsite. TPH has not been detected in groundwater from wells W-13 and W-14 which are located on the downgradient side of the property. Groundwater from wells W-7 and W-19

had continued to show low concentrations of TPH prior to October 1991. The only TPH detected in downgradient wells prior to the October 25, 1991 sampling event was TPH/MO detected in groundwater from wells W-20 and W-24, in the samples collected in April 1991. Presence of TPH/MO was not confirmed when these wells were subsequently sampled in October 1991. According to MAL, the TPH/MO detected in these wells showed a chromatographic pattern that did not exactly match the motor oil standard chromatograph.

The results of the October 25, 1991 TPH analyses were generally consistent with previous results. However, the 34 ppm level of TPH/MO in Well W-19 was significantly higher than previous results which have ranged from less than 1 to 8 ppm. Consistent with analytical results prior to April 1991, all of the wells located on the downgradient side of the Marketplace property showed no TPH in groundwater during October 1991. This indicates that occurrence of TPH is limited to the Marketplace property and does not occur near the property boundary.

Groundwater from wells W-20 and W-24 was analyzed for VOCs (BTXE) and by the HFA. The purpose of these analyses were to determine if the TPH/MO detected in April 1991 had any petroleum-associated constituents that might be associated with the Marketplace site. The results of the BTXE analyses show that VOCs do not occur on the downgradient side of the Marketplace property. The results of HFA analysis also indicate an absence of organic compounds in wells W-20 and W-24. The VOC and HFA results therefore confirm the absence of petroleum-associated hydrocarbons that were indicated by the results of the TPH/MO analyses.

HFA analysis was also performed on samples from wells W-5, W-7, and W-19 to ascertain whether hydrocarbons detected in these wells are from the same source. The results of the HFA analysis are provided in Attachment B. The HFA results for Well W-5 showed the presence of low to high boiling point compounds, such as those found in a crude oil or a waste oil. The HFA result for well W-7 showed the presence of low, medium and high boiling point compounds, such as those found in biogenic or highly degraded material. The HFA result for groundwater from W-19 showed presence of medium to high boiling point compounds, such as those found in motor oil. Therefore, the HFA results indicate that hydrocarbons in wells W-5 and W-19 are likely from different sources: 1) the sample from well W-5 is similar to a crude or waste oil and can be attributed to the former asphalt refining plant, and 2) the hydrocarbons in well W-19 are similar to motor oil and can be attributed to the former Nielsen trucking facility (described in the Groundwater Characterization Report). Although the HFA results for well W-7 are inconclusive, it is possible that the hydrocarbons detected in well W-7 may be a degraded version of one or both of the hydrocarbon compounds detected in wells W-5 and W-19.

Free Product Removal from Well W-5

In accordance with the Work Plan, free product was removed from Well W-5 on a biweekly basis from July through October 1990 and on a monthly basis between October 1990 and June 1991. Product was removed either with a disposable bailer or with a peristaltic pump. The product thickness, both before and after product removal, and an estimate of the volume of fluid removed, is recorded in Table 3. It is noted that the volume of fluid removed includes an undetermined amount of water. The total amount of product removed from Well W-5 between July 1990 and June 1991 was 13.7 gallons. Product removal from Well W-5 was discontinued in June 1991 because: 1) the volume of product that was removed from Well W-5 over the one-year period was insignificant, and 2) a removable thickness of product occurs only in well W-5, indicating that product is limited to this area.

CONCLUSIONS

In summary, the results from the October 1991 quarterly monitoring activities conducted at the Emery Bay Marketplace property are as follows:

- The October 1991 groundwater flow map for the artificial fill (Figure 1) is consistent with previous groundwater flow maps (McLaren, 1990a; McLaren/Hart, 1990a, 1990b, 1991), and shows that groundwater flow is toward the west-southwest.

- The October 1991 groundwater sampling event confirms the conclusion from the Groundwater Characterization Report that petroleum hydrocarbons do not occur downgradient of Wells W-7 and W-19 and that they are limited to the site property.

- The TPH/MO detected in wells W-20 and W-24 one time in April 1991 was not confirmed. The results of the BTXE and HFA analyses further confirm the absence of hydrocarbons in these wells.

- The results of the HFA analysis of wells containing hydrocarbons (wells W-5, W-7, and W-19) indicates that: 1) motor oil is present in Well W-19, 2) a crude or waste oil is present in Well W-5, and 3) a degraded biogenic material that could not be further characterized is present in Well W-7. The results suggest that, although TPH/MO has been detected in well W-19, it is not from the same source as the free product in Well W-5. This result indicates that there are two localized areas with hydrocarbons in groundwater at the Marketplace site.

- A total of 13.7 gallons of free product was removed from Well W-5 on a periodic basis for one year, between July 1990 and June 1991. The average product thickness prior to removal did not decrease significantly after that one-year period. Product removal from well W-5 was discontinued due to: 1) the insignificant volume of product that was removed from the well during the one-year period and 2) the fact that the extent of product appears to be limited to the vicinity of Well W-5.

If you have any questions regarding this report, please call.

Sincerely,

Julie S. Menack

Julie S. Menack, RG #4440
Supervising Hydrogeologist

Paula A. Bolio
Associate Hydrogeologist

Attachments (2)

cc/attach: Larry Seto
Alameda County Department of Environmental Health

1203AMD1

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REFERENCES

McLaren. (1989). Free Product Subsurface Investigation, Marketplace Site, Emeryville, California, October 19, 1989.

McLaren. (1990a). Groundwater Characterization, Emery Bay Marketplace, June 19,1990.

McLaren. (1990b). Work Plan for Groundwater Monitoring and Free Product Removal at the Marketplace Site, Emeryville, California, July 6, 1990.

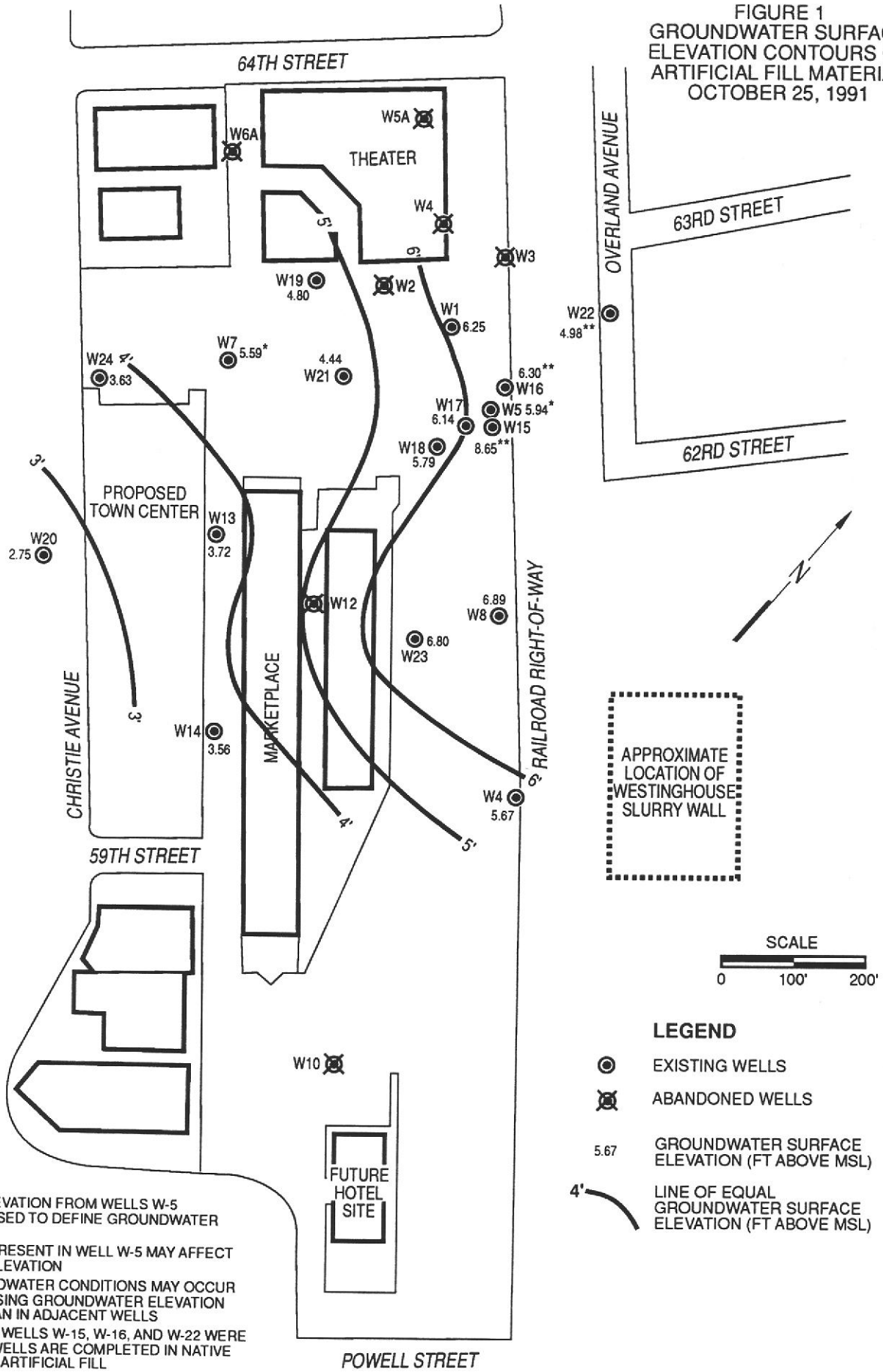
McLaren/Hart. (1990a). Quarterly Groundwater Monitoring Report, Emery Bay Marketplace, Emeryville, California, October 3, 1990.

McLaren/Hart. (1990b). Quarterly Groundwater Monitoring Report, Emery Bay Marketplace, Emeryville, California, November 28, 1990.

McLaren/Hart. (1991a). Quarterly Groundwater Monitoring Report, Emery Bay Marketplace, Emeryville, California, August 14, 1991.

McLaren/Hart. (1991b). Proposal and Cost Estimate for Continued Groundwater Monitoring at the Emery Bay Marketplace Site, Emeryville, California, October 9, 1991.

FIGURE 1
GROUNDWATER SURFACE ELEVATION CONTOURS OF ARTIFICIAL FILL MATERIAL
OCTOBER 25, 1991



LEGEND

- EXISTING WELLS
- ABANDONED WELLS
- 5.67 GROUNDWATER SURFACE ELEVATION (FT ABOVE MSL)
- 4' LINE OF EQUAL GROUNDWATER SURFACE ELEVATION (FT ABOVE MSL)

* GROUNDWATER ELEVATION FROM WELLS W-5 AND W-7 WERE NOT USED TO DEFINE GROUNDWATER CONTOURS BECAUSE:

- FREE PRODUCT PRESENT IN WELL W-5 MAY AFFECT GROUNDWATER ELEVATION
- PERCHED GROUNDWATER CONDITIONS MAY OCCUR AT WELL W-7, CAUSING GROUNDWATER ELEVATION TO BE HIGHER THAN IN ADJACENT WELLS

** ELEVATIONS FROM WELLS W-15, W-16, AND W-22 WERE NOT USED BECAUSE WELLS ARE COMPLETED IN NATIVE MATERIAL BELOW THE ARTIFICIAL FILL

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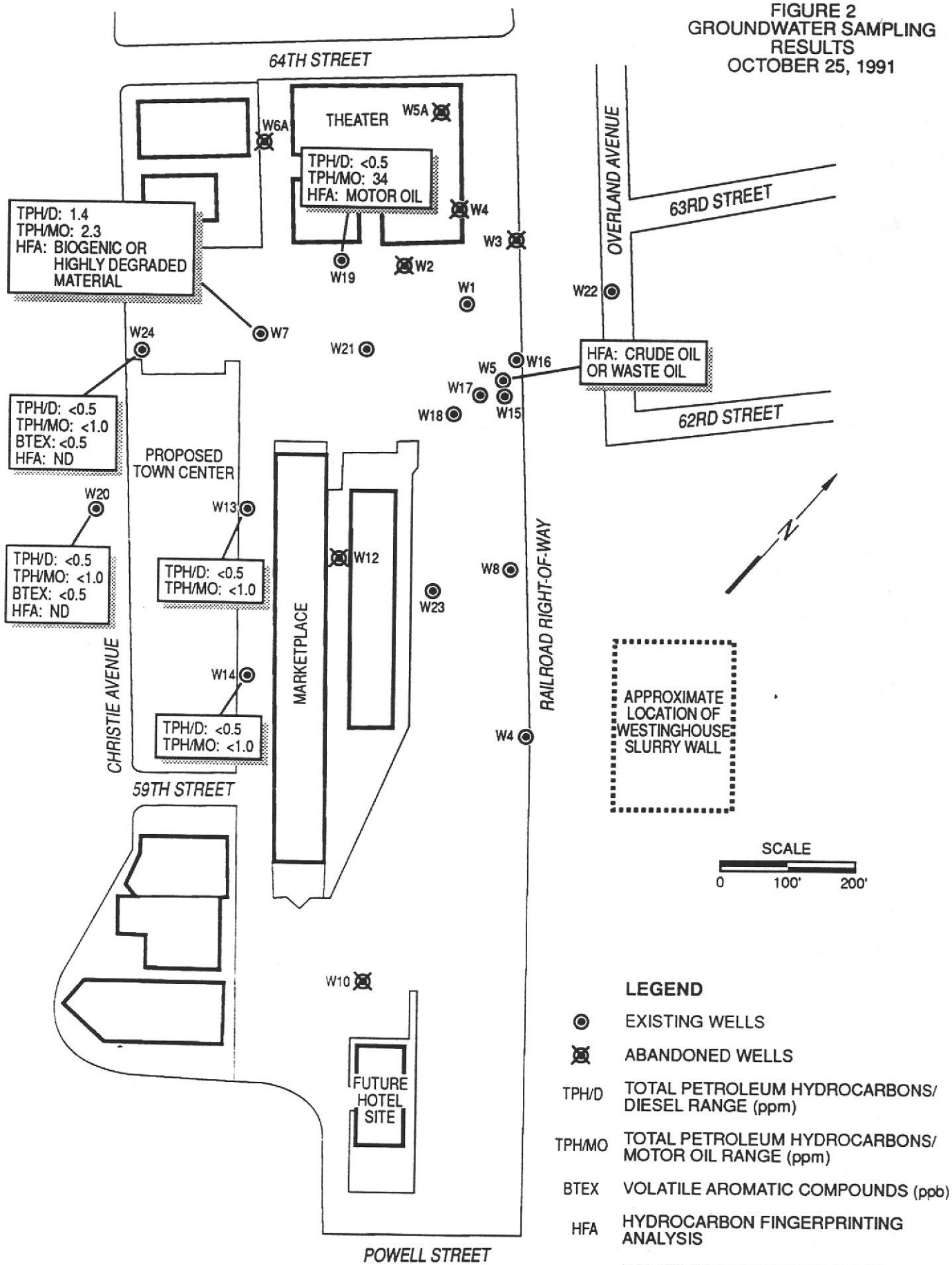
FIGURE 2
GROUNDWATER SAMPLING
RESULTS
OCTOBER 25, 1991



LEGEND

◉	EXISTING WELLS
⊠	ABANDONED WELLS
TPH/D	TOTAL PETROLEUM HYDROCARBONS/ DIESEL RANGE (ppm)
TPH/MO	TOTAL PETROLEUM HYDROCARBONS/ MOTOR OIL RANGE (ppm)
BTEX	VOLATILE AROMATIC COMPOUNDS (ppb)
HFA	HYDROCARBON FINGERPRINTING ANALYSIS
ND	VOLATILES AND SEMIVOLATILES NOT DETECTED

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TABLE 1

GROUNDWATER DEPTHS AND ELEVATIONS
EMERY BAY MARKETPLACE SITE

Well Number	Top of Casing (Feet)	Date	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)	Product Thickness (Feet)
W-1[a]	11.47	8-7-81	4.30	6.20[b]	
		9-10-81	4.40	6.10[b]	
		5-6-87	6	6.08[b]	
		8-20-89	5.60	5.87	
		10-11-89	5.63	5.84	
		2-22-90	4.92	6.55	
		2-28-90	5.02	6.45	
		4-9-90	5.44	6.03	
		6-7-90	5.37	6.10	
		7-25-90	5.26	6.21	
		10-3-90	5.43	6.04	
		1-3-91	5.69	5.78	
		4-3-91	4.74	6.73	
		10-25-91	5.22	6.25	
W-4	9.96	8-7-81	4.30	6.20[b]	
		9-10-81	4.40	6.10[b]	
		1-18-82	2.50	8.00[b]	
		3-27-85	?[c]	8.65	
		8-20-89	3.95	6.01	
		10-11-89	3.87	6.09	
		2-22-90	2.0	7.96	
		2-28-90	2.39	7.57	
		4-9-90	3.17	6.79	
		6-7-90	2.73	7.23	
		7-25-90	3.71	6.25	
		10-3-90	4.18	5.78	
		1-3-91	3.64	6.32	
		4-3-91	1.45	8.51	
		10-25-91	4.29	5.67	
W-5	11.41	8-7-81	4.70	7.50[b]	c
		9-10-81	4.90	7.30[b]	c
		1-18-82	2.50	9.60[b]	c
		3-27-85	?[c]	9.28	c
		10-11-89	4.43	6.98	0.71
		2-22-90	3.80	7.61	0.88
		2-28-90	4.43	6.98	1.65
		4-9-90	4.73	6.68	1.82
		6-7-90	4.30	7.11	1.80
		7-25-90	5.10	6.31	2.12
		10-3-90	4.90	6.51	1.11
		1-3-91	4.77	6.64	0.85
		4-3-91	2.42	8.99	0.03
		10-25-91	5.47	5.94	1.18
W-7[a]	9.05	5-6-87	3	6.88[b]	
		8-20-89	3.59	5.46	
		10-11-89	3.08	5.97	
		2-22-90	1.75	7.30	
		2-28-90	1.31	7.74	
		4-9-90	2.42	6.63	
		6-7-90	1.21	7.84	
		7-25-90	2.76	6.29	
		10-3-90	3.22	5.83	
		1-3-91	3.17	5.88	
		4-3-91	1.18	7.87	
		10-25-91	3.47	5.59	
W-8	10.43	5-6-87	5.5	6.88[b]	
		8-20-89	3.59	6.84	
		2-22-90	1.5	8.93	
		2-28-90	1.78	8.65	
		4-9-90	3.12	7.31	
		6-7-90	2.90	7.53	
		7-27-90[d]	3.33	7.10	
		10-3-90	3.65	6.78	
		1-3-91	3.46	6.97	
		4-3-91	1.47	8.96	
		10-25-91	3.54	6.89	

TABLE 1

GROUNDWATER DEPTHS AND ELEVATIONS
EMERY BAY MARKETPLACE SITE
(Continued)

Well Number	Top of Casing (Feet)	Date	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)	Product Thickness (Feet)
W-13	8.15	8-20-89	4.64	3.51	
		10-11-89	4.60	3.55	
		2-22-90	3.85	4.30	
		2-28-90	4.18	3.97	
		4-9-90	4.31	3.84	
		6-7-90	3.93	4.22	
		7-25-90	4.40	3.75	
		10-3-90	4.67	3.48	
		1-3-91	4.43	3.72	
		4-3-91	3.64	4.51	
		10-25-91	4.54	3.72	
W-14	7.97	8-20-90	5.02	2.95	
		2-22-90	4.19	3.78	
		2-28-90	4.46	3.51	
		4-9-90	4.36	3.61	
		6-7-90	5.29	2.68	
		7-25-90	4.83	3.14	
		10-3-90	5.09	2.88	
		1-3-91	4.32	3.65	
		4-3-91	4.31	3.66	
		10-25-91	4.41	3.56	
W-15	11.53	8-20-89	3.43	8.10	
		10-11-89	4.26	7.27	
		2-22-90	2.58	8.95	
		2-28-90	2.53	9.00	
		4-9-90	2.48	9.05	
		6-7-90	4.54	6.99	
		7-25-90	4.00	7.53	
		10-3-90	3.46	8.07	
		1-3-91	2.97	8.56	
		4-3-91	3.05	8.48	
		10-25-91	2.88	8.65	
W-16	10.94	10-11-89	4.81	6.13	0.07
		2-22-90	3.92	7.02	NM
		2-28-90	3.88	7.06	NM
		4-9-90	7.81	3.13	NM
		6-7-90	6.19	4.75	NM
		7-27-90[1]	4.44	6.50	NM
		10-3-90	4.38	6.56	0.02
		1-3-91	4.67	6.27	0.02
		4-3-91	3.50	7.48	0.02
		10-25-91	4.64	6.30	NM
W-17	12.14	10-11-89	9.12	3.02	
		2-22-90	5.42	6.72	
		2-28-90	5.35	6.79	
		4-9-90	5.72	6.42	
		6-7-90	---[2]	---[2]	
		7-26-90	5.59	6.55	
		10-3-90	5.72	6.42	
		1-3-91	6.28	5.86	
		4-3-91	4.69	7.45	
		10-25-91	6.00	6.14	
W-18	11.34	10-11-89	5.52	5.82	
		2-22-90	4.42	6.92	
		2-28-90	4.77	6.57	
		4-9-90	5.24	6.10	
		6-7-90	4.28	7.06	
		7-25-90	4.98	6.36	
		10-3-90	5.44	5.90	
		1-3-91	5.84	5.50	
		4-3-91	4.94	6.40	
		10-25-91	5.55	5.79	

TABLE 1

GROUNDWATER DEPTHS AND ELEVATIONS
EMERY BAY MARKETPLACE SITE
(Continued)

Well Number	Top of Casing (Feet)	Date	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)	Product Thickness (Feet)
W-19	10.27	4-9-90	5.11	5.16	
		6-7-90	4.77	5.50	
		7-25-90	4.93	5.34	
		10-3-90	4.95	5.32	
		1-3-91	5.95	4.32	
		4-3-91	5.39	4.88	
		10-25-91	5.47	4.80	
W-20	6.82	4-9-90	4.08	2.74	
		6-7-90	3.79	3.03	
		7-25-90	4.00	2.82	
		10-3-90	4.03	2.79	
		1-3-91	4.12	2.70	
		4-3-91	3.84	2.98	
		10-25-91	4.07	2.75	
W-21	9.48	4-9-90	5.21	4.27	
		6-7-90	4.84	4.64	
		7-25-90	5.05	4.43	
		10-3-90	5.18	4.30	
		1-3-91	5.47	4.01	
		4-3-91	4.80	4.68	
		10-25-91	5.04	4.44	
W-22	11.67	4-9-90	7.50	4.17	
		6-7-90	7.36	4.31	
		7-25-90	7.49	4.18	
		10-3-90	7.68	3.99	
		1-3-91	7.88	3.79	
		4-3-91	7.64	4.03	
		10-25-91	6.69	4.98	
W-23	9.16	4-9-90	1.51	7.65	
		6-7-90	1.78	7.38	
		7-27-90[f]	2.63	6.53	
		10-3-90	3.20	5.96	
		1-3-91	2.36	6.80	
		4-3-91	0.60[h]	8.56	
		10-25-91	2.36	6.80	
W-24	8.72	6-7-90	4.75	3.97	
		7-25-90	5.02	3.70	
		10-3-90	5.00	3.72	
		1-3-91	5.25	3.47	
		4-3-91	4.56	4.16	
		10-25-91	5.09	3.63	

[a] Nielson Property
[b] Groundwater elevation taken from earlier reports; may not agree with calculated elevation using current top of casing elevation.
[c] Data not available.
[d] Well W-8 was not accessible on 7-25-90 and 7-26-90. It was sounded on 7-27-90.
[e] NM indicates product thickness not measurable.
[f] Wells W-16 and W-23 were under pressure when sounded in 7-25-90. The wells were allowed to equilibrate and were resounded on 7-27-90.
[g] Well W-17 not accessible on 6-7-90.
[h] Depth to groundwater measured with tape measure because water level was too shallow to measure with oil-water interface probe.

TABLE 2

HYDROCARBONS IN GROUNDWATER
EMERY BAY MARKETPLACE SITE

Number Well	Sample Date	TPH/D Concentration (ppm)	TPH/MO Concentration (ppm)
W-1	4-14-87	---[a]	<5[b,c]
	2-28-90	<0.5	---
	4-11-90	<0.1	0.57
W-2[d]	4-15-87	<1	---
W-3[d]		---	---
W-4[d]	4-14-87	---	<5[c]
W-4	3-01-90	<0.5	---
	4-10-90	<0.1	<0.25
W-5[e]	9-27-89	20	---
B-5[d]		---	---
W-5A[d]	4-16-87	<1[f]	<1[f]
W-5[n]	10-25-91	HFA: Crude Oil or Waste Oil	
W-6[d]	4-16-87	<1[f]	<1[f]
W-7	9-26-89	1.1	---
	2-28-90	<0.5[g]	---
	4-11-90	5.6	7.5
	7-30-90	2.6	2
	10-4-90	5	6
	1-4-91	4	12
	4-3-91	<1.0[h]	3.2
	10-25-91	1.4	2.3
	10-25-91[n]	HFA: Biogenic or highly degraded material	
W-8	4-17-87	10[i]	---
	9-26-89	7.1	---
	3-01-90	4.5	---
	4-18-90	5.3	---
W-13	2-28-90	<0.5	---
	4-12-90	<0.5	---
	7-27-90	<0.5	<1
	10-4-90	<0.5	<1
	1-3-91	<0.5	<1
	4-4-91	<0.5	<1
	10-25-91	<0.5	<1
W-14	2-28-90	<0.5	---
	4-11-90	<0.1	<0.25
	7-30-90	<0.6	<1
	10-4-90	<0.5	<1
	1-4-91	<0.5	<1
	4-4-91	<0.5	<1
	10-25-91	<0.5	<1
W-15	9-25-89	1.2	---
	4-13-90	1.5	---
W-16	9-27-89	4.7	---
	2-28-90	22	---
	4-13-90	9	---
W-17	9-25-89	0.7	---
	4-13-90	1.6	---
W-18	9-26-89	3.1	---
	4-13-90	5.1	---

TABLE 2
(Continued)

HYDROCARBONS IN GROUNDWATER
EMERY BAY MARKETPLACE SITE

Well Number	Sample Date	TPH/D Concentration (ppm)	TPH/MO Concentration (ppm)
W-19	4-12-90	1.1	---
	4-16-90	<0.5[j]	---
	7-27-90	<1	8
	10-3-90	<0.5[k]	3
	1-3-91	<0.5	<1
	4-3-91	<2.5[h]	8.4
	10-25-91[n]	<0.5	34
	10-25-91	HFA: Motor Oil	
W-20	4-12-90	<0.5	---
	4-16-90	<0.5	---
	7-30-90	<0.5	<1
	10-3-90	<0.5	<1
	1-4-91	<0.5	<1
	4-4-91	<0.5	2.3[l]
	10-25-91[m]	<0.5	<1
	10-25-91[n]	HFA: Volatiles and Semi-Volatiles not detected	
W-21	4-12-90	1.4	---
	4-18-90	1.7	---
W-22	4-12-90	<0.5	---
	4-18-90	<0.5	---
W-23	4-12-90	2.9	---
	4-18-90	3.6	---
W-24	6-7-90	<0.5	---
	7-27-90	<0.5	<1
	10-3-90	<0.5	<1
	1-3-91	<0.5	<1
	4-3-91	<0.5	1.1[l]
	10-25-91[m]	<0.5	<1
	10-25-91[n]	HFA: Volatiles and Semi-Volaties not detected	

[a] --- indicates no analysis made for constituent.
[b] < indicates constituent not detected above this level.
[c] Grease also not detected above 5 ppm in Wells W-1 and W-4 (Nielson)
[d] Abandoned well on Nielson property.
[e] Free product in Well W-5.
[f] Indicates total gasoline, diesel, and motor oil also not detected above 1 ppm in wells W-5A and W-6.
[g] Review of gas chromatograph indicated TPH/D present at 0.3 ppm in Well W-7 on 2-28-90.
[h] Reporting limits increased from 0.5 ppm to 1.0 ppm (W-7) and 2.5 ppm (W-19) TPH/D on 4-3-91 because samples were diluted due presence of motor oil.
[i] Semiquantified results include gasoline, diesel, and some oil and grease in well W-8.
[j] Review of gas chromatograph indicated TPH/D present at 0.4 ppm in Well W-19 on 4-16-90.
[k] Review of gas chromatograph indicated TPH/D present at 0.3 ppm in Well W-19 on 10-3-90.
[l] The chromatographic pattern in the sample does not exactly match the motor oil standard chromatograph.
[m] BTEX analyzed 10/25/91, not detected.
[n] Hydrocarbon Fingerprinting Analysis (HFA)

TABLE 3
PRODUCT THICKNESS DATA FOR WELL W-5
EMERY BAY MARKETPLACE SITE

Date	Before Product Removal			After Product Removal			Volume Removed (Gal.)
	Depth to Oil	Depth to Water	Product Thickness	Depth to Oil	Depth to Water	Product Thickness	
Biweekly Product Removal							
7/25/90	2.98	5.10	2.12	*	*	*	0.7**
8/8/90	3.56	4.72	1.16	4.43	4.47	0.04	1.0**
8/24/90	3.56	4.80	1.24	4.94	4.94	0.00	0.5
9/7/90	3.62	4.83	1.21	4.58	4.79	0.21	0.3**
9/21/90	3.72	4.93	1.21	4.44	4.54	0.10	0.4**
10/4/90	3.84	4.94	1.10	3.24	3.96	0.72	0.3
10/17/90	3.92	4.96	1.04	3.94	3.96	0.02	0.2
10/31/90	4.06	5.24	1.18	4.65	4.72	0.07	0.4
Monthly Product Removal							
11/29/90	4.34	5.64	1.30	5.64	5.65	0.01	1.5
12/28/90	3.97	4.68	0.71	5.46	5.48	0.02	2.0
1/31/91	3.65	4.64	0.99	5.22	5.25	0.03	2.0
2/28/91	2.67	4.17	1.50	3.7	3.72	0.02	0.4
3/28/91	2.08	3.57	1.49	3.71	3.71	0.00	0.8
4/29/91	2.77	4.43	1.66	3.64	3.73	0.09	0.4
5/30/91	3.14	4.26	1.12	5.15	5.15	0.00	2.0
6/24/91	3.56	4.72	1.16	4.11	4.12	0.01	0.8**
TOTAL AMOUNT OF PRODUCT REMOVED***							13.7

*Product thickness not measured after product was removed on 7/25/90.
**Product removed with a bailer.
***Total amount of product removed includes an undetermined amount of water.

ATTACHMENT A

HYDROLOGIC DATA SHEETS

McLaren

HYDRODATA

DATE: 10/25/91

PROJECT: Market Place EVENT: _____ SAMPLER: CGW + DAW

NO.	WELL OR LOCATION	DATE MO	DA	YR	TIME HR	MIN	MEASUREMENT	CODE	COMMENTS
1	W-16	10	25	91	9	20	4.64	SWL	used oil sounder
2	W-5				9	30	4.29	OIL	
3	W-5				9	30	5.47	OWI	
4	W-15				9	35	2.88	SWL	
5	W-17				9	42	6.00		
6	W-18				9	52	5.55		vault box flooded replaced lock (2357)
7	W-23				10	05	2.36		replaced lock (2357)
8	W-8				10	12	3.54		
9	W-4				10	20	4.29		
10	W-14				10	31	4.41		
11	W-13				10	35	4.43		
12	W-20				10	41	4.07		well unlocked
* 13	W-24				10	52	5.09		vault box full of gelatin-like mud
* 14	W-7				11	00	3.46		see W-24; replaced lock
* 15	W-19				11	05	5.47		replaced lock
* 16	W-21				11	13	5.04		replaced lock
17	W-1				11	20	5.22		vault box flooded; filled with gelatin mud
18	W-22				11	32	6.69		replaced lock
19									
20									

CODES:

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

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

Note in comments column if well is not: properly labeled, locked, or able to be locked. Describe corrective action.

Note flooding of vault box, odor, access problems.

[2]Negative pressure (Vacuum) psi = approx -(1/2 x mmHg)

7, 19, 5

ATTACHMENT B

LABORATORY ANALYTICAL DATA SHEETS, QA LABORATORY RESULTS, CHAIN-OF-CUSTODY FORMS, AND SAMPLING DATA SHEETS

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59805

Sample Description: W-7

Lab Project-ID Number: 5088-001

Sample Number: 187001

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Extracted: 10/28/91

Date Analyzed: 10/31/91

Batch Number: 911028-2002

PETROLEUM HYDROCARBONS	CONCENTRATION mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	1.3 (b)	0.50
Motor Oil Range	2.0	1.0
Total Petroleum Hydrocarbons	3.3	1.0

Dilution: None

Comments:

(a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

(b) The chromatographic pattern of diesel in the sample does not exactly match the standard chromatograph.

Approved By: Chris Phillips for C.M Date: 11/8/91
Cheryl Matterson, Associate Chemist

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

101491

McLaren Hart

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)
Preparation Method: EPA 3510

Project Name:	Marketplace	Project Number:	59805
Sample Description:	W-7 Replicate	Lab Project-ID Number:	5088-002
Sample Number:	187003	Date Sampled:	10/25/91
Date Received:	10/26/91	Date Extracted:	10/28/91
Date Analyzed:	10/31/91	Batch Number:	911028-2002

PETROLEUM HYDROCARBONS	CONCENTRATION mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	1.4 (b)	0.50
Motor Oil Range	2.3	1.0
Total Petroleum Hydrocarbons	3.7	1.0

Dilution: None

Comments:
(a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

(b) The chromatographic pattern of diesel in the sample does not exactly match the standard chromatograph.

Approved By: Ilona Phillips for C.M Date: 11/8/91
Cheryl Matterson, Associate Chemist

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

101491

McLaren Hart

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59805

Sample Description: Trip Blank

Lab Project-ID Number: 5088-003

Sample Number: 187013

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Extracted: 10/28/91

Date Analyzed: 10/31/91

Batch Number: 911028-2002

PETROLEUM HYDROCARBONS	CONCENTRATION mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: Thus Phillips for C.M. Date: 11/7/91
Cheryl Matterson, Associate Chemist

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

101491

McLaren Hart

VOLATILE AROMATIC COMPOUNDS

Analytical Method: Modified EPA 8020 (BTEX)
Preparation Method: EPA 5030

Project Name: Marketplace

Project Number: 59805

Sample Description: Trip Blank

Lab Project-ID Number: 5088-003

Sample Number: 187017

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Analyzed: 10/29/91

COMPOUND	ANALYTE CONCENTRATION ug/L (ppb)	REPORTING LIMIT 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

Surrogate	Percent Recovery	Acceptance Limits
a,a,a-Trifluorotoluene	95	80 - 120

Dilution: None

Comments:

Approved By: Chris Phillips for C.M Date: 11/8/91
Cheryl Matterson, Associate Chemist

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

070191

McLaren Hart

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59805

Sample Description: W-19

Lab Project-ID Number: 5088-004

Sample Number: 187026

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Extracted: 10/28/91

Date Analyzed: 11/02/91

Batch Number: 911028-2002

PETROLEUM HYDROCARBONS	CONCENTRATION mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
Gasoline Range	BRL	5.0
Jet Fuel/Kerosene Range	BRL	5.0
Diesel Range	BRL	5.0
Motor Oil Range	34.	10.
Total Petroleum Hydrocarbons	34.	10.

Dilution: 1:10

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: Chris Phillips for C.M. Date: 11/8/91
Cheryl Matterson, Associate Chemist

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

101491

McLaren Hart

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59805

Sample Description: W-14

Lab Project-ID Number: 5088-005

Sample Number: 186009

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Extracted: 10/28/91

Date Analyzed: 10/31/91

Batch Number: 911028-2002

PETROLEUM HYDROCARBONS	CONCENTRATION mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: Chris Phillips for C.M Date: 11/8/91
Cheryl Matterson, Associate Chemist

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

101491

McLaren Hart

VOLATILE AROMATIC COMPOUNDS

Analytical Method: Modified EPA 8020 (BTEX)
Preparation Method: EPA 5030

Project Name: Marketplace

Project Number: 59805

Sample Description: W-20

Lab Project-ID Number: 5088-006

Sample Number: 187011

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Analyzed: 10/30/91

COMPOUND	ANALYTE CONCENTRATION ug/L (ppb)	REPORTING LIMIT 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

Surrogate	Percent Recovery	Acceptance Limits
a,a,a-Trifluorotoluene	105	80 - 120

Dilution: None

Comments:

Approved By: Chris Phillips for C.M. Date: 11/8/91
Cheryl Matterson, Associate Chemist

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

070191

McLaren Hart

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59805

Sample Description: W-20

Lab Project-ID Number: 5088-006

Sample Number: 187006

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Extracted: 10/28/91

Date Analyzed: 10/31/91

Batch Number: 911028-2002

PETROLEUM HYDROCARBONS	CONCENTRATION mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: Yvonne Phillips for C.M Date: 11/8/91
Cheryl Matterson, Associate Chemist

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

101491

McLaren Hart

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59805

Sample Description: W-24

Lab Project-ID Number: 5088-007

Sample Number: 187019

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Extracted: 10/28/91

Date Analyzed: 10/31/91

Batch Number: 911028-2002

PETROLEUM HYDROCARBONS	CONCENTRATION mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: Chris Phillips for C.M Date: 11/5/91
Cheryl Matterson, Associate Chemist

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

101491

McLaren Hart

VOLATILE AROMATIC COMPOUNDS

Analytical Method: Modified EPA 8020 (BTEX)
Preparation Method: EPA 5030

Project Name: Marketplace

Project Number: 59805

Sample Description: W-24

Lab Project-ID Number: 5088-007

Sample Number: 187023

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Analyzed: 10/30/91

COMPOUND	ANALYTE CONCENTRATION ug/L (ppb)	REPORTING LIMIT 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

Surrogate	Percent Recovery	Acceptance Limits
a,a,a-Trifluorotoluene	105	80 - 120

Dilution: None

Comments:

Approved By: Chris Phillips for C.M Date: 11/8/91
Cheryl Matterson, Associate Chemist

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

070191

McLaren Hart

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59805

Sample Description: W-13

Lab Project-ID Number: 5088-008

Sample Number: 186007

Date Sampled: 10/25/91

Date Received: 10/26/91

Date Extracted: 10/28/91

Date Analyzed: 10/31/91

Batch Number: 911028-2002

PETROLEUM HYDROCARBONS	CONCENTRATION mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: Chris Phillips for C.M. Date: 11/2/91
Cheryl Matterson, Associate Chemist

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

101491

McLaren Hart

McLaren Hart

Date: November 7, 1991
LP #: 5088

Julie Menack
McLaren/Hart
1135 Atlantic Avenue
Alameda, CA 94501

Dear Ms. Menack:

Enclosed are the laboratory results for the eight samples submitted by you to the McLaren Analytical Laboratory on October 26, 1991, for the project *Marketplace*.

The analyses you requested are:

Mod. EPA 8015 (8 - Water)
Mod. EPA 8020 (BTEX) (3 - 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,

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

11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696 FAX (916) 638-2842

McLaren Hart

225264

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project No.: _____ Secured: Yes ___ No ___
Storage Refrigerator ID: _____
Storage Freezer ID: _____

Project Name: Marketplace Project #: 59805 Sampler: Chris Walsh (Printed Name) Chris Walsh (Signature)

Relinquished by: (Signature and Printed Name) Chris Walsh Chris Walsh	Received by: (Signature and Printed Name) Fedex	Date: 10/25/91	Time: 19:00
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:
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: 1217409572

Circle or Add Analysis(es) Requested

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description: Date	Time	Description	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)	625/8270 (BNA-GC/MS)	TPH/G (Gasoline-GC)	TPH/D (Diesel-GC)	418.1 (IR)	6015 Modified (GC)	Metals-Total a	Metals-Soluble a	Fluoride/Perchlorate	Chloride/pH	TDS/Percent Solid	Specific Conductivity (EC)	Motor Oil	TAT	Container(s) #	Container(s) Type	FOR LABORATORY USE ONLY Lab ID
1	187001	10/25/91	1300	W-7									X							X		4	1	A(VOA)	
2	187002			↓ (SPARE)																					
3	187003			W-7 Replicate																					
4	187004		↓	↓ (SPARE)																					
5	187013		1200	Trip Blank																					
6	187014		↓	↓ (SPARE)																					
7	187026		1700	W-19																				(1	
8	187027		↓	↓ (SPARE)																					
9	186009		1550	W-14																					
10	186010	↓	↓	↓ (SPARE)																					

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: Julie Menack / Alameda
☐ Client Name: _____
Company: _____
Address: _____
Phone: ( ) _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

McLaren Hart

225266

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project No.: _____ Secured: Yes ___ No ___
Storage Refrigerator ID: _____
Storage Freezer ID: _____

Project Name: Marketplace Project #: 59805 Sampler: Chris Walsh (Printed Name) Chris Walsh (Signature)

Relinquished by: (Signature and Printed Name) Chris Walsh Chris Walsh	Received by: (Signature and Printed Name) Fedex	Date: 10/25/91	Time: 19:00
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:
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: 1217409572

Circle or Add Analysis(es) Requested

a) Identify specific metals requested under Special Instructions

	Sample ID Number	Sample Description: Date	Time	Description	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)	625/8270 (BNA-GC/MS)	TPH/G (Gasoline-GC)	TPH/D (Diesel-GC)	418.1 (IR)	8015 Modified (GC)	Metals-Total a	Metals-Soluble a	Fluoride/Perchlorate	Chloride/pH	TDS/Percent Solid	Specific Conductivity (EC)	BTEX Motor Oil	TAT	Container(s) #	Container(s) Type	FOR LABORATORY USE ONLY Lab ID
1	187006	10/25/91	14:35	W-20										X								X	4	1	A(NP)	
2	187007			(SPARE)																					V(HCl)	
3	187008			W-20																		X				
4	187009			(SPARE)																						
5	187010			(SPARE)																						
6	187011			(SPARE)																						
7	187015		12:00	Trip Blank																						
8	187016			(SPARE)																						
9	187017			(SPARE)																						
10	187018			(SPARE)																						

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 _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

SEND DOCUMENTATION AND RESULTS TO (Check one):
☑ Project Manager/Office: Julie Menack / Alameda
☐ Client Name: _____
Company: _____
Address: _____
Phone: ( ) _____ Fax: _____

McLaren Hart

225267

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project No.: _____ Secured: Yes ___ No ___
Storage Refrigerator ID: _____
Storage Freezer ID: _____

Project Name: Marketplace Project #: 59805 Sampler: Chris Walsh (Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Chris Walsh Chris Walsh	Fedex	10/25/91	19:00
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:
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: 217409572

Circle or Add Analysis(es) Requested

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description: Date	Time	Description	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)	625/8270 (BNA-GC/MS)	TPH/G (Gasoline-GC)	TPH/D (Diesel-GC)	418.1 (IR)	8015 Modified (GC)	Metals-Total a	Metals-Soluble a	Fluoride/Perchlorate	Chloride/pH	TDS/Percent Solid	Specific Conductivity (EC)	BTEX	Motor Oil	TAT	Container(s) #	Container(s) Type	FOR LABORATORY USE ONLY Lab ID
1	187019	10/25/91	1550	W-24									X								X		4	1	A(NP)	
2	187020	↓	↓	↓ (SPARE)									↓								↓		↓	↓	↓	
3	187021			W-24																					V(HCl)	
4	187022			↓ (SPARE)													X								↓	
5	187023			(SPARE)																						
6	187024	↓	↓	↓ (SPARE)																						
7	186007			W-13									X								X				A(NP)	
8	186008	↓	↓	↓ (SPARE)									↓								↓		↓	↓	↓	
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 _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

SEND DOCUMENTATION AND RESULTS TO (Check one):
☑ Project Manager/Office: Julie Menack / Alameda
☐ Client Name: _____
Company: _____
Address: _____
Phone: ( ) _____ 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.:

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

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.

McLaren Hart

QUALITY CONTROL REPORT

METHOD BLANK

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

Date Analyzed: 10/29/91

Compound	Reporting Limit	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

(DC3-CN5088)

McLaren Hart

QUALITY CONTROL REPORT

METHOD BLANK

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

Date Analyzed: 10/30/91

Compound	Reporting Limit	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

(DC3-CN5088)

McLaren Hart

QUALITY CONTROL REPORT

METHOD BLANK

Method: Mod. EPA 8015
Units: mg/L (ppm)

Date Analyzed: 10/30/91
Date Extracted: 10/28/91
Batch Number: 911028-2002

Compound	Reporting Limit	Results of the MB
Gasoline Range	0.50	BRL
Jet Fuel/Kerosene Range	0.50	BRL
Diesel Range	0.50	BRL
Motor Oil Range	1.0	BRL

McLaren Hart

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

LP#: 5088

Analyst: EB

Batch #: 911028-2002

Date Of Analysis: 10/30/91

Spike Sample ID: LCSW/LCSDW #17

Column: DB1

Spike ID Code: W2-379/W2-495

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	ACCEPTANCE LIMITS RPD
Gasoline	NA	2.5	2.0	80	1.8	72	11	26 - 90	≤ 25
Diesel	NA	2.5	1.9	76	2.2	88	15	43 - 152	≤ 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

Comments:

8015MSDR.W91

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

LP#: 5088

Analyst: LEX

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

Matrix: Water Units: ug/L

COMPOUNDS	(a) SAMPLE CONC.	(b) SPIKE CONC.	(c) SAMPLE + SPIKE CONC.	(d) SPIKE REC.%	(e) SAMPLE DUP. + SPIKE CONC.	(f) SPIKE DUP. REC. %	(g) RPD%	ACCEPTANCE LIMITS % REC.	ACCEPTANCE LIMITS RPD
1,1 - Dichloroethane	NA	NA	NA	NA	NA	NA	NA	80 - 120	≤20
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

SURROGATE COMPOUNDS	DET.	(h) SURROGATE SPIKE CONC.	(i) SAMPLE + SURROGATE SPIKE CONC.	(j) SURROGATE REC. %	(k) SAMPLE DUP + SURROGATE SPIKE CONC.	(l) 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) x 100
Surrogate Dupe % Recovery = l = (k/h) x 100

Comments:

8010-20W.91

McLaren Hart

(DC3-CN5088)

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

LP#: 5088

Analyst: LEX

Batch #: NA

Date Of Analysis: 10/30/91

Spike Sample ID: LCS/D W 29

Column: DBWAX

Spike ID Code: W1-352

Instrument #: GC3

Surrogate ID Code: W1-332

Matrix: Water Units: ug/L

COMPOUNDS	(a) SAMPLE CONC.	(b) SPIKE CONC.	(c) SAMPLE + SPIKE CONC.	(d) SPIKE REC.%	(e) SAMPLE DUP. + SPIKE CONC.	(f) SPIKE DUP. REC. %	(g) RPD%	ACCEPTANCE LIMITS % REC.	ACCEPTANCE LIMITS RPD
1,1 - Dichloroethane	NA	NA	NA	NA	NA	NA	NA	80 - 120	≤20
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	4.3	86	4.5	90	4	80 - 120	≤20
Benzene	NA	5.0	4.3	86	4.2	84	2	80 - 120	≤20
Ethyl Benzene	NA	5.0	4.6	92	4.9	98	6	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

SURROGATE COMPOUNDS	DET.	(h) SURROGATE SPIKE CONC.	(i) SAMPLE + SURROGATE SPIKE CONC.	(j) SURROGATE REC. %	(k) SAMPLE DUP + SURROGATE SPIKE CONC.	(l) SURROGATE DUP. RECOVERY %	ACCEPTANCE LIMITS
a,a,a,-Trifluorotoluene	PID	4.0	6.2	155 [a]	4.3	108	80 - 120

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

Comments:

[a] Sample surrogate compound was beyond quality control limits. All other quality control is acceptable.

8010-20W.91

McLaren Hart

(DC3-CN5088)

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 were calculated based only on detected peaks.

Gasoline and diesel standard obtained from local Chevron station. Gasoline is sold commercially as unleaded gasoline and diesel as diesel fuel #2.

Kerosene standard obtained from Post Jeff Chevron/Mobil Products. It is sold commercially as jet fuel and kerosene. Other jet fuel sources may produce different instrument responses and contain different hydrocarbon chains. The kerosene standard contains the same hydrocarbon chain as commercial jet fuel.

Motor oil standard obtained from local automotive store. Manufacturer and motor oil type are Pennzoil SAE 10W-40.

Results are reported on the attached data sheets.

McLaren Hart

McLaren Hart

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project No:
Storage Refrigerator ID:
Storage Freezer ID:
Secured: Yes / No

Project Name: Market place Project #: 59805 Sampler: Chris Walsh (Printed Name) (Signature)

Relinquished by (Signature and Printed Name)	Received by (Signature and Printed Name)	Date	Time
Chris Walsh Chris Walsh	Fedex	10/25/91	19.00
Relinquished by (Signature and Printed Name)	Received by (Signature and Printed Name)	Date	Time
		10-26-91	8145Am
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: Friedman + Broya
McLaren Analytical Laboratory
1801 White Rock Road
Rancho Cordova, CA 95670
(916) 638-3696
FAX (916) 638-2842

Method of Shipment: Fedex

Shipment ID: 1217409561

Circle or Add Analysis(es) Requested

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description: Date	Time	Description	TAT	Container(s): #	Type	FOR LABORATORY USE ONLY: Lab ID
1	187005	10/25/91	1300	W-7	4	1	A(AP)	24391
2	187012	10/25/91	1435	W-20				24392
3	187025	10/25/91	1550	W-24				24393
4	187028	10/25/91	1700	W-19				24394
5	186011	10/25/91	1640	W-5				24395
6								
7								
8								
9								
10								

Consumed in Analysis - 10-26-91

Special Instructions/Comments

HFS = Hydrocarbon Fingerprint Analysis

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

FOR LABORATORY USE ONLY Sample Condition Upon Receipt

SEND DOCUMENTATION AND RESULTS TO (Check one)
☐ Project Manager/Office
☑ Client Name: Julie Meruck
Company: McLaren / Hart
Address: 1135 Atlantic Ave Alameda CA 94501
Phone: (510) 521 5200 Fax

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3008-B 16th Avenue West
Seattle, WA 98119
FAX: (206) 283-5044

October 30, 1991

Julie Menack, Project Leader
McLaren Hart
1135 Atlantic Avenue
Alameda, CA 94501

Dear Ms Menack:

Enclosed are the results of the analyses of the samples submitted on October 26, 1991 from Project 59805, Market Place.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this material, or if you just want to discuss any aspect of your projects, please do not hesitate to contact me.

Sincerely,

Lisa Bentley

Lisa A. Bentley, Chemist

LAB/sao

Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: October 30, 1991
Date Submitted: October 26, 1991
Project: 59805, Market Place

RESULTS OF ANALYSES OF THE WATER SAMPLES FOR FINGERPRINT CHARACTERIZATION BY CAPILLARY GAS CHROMATOGRAPHY USING FLAME IONIZATION DETECTION (FID) AND ELECTRON CAPTURE DETECTION (ECD)

Sample #	GC Characterization
W-7	The gas chromatographic trace showed the presence of low, medium and high boiling compounds, such as those found in biogenic or highly degraded material. This characterization is based on the presence of envelopes present from ca *n*-C_4 to *n*-C_{10}, several ragged peaks ca *n*-C_{10} to *n*-C_{12} and ca *n*-C_{18} to beyond *n*-C_{34}. The ECD trace confirmed this characterization by showing the presence of low levels of oxygenated compounds which are indicative of biogenic or highly degraded material.
W-20	The gas chromatographic trace showed an absence of significant levels of volatile or semi-volatile compounds.
W-24	The gas chromatographic trace showed an absence of significant levels of volatile or semi-volatile compounds.
W-19	The gas chromatographic trace showed the presence of medium to high boiling compounds, such as those found in motor oil. This characterization is based on the presence of a relatively smooth envelope of peaks present from ca *n*-C_{12} to beyond *n*-C_{34} with a maximum near *n*-C_{24}. The material appeared to be relatively unweathered due to the presence of volatile material eluting prior to *n*-C_{18}. This is also indicated by the presence of the sharp peaks eluting at the maximum of the envelope.

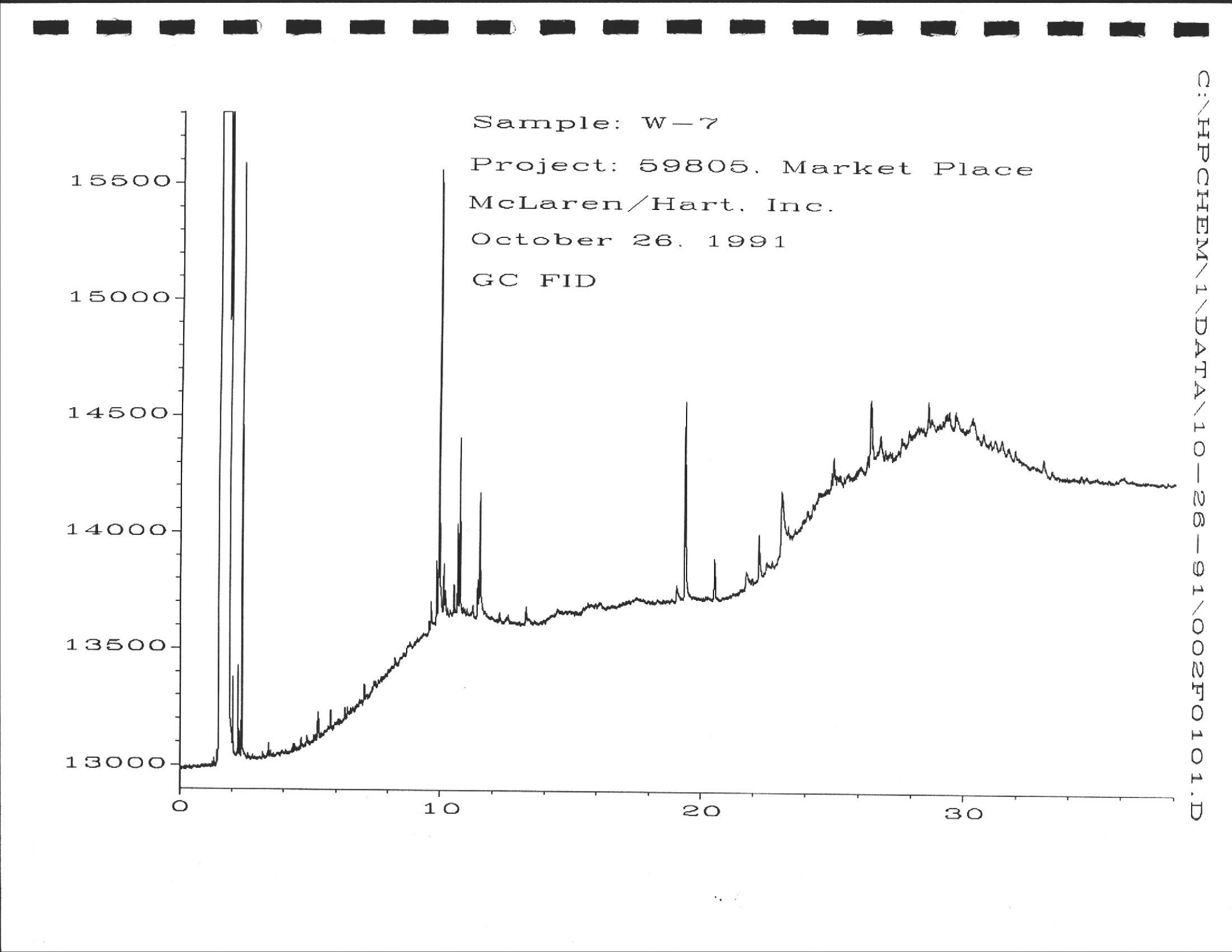
FRIEDMAN & BRUYA, INC.

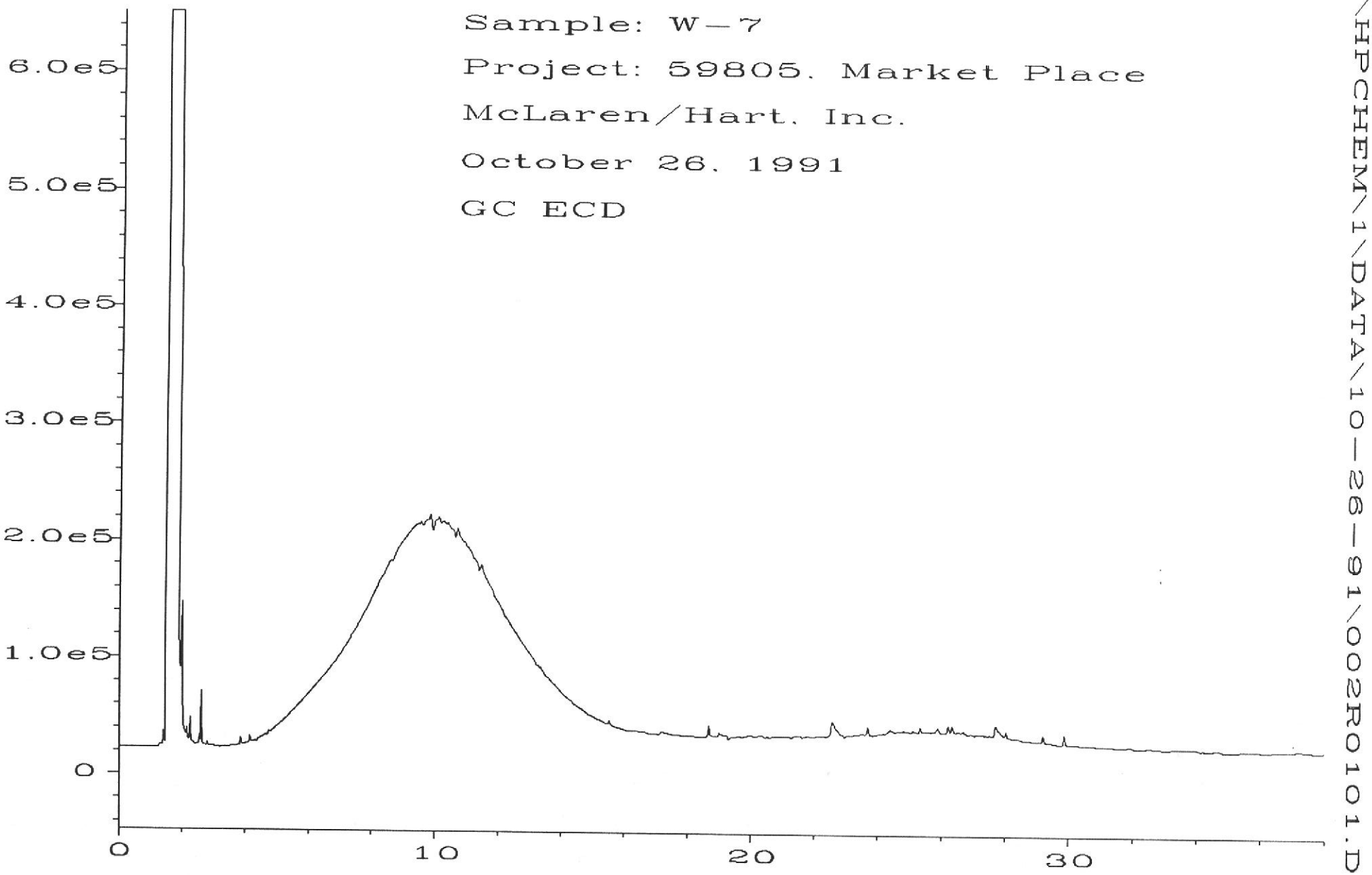
ENVIRONMENTAL CHEMISTS

Date of Report: October 30, 1991
Date Submitted: October 26, 1991
Project: 59805, Market Place

RESULTS OF ANALYSES OF THE PRODUCT SAMPLE FOR FINGERPRINT CHARACTERIZATION BY CAPILLARY GAS CHROMATOGRAPHY USING FLAME IONIZATION DETECTION (FID) AND ELECTRON CAPTURE DETECTION (ECD)

Sample #	GC Characterization
W-5	The gas chromatographic trace showed the presence of low to high boiling compounds, such as those found in a crude oil or a waste oil. This characterization is based on the presence of a relatively smooth envelope of peaks present from ca n-C_4 to beyond n-C_{34} with a maximum near n-C_{23}. The material appeared to be fairly weathered as indicated by the ragged nature of the peaks throughout the envelope.


Sample: W-7
Project: 59805. Market Place
McLaren/Hart. Inc.
October 26. 1991
GC FID
15500
15000
14500
14000
13500
13000
0
10
20
30
C:\HPCHEM\1\DATA\10-26-91\002F0101.D


Sample: W-7
Project: 59805. Market Place
McLaren/Hart. Inc.
October 26. 1991
GC ECD
6.0e5
5.0e5
4.0e5
3.0e5
2.0e5
1.0e5
0
0
10
20
30
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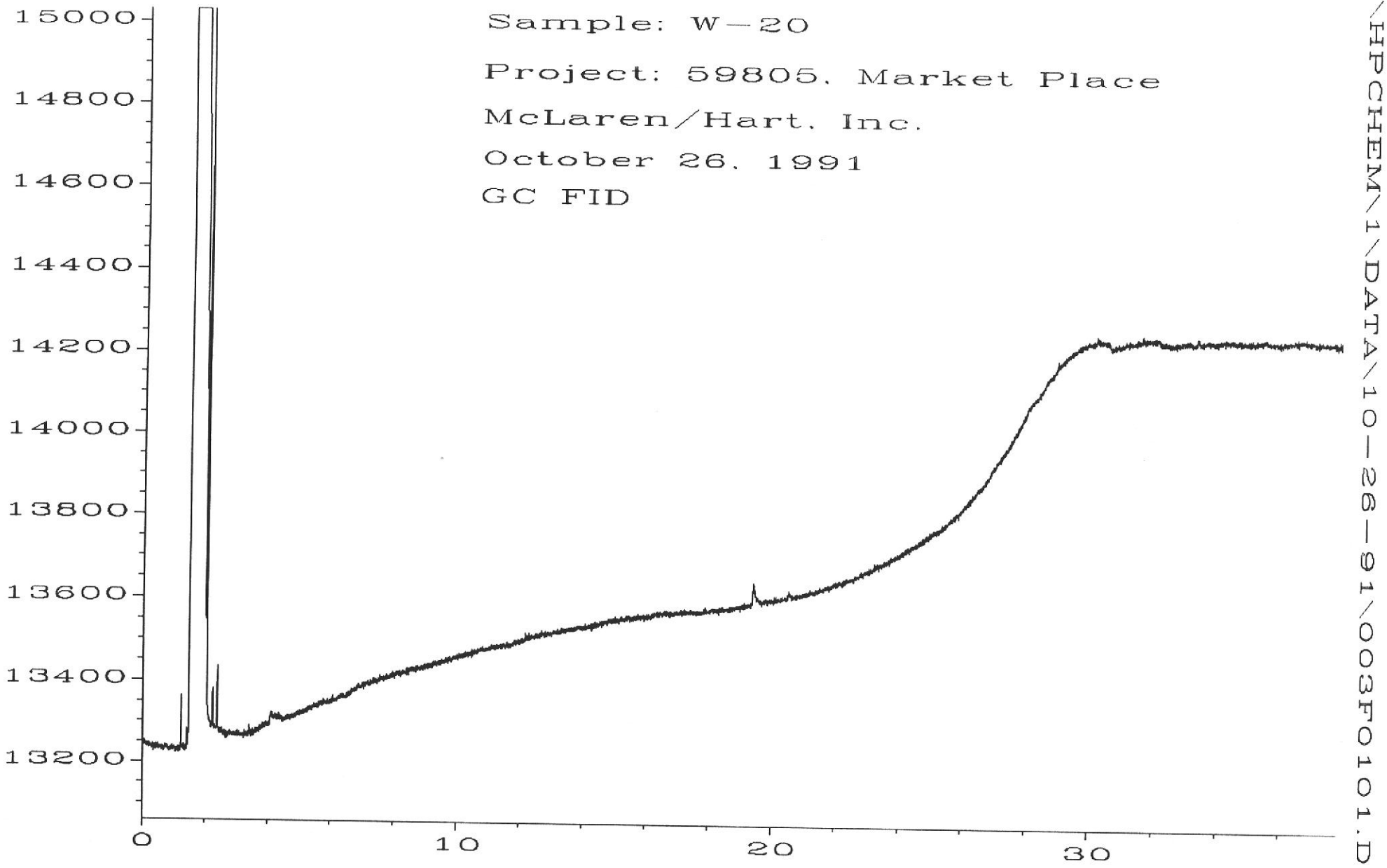
Sample: W-20
Project: 59805. Market Place
McLaren/Hart. Inc.
October 26. 1991
GC FID
15000
14800
14600
14400
14200
14000
13800
13600
13400
13200
0
10
20
30
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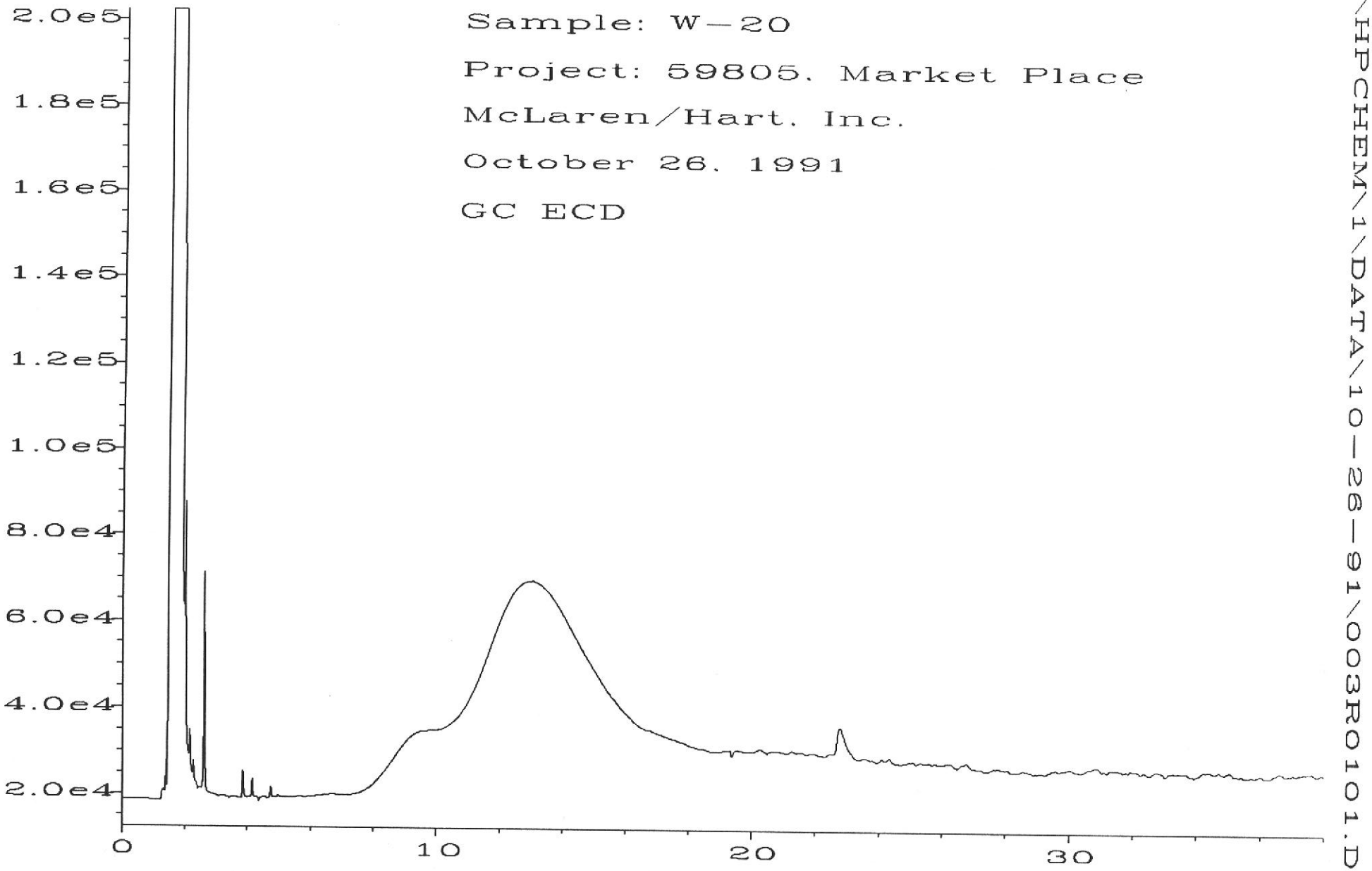
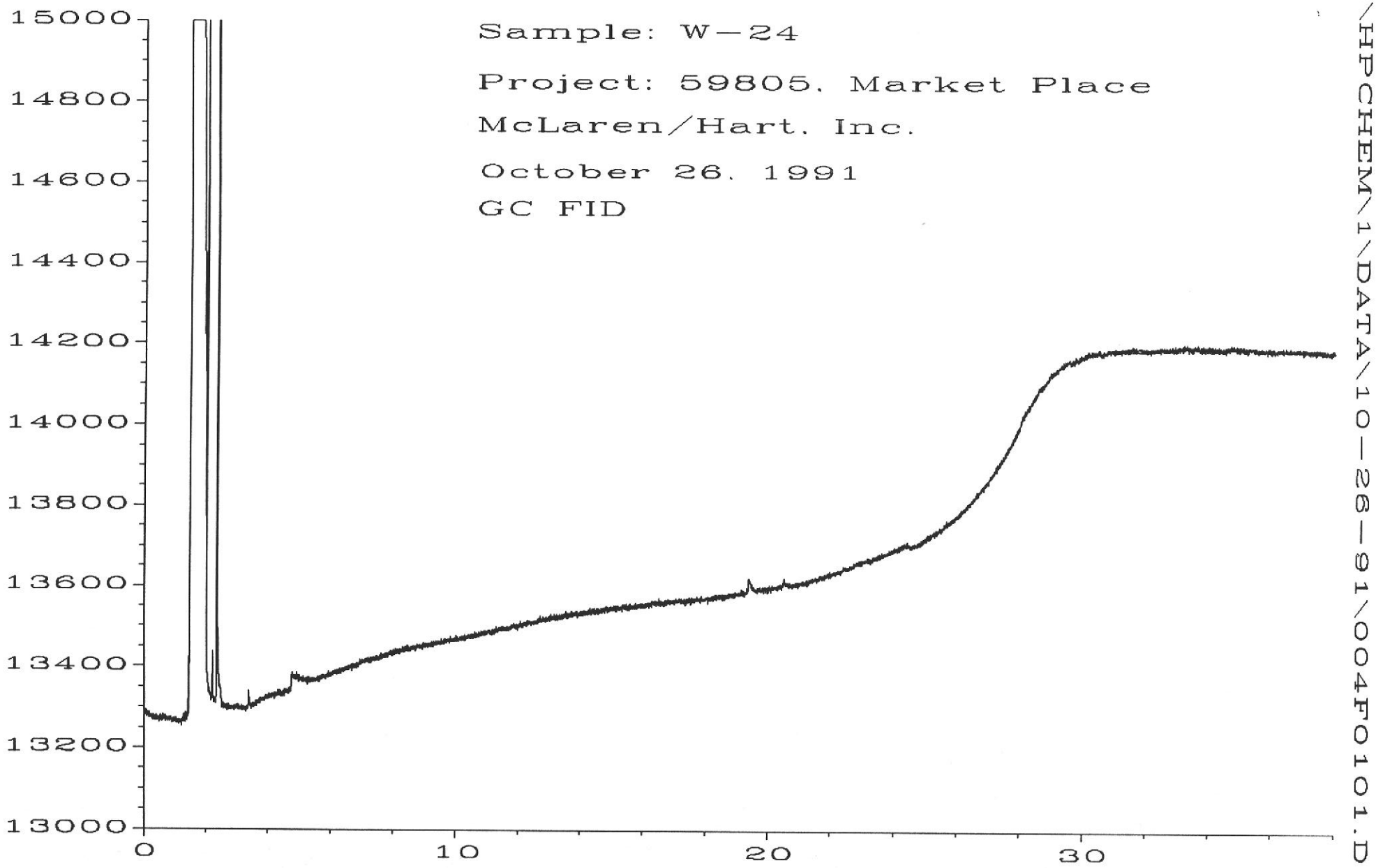
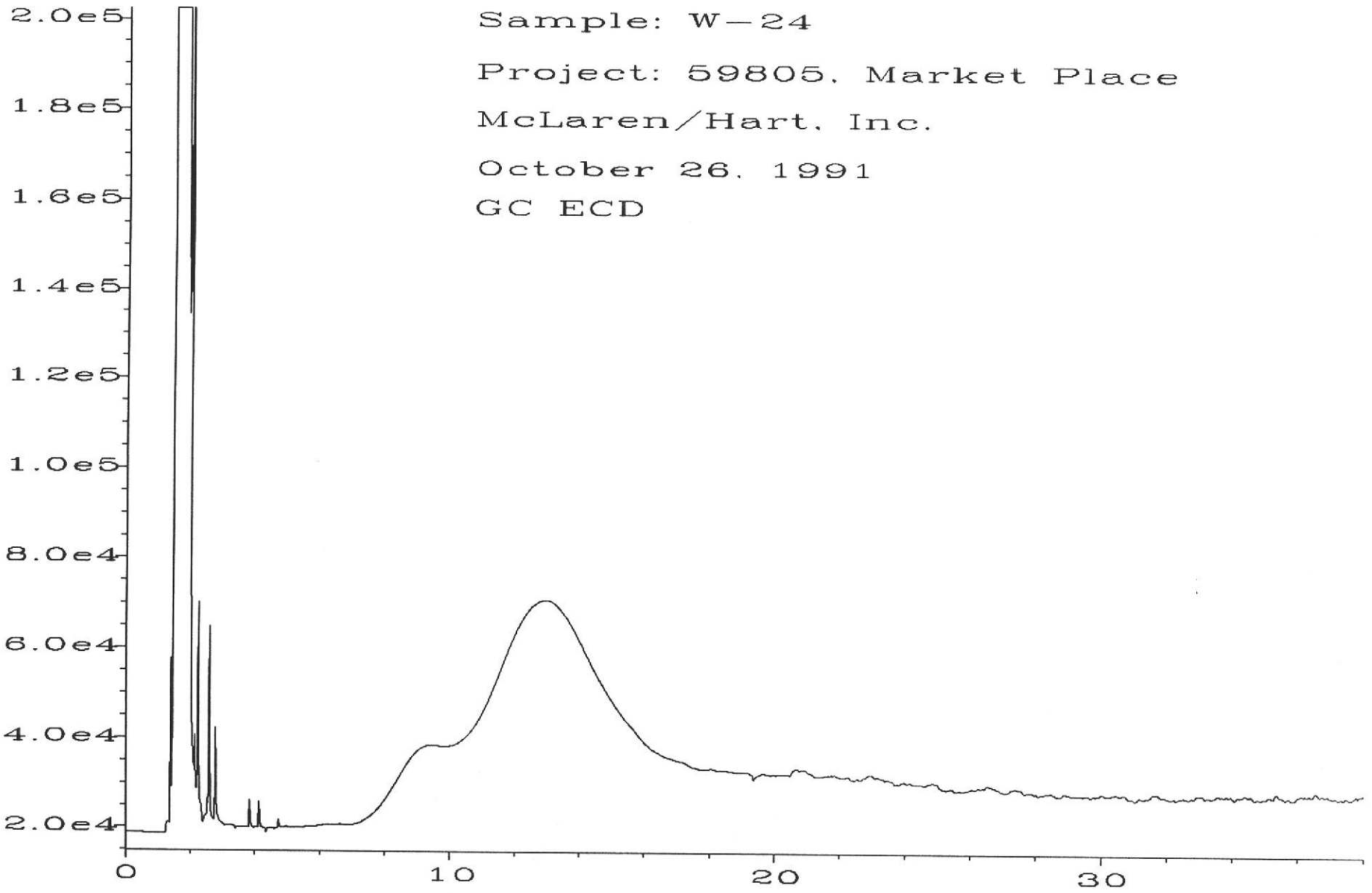
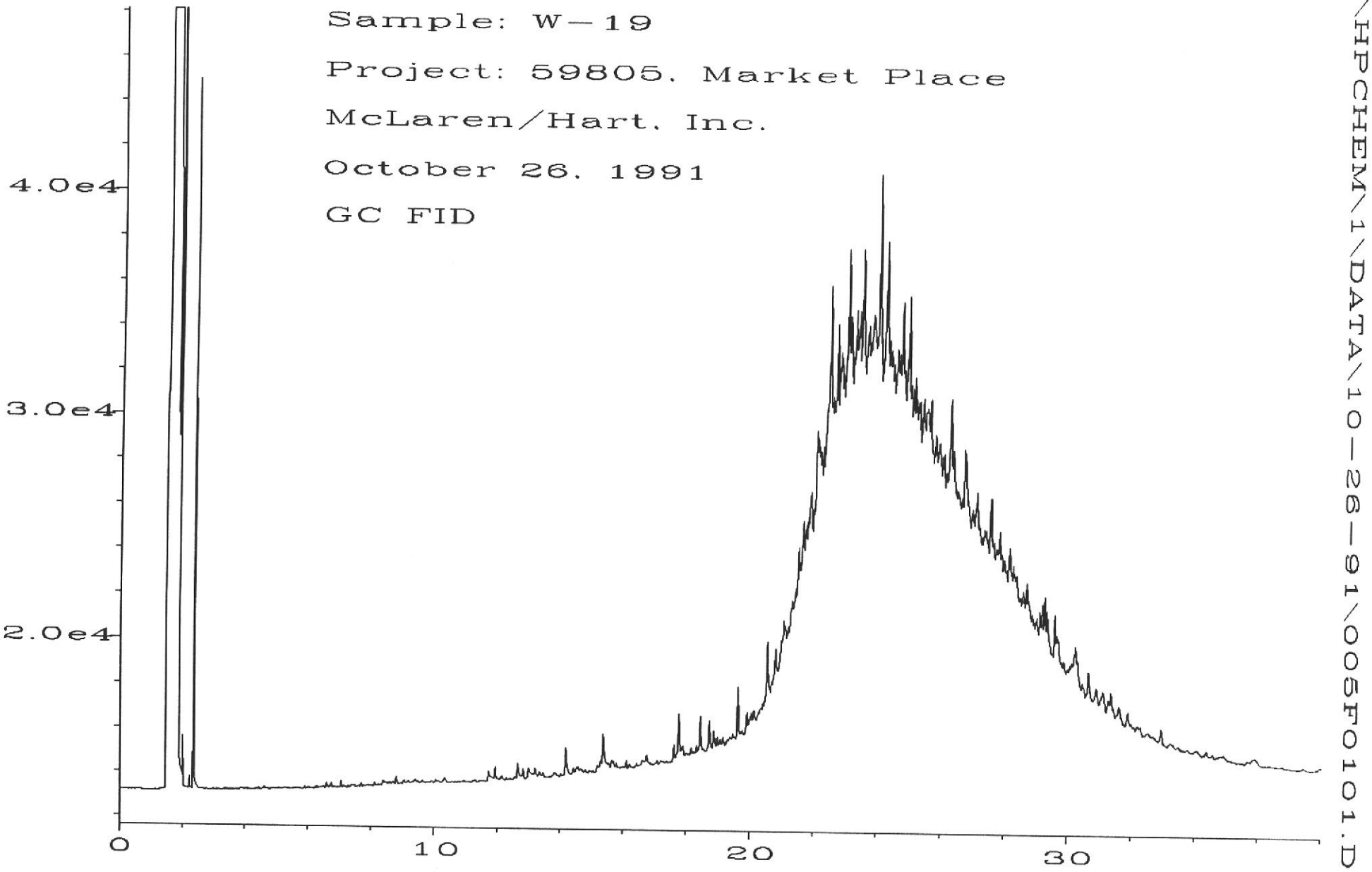

Sample: W-20
Project: 59805. Market Place
McLaren/Hart. Inc.
October 26. 1991
GC ECD
2.0e5
1.8e5
1.6e5
1.4e5
1.2e5
1.0e5
8.0e4
6.0e4
4.0e4
2.0e4
0
10
20
30
C:\HPCHEM\1\DATA\10-26-91\003R0101.D


Sample: W-24
Project: 59805. Market Place
McLaren/Hart. Inc.
October 26. 1991
GC FID
15000
14800
14600
14400
14200
14000
13800
13600
13400
13200
13000
0
10
20
30
C:\HPCHEM\1\DATA\10-26-91\004F0101.D


Sample: W-24
Project: 59805. Market Place
McLaren/Hart, Inc.
October 26, 1991
GC ECD
2.0e5
1.8e5
1.6e5
1.4e5
1.2e5
1.0e5
8.0e4
6.0e4
4.0e4
2.0e4
0
10
20
30
C:\HPCHEM\1\DATA\10-26-91\004R0101.D


Sample: W-19
Project: 59805. Market Place
McLaren/Hart, Inc.
October 26, 1991
GC FID
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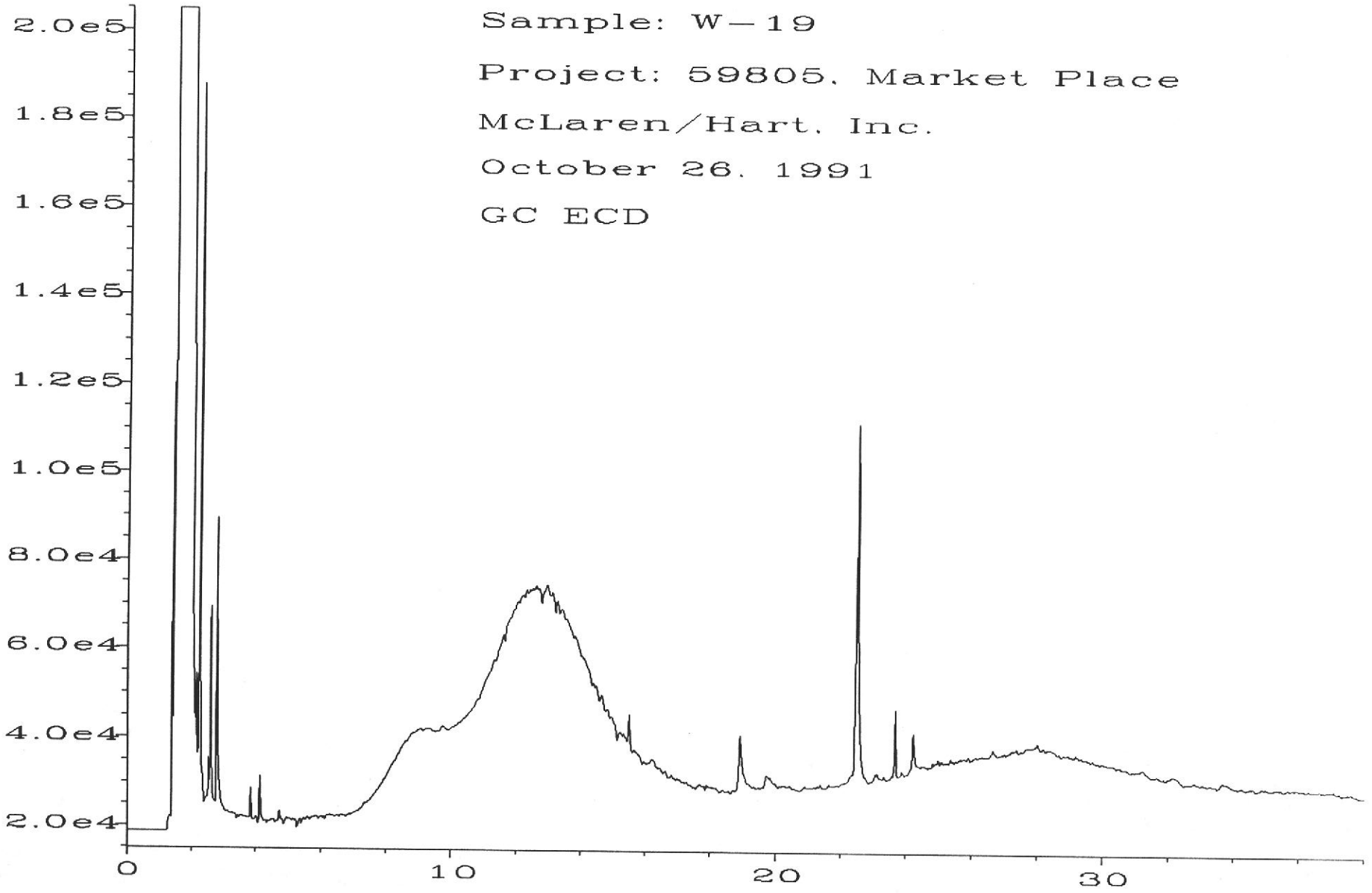
3.0e4
2.0e4
0
10
20
30
C:\HPCHEM\1\DATA\10-26-91\005F0101.D


Sample: W-19
Project: 59805. Market Place
McLaren/Hart. Inc.
October 26. 1991
GC ECD
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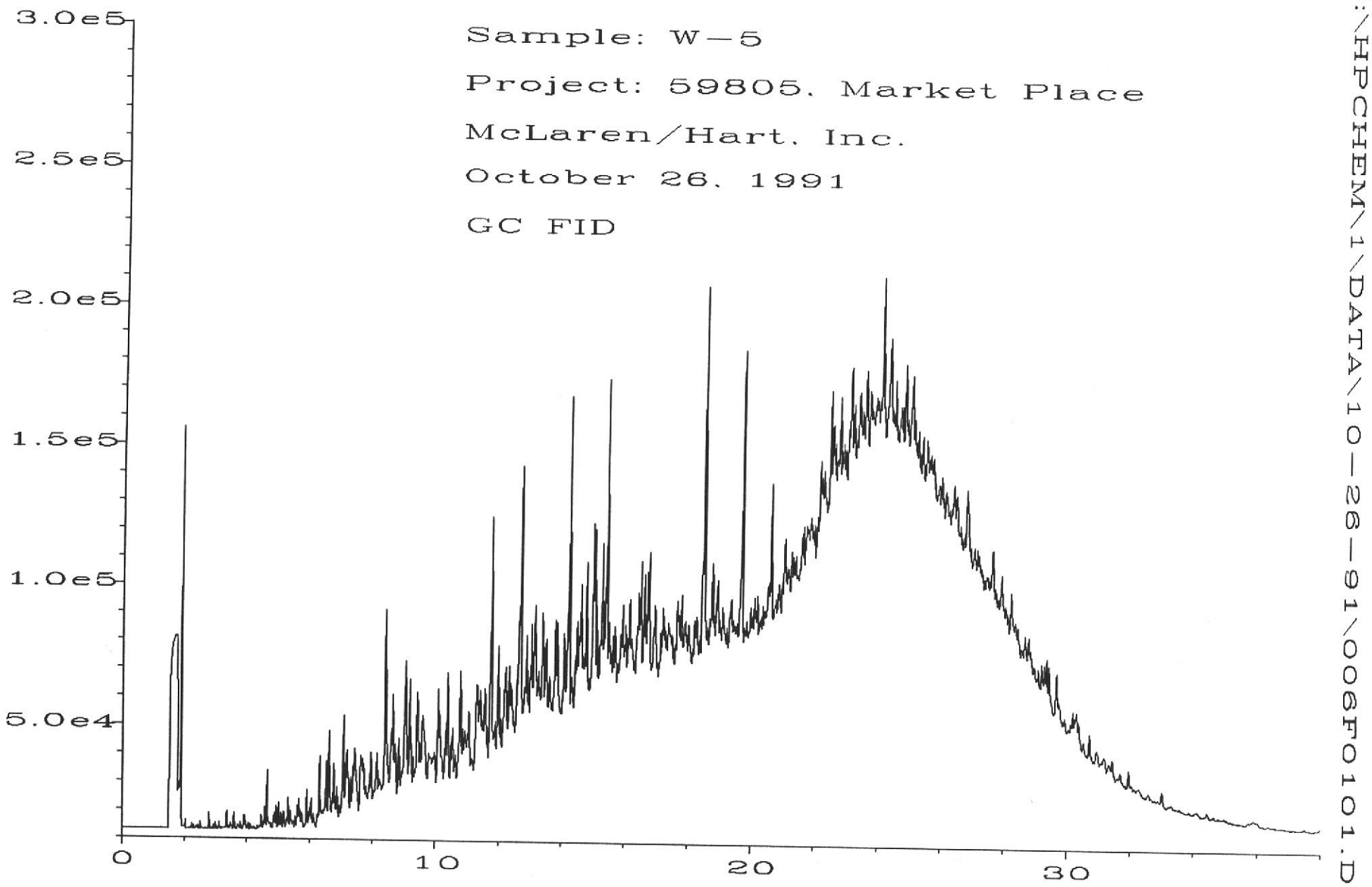
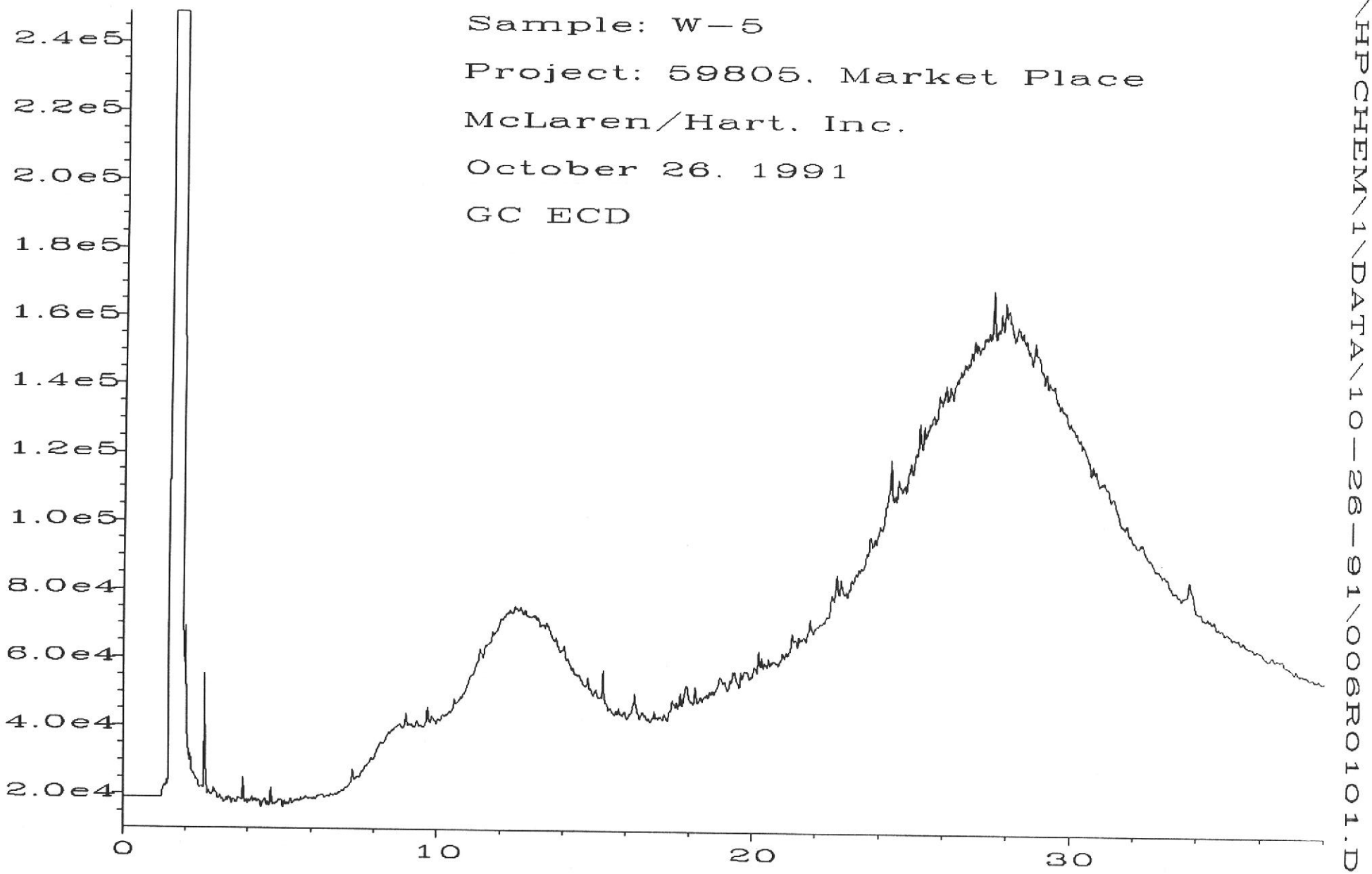
1.8e5
1.6e5
1.4e5
1.2e5
1.0e5
8.0e4
6.0e4
4.0e4
2.0e4
0
10
20
30
C:\HPCHEM\1\DATA\10-26-91\005R0101.D


Sample: W-5
Project: 59805. Market Place
McLaren/Hart. Inc.
October 26. 1991
GC FID
3.0e5
2.5e5
2.0e5
1.5e5
1.0e5
5.0e4
0
10
20
30
C:\HPCHEM\1\DATA\10-26-91\006F0101.D


Sample: W-5
Project: 59805. Market Place
McLaren/Hart. Inc.
October 26. 1991
GC ECD
2.4e5
2.2e5
2.0e5
1.8e5
1.6e5
1.4e5
1.2e5
1.0e5
8.0e4
6.0e4
4.0e4
2.0e4
0
10
20
30
C:\HPCHEM\1\DATA\10-26-91\006R0101.D

SAMPLING LIST

CLIENT: MARKETPLACE SITE: EMERYVILLE EVENT: QUARTERLY

TASK: H20 SAMPLING JOB NAME MARKETPLACE JOB # 59805

SOUNDING ROUND: YES SAMP. START DATE: 25-Oct

SOUNDING DATE: 25-Oct TOTAL HRS BUDGETED ?

OF WELLS TO SND ALL # OF WELLS TO SAMP. 7

MAIN LAB: MAL COMPLETION DATE: 25-Oct

DUPLICATE LAB: 0

QA/QC:	QUANTITY/SPECIFIC WELLS/ANALYSIS		
TRIP BLANKS	1	BTXE / 8015 + MO	
FIELD BLANKS	0		
EQUIPMENT BLANKS	0		
MS/MSD	0		
REPLICATES	1	8015 + MO	W-7
DUPLICATES	0		

SPECIAL INSTRUCTIONS OR COMMENTS:

ANALYSIS	CONTAINERS	LAB
8015 +MO	2 * 1L AMBER	MAL
BTXE	4 * 40ML VOA / HCL	MAL
HFS	1 * 1L AMBER	F + B

SEND ALL SAMPLES IN ONE SHIPMENT FOR SATURDAY DELIVERY.
HFS ANALYSIS STANDS FOR "HYDROCARBON FINGERPRINT ANALYSIS", AND SHOULD BE SPECIFIED AS SUCH IN THE COMMENTS COLUMN OF THE C.O.C.
WELL W-5 HAS PRODUCT. THE WELL SHOULD NOT BE PURGED BUT A GRAB SAMPLE OF THE PRODUCT SHOULD BE TAKEN

SEND HFS SAMPLES TO:
FRIEDMAN + BROYA
3008-B 16TH AVENUE W.
SEATTLE , WA 98119

NO TRIP BLANK IS NEEDED FOR HFS ANALYSIS, AND MINIMAL ICE SHOULD BE USED IN COOLER.

MARKETPLACE OCT. 91

WELL OR LOCATION	ANALYSIS	DATE SAMPLED	EQUIPMENT USED	SEDS	COC'S	COMMENTS
W-7	8015 +	10/25/91	PERI/BAIL	OK	OK	VISIBLE OIL SHEEN
	MOTOR OIL				OK	
	HFS				OK	
REPLICATE	8015 +				OK	
	MOTOR OIL				OK	
W-13	8015 +	10/25/91	PERI/BAIL	OK	OK	
	MOTOR OIL				OK	
W-14	8015 +	10/25/91	PERI/BAIL	OK	OK	
	MOTOR OIL				OK	
W-19	8015 +	10/25/91	PERI/BAIL	OK	OK	OIL SHEEN ON WATER, SAMPLE
	MOTOR OIL				OK	CONTAINED BLACK PARTICULATE
	HFS				OK	MATTER
W-20	8015 +	10/25/91	PERI/BAIL	OK	OK	
	MOTOR OIL				OK	
	BTXE				OK	
	HFS				OK	

MARKETPLACE OCT. 91

WELL OR LOCATION	ANALYSIS	DATE SAMPLED	EQUIPMENT USED	SEDS	COC'S	COMMENTS
W-24	8015 +	10/25/91	PERI/BAIL	OK	OK	
	MOTOR OIL				OK	
	BTXE				OK	
	HFS				OK	
W-5	HFS	10/25/91	GRAB	OK	OK	1.28' PRODUCT

SAMPLING EVENT DATA SHEET

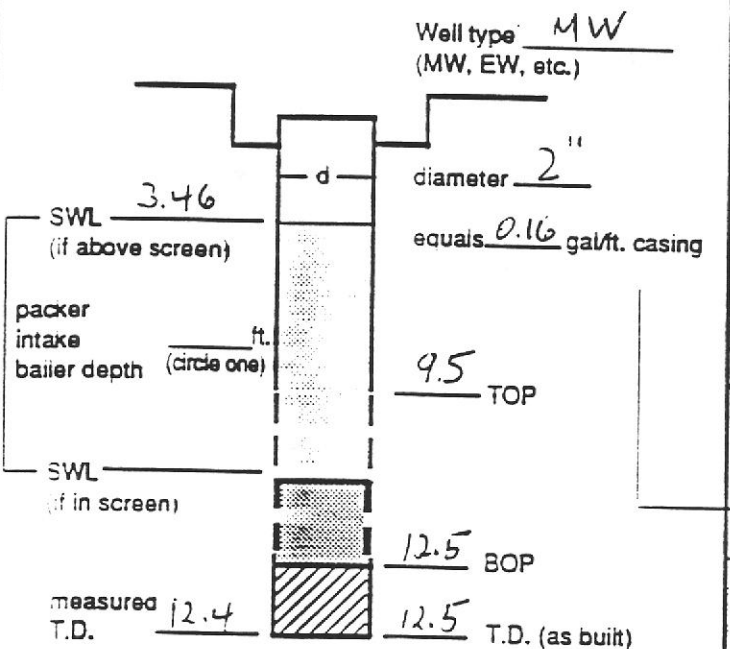
(fill out completely)

McLaren

WELL OR LOCATION MW-7

PROJECT Marketplace EVENT Quarterly SAMPLER CGW DATE 10/25/91

Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1218	0.13 GPM	
	1245		6.03
Stop	1252	"	6.26
Sampled	1300		4.21
(Final IWL)	1310		4.23

Purge calculation

0.16 gal/ft. * 9.04 ft. = 1.45 gals x 3 = 4.4 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:

peristaltic pump to purge
disposable bailer to sample

Actual gallons purged 4.4

Actual volumes purged 3

Well yield ⊕ MY/HY
(see below)

COC # 225264

Sample I.D.	Analysis	Lab
187001-2	8015/MO	MAL
187003-4	8015/MO REP	↓
187005	HFS	FB
187013-14	8015/MO TB	MAL

Additional comments:

Oil sheen visible on water surface

Gallons purged *	TEMP °C / (F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. 1.4	72.0	6,760	6.21	7.83		
2. 2.8	72.2	8,380	6.20	8.65		
3. 4.2	72.0	8,540	6.18	8.33		
4. SAMPLE				17.81		
5.						

* Take measurement at approximately each casing volume purged.

⊕ HY- Minimal W.L. drop | MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump. | LY - Able to purge 3 volumes by returning later or next day. | VLY - Minimal recharge - unable to purge 3 volumes.

SAMPLING EVENT DATA SHEET

(fill out completely)

McLaren

WELL OR LOCATION MW-

PROJECT AIRLIFT PILOT EVENT Quarterly SAMPLER SW DATE 10/25/1

Well / Hydrologic statistics

Well type MW (MW, EW, etc.)

d — diameter 2"

SWL 4.48 (if above screen)

equals .16 gal/ft. casing

packer intake> bailer depth 5 ft. (circle one)

5 TOP

SWL (if in screen)

10 BOP

measured T.D. 9.99

10 T.D. (as built)

Action	Time	Pump rate	IWL (low vi
Start pump / Begin	1425	.125 GPM	
	1433	.125 GPM	5.62
	1441	.125 GPM	5.7
	1449	.125 GPM	5.6
	1457	.125 GPM	5.6
Stop	1459	—	5.2
Sampled	1510		5.11
(Final IWL)			

Purge calculation

.16 gal/ft. * 5.52 ft. = .9 gals x 3 = 3 ga

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:

PERISTALTIC (DC) USED TO PURGE. DISPOSABLE BAILER USED TO SAMPLE

20% = 5.58

Actual gallons purged 3

Actual volumes purged 3+

Well yield ⊕ (see below) HY

COC # 225267

Sample I.D.	Analysis	Lab
186007-08	8015/MTBE GL	MCL

Additional comments:

Gallons purged *	TEMP °C / °F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. 1	64.0	1740	6.76	5.21		
2. 2	64.9	1060	7.28 ~~6.10~~	2.15		
3. 3	64.7	1050	7.29	0.77		
4. 4	64.5	1030	7.34	0.72		
5. SAMPLE	64.7	1040	7.19	7.02		

* 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 recharg unable to purg 3 volumes.

SAMPLING EVENT DATA SHEET

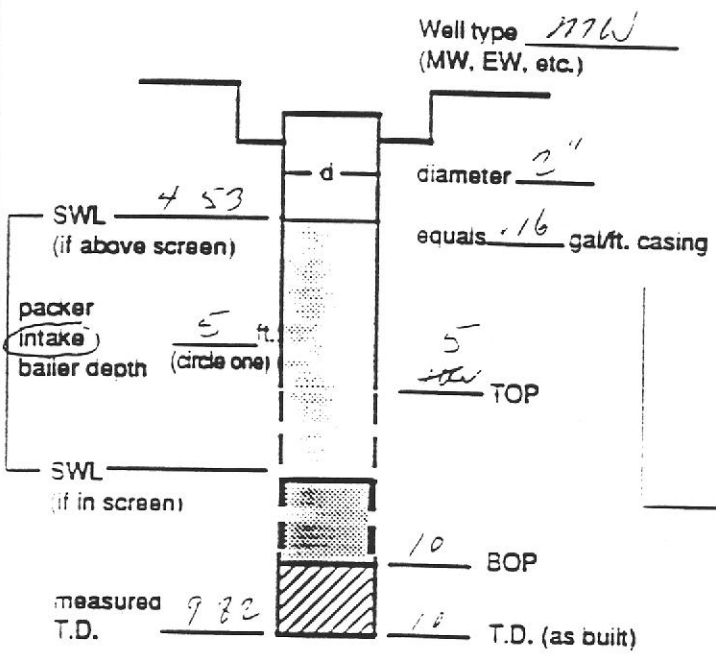
(fill out completely)

McLaren

WELL OR LOCATION MW-14

PROJECT MARKET ISSUE EVENT Quarterly SAMPLER DW DATE 10/25/91

Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1235	.16 GPM	
	1241	.16 GPM	8.32
RE-START	1305	.125 GPM	5.31
	1313	.125 GPM	9.23
RE-START	1355	.16 GPM	5.25
~~V~~	~~1402~~		
Stop	1402	—	~~WELL~~ DR
Sampled	1550		4.62
(Final IWL)			

Purge calculation

.16 gal/ft. * 5.47 ft. = .88 gals x 3 = 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:

Low Speed (DC) Peri Pump used to Purge 3 Volumes. Disposable Bailer used to Sample. Allowed well to Recharge to prior to Sampling.

10% = 5.59

Actual gallons purged ~~2~~ 3

Actual volumes purged ~~2~~ 3+

Well yield ⊕ LY/MY
(see below)

COC # 225264

Sample I.D.	Analysis	Lab
186009-010	8015/MTR OIL	mcl

Additional comments:

WELL WENT DRY AFTER 1+ VOLUMES
RE-STARTED PUMPING AT 1305.
WENT WELL DRY AFTER 2+ VOLUMES.
RE-STARTED PUMPING AT 1355.

Gallons purged *	TEMP °C (°F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. 1.0	66.9	6210	7.42	4.83		
2. 2.0	70.0	6040	7.36	14.92		
3. 3.0	69.7	5770	7.18	17.46		
4. SAMPLE	65.6	~~6195~~ 6180	7.57	17.42		
5.						

* Take measurement at approximately each casing volume purged.

⊕ HY- Minimal W.L drop

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

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

VLY - Minimal recharge - unable to purge 3 volumes.

SAMPLING EVENT DATA SHEET

(fill out completely)

McLaren

WELL OR LOCATION MW-19

PROJECT Marketplace EVENT Quarterly SAMPLER CG-W DATE 10/25/91

Well / Hydrologic statistics

Well type MW (MW, EW, etc.)

d — diameter 2"

equals 0.16 gal/ft. casing

SWL (if above screen)

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

SWL 5.46 (if in screen)

measured T.D. 13.8

2.5 TOP

14 BOP

14 T.D. (as built)

Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1690	0.13 GPM	
Stop	1646	↓	5.48
Sampled	1700		
(Final IWL)	1705		5.46

Purge calculation

0.16 gal/ft. • 8.54 ft. = 1.4 gals x 3 = 4.2 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:

peristaltic pump to purge
disposable bailer to sample

Actual gallons purged 4.5

Actual volumes purged 3+

Well yield ⊕ (see below) HY

COC #

Sample I.D.	Analysis	Lab
197026-7	8015/MO	MAL
197028	HFS	FB

Additional comments:

Oil sheen visible on water surface
samples heavily laden w/ black particulate matter.

Gallons purged *	TEMP °C / (F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. 1.4	67.5	5,010	6.66	0.54		
2. 2.8	67.3	3,940	6.54	0.30		
3. 4.2	67.2	3,260	6.51	0.75		
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.

SAMPLING EVENT DATA SHEET

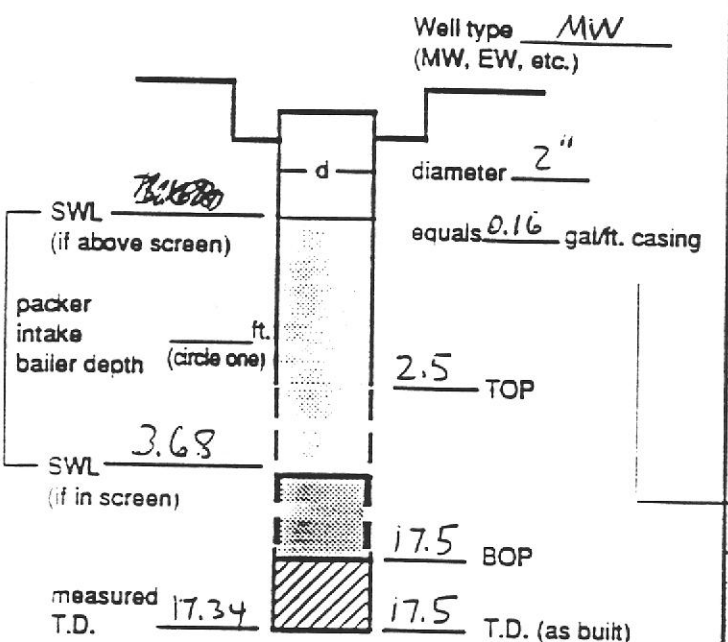
(fill out completely)

McLaren

WELL OR LOCATION W-20

PROJECT Marketplace EVENT Quarterly SAMPLER CGW DATE 10/25/91

Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1400	0.24 GPM	
	1417		4.42
Stop	1428		4.50
Sampled	1435		
(Final IWL)	1450		3.94

Purge calculation

0.16 gal/ft. * 13.82 ft. = 2.2 gals x 3 = 6.6 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:

peristaltic pump to purge
disposable bailer to sample

Actual gallons purged 6.6

Actual volumes purged 3

Well yield ⊕ (see below) HY

COC #

Sample I.D.	Analysis	Lab
187006-7	8015/MO	MAL
187008-11	BTEX	↓
187012	HFS	FB
187015-18	BTEX TB	MAL

Additional comments:

Gallons purged *	TEMP °C / °F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. 2	65.5	8,920	6.48	2.11		
2. 4	65.5	8,770	6.54	0.30		
3. 6	65.1	8,710	6.56	0.19		
4. SAMPLE				0.23		
5.						

* Take measurement at approximately each casing volume purged.

⊕ HY- Minimal W.L drop | MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump. | LY - Able to purge 3 volumes by returning later or next day. | VLY - Minimal recharge - unable to purge 3 volumes.

SAMPLING EVENT DATA SHEET

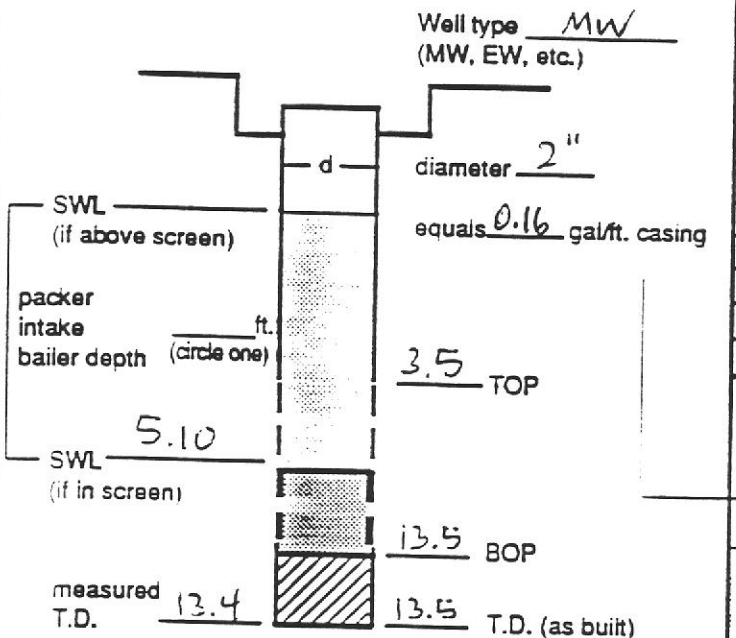
(fill out completely)

McLaren

WELL OR LOCATION W-24

PROJECT Marketplace EVENT Quarterly SAMPLER CGW DATE 10/25/91

Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1503	a14 GPM	
	1522		5.15
Stop	1542	↓	5.16
Sampled	1550		
(Final IWL)	1600		5.12

Purge calculation

0.16 gal/ft. * 8.4 ft. = 1.34 gals x 3 = 4 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:

peristaltic pump to purge
disposable bailer to sample

Actual gallons purged 5.4

Actual volumes purged 4

Well yield ⊕ (see below) HY

COC # 225273

Sample I.D.	Analysis	Lab
187019-20	8015/MO	MAL
187021-4	BTEX	↓
187025	HFS	FB

Additional comments:

Gallons purged *	TEMP °C / (F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. 1.3	68.2	5,610	6.79	0.08		
2. 2.6	68.1	4,860	6.76	0.28		
3. 3.9	68.0	3,880	6.65	0.41		
4. 5.2	67.9	3,330	6.67	0.60		
5. SAMPLE				0.78		

* Take measurement at approximately each casing volume purged.

⊕ HY- Minimal W.L drop | MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump. | LY - Able to purge 3 volumes by returning later or next day. | VLY - Minimal recharge - unable to purge 3 volumes.

SAMPLING EVENT DATA SHEET

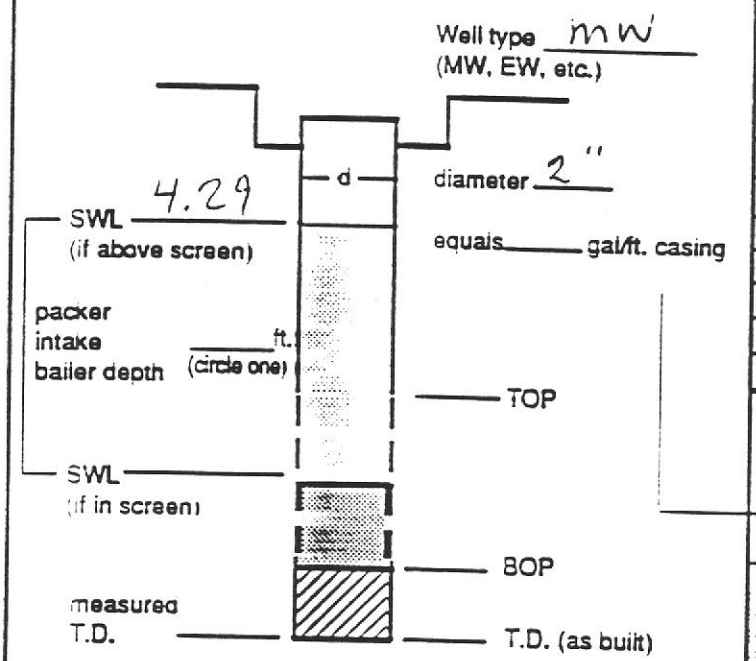
(fill out completely)

McLaren

WELL OR LOCATION MW-5

PROJECT MARKET PL EVENT Quarterly SAMPLER DW DATE 10/25/91

Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low vield)
Start pump / Begin			
Stop			
Sampled	1640	LW	
(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:

USED OIL SOUNDER to MEASURE PRODUCT COLUMN

SWL: 4.29 (PRODUCT LEVEL)
OWI: 5.47 (OIL/WATER INTERFACE)
1.28 = PRODUCT COLUMN

Actual gallons purged NA

Actual volumes purged —

Well yield ⊕ —
(see below)

COC # W225276 - 225265

Sample I.D.	Analysis	Lab
186011	HFS	SEATTLE

Additional comments:

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 Hart

225265

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project No.:
Storage Refrigerator ID:
Storage Freezer ID:
Secured: Yes ___ No ___

Project Name: Market place Project #: 59805 Sampler: Chris Walsh (Printed Name) (Signature)

Relinquished by: (Signature and Printed Name) Chris Walsh Chris Walsh	Received by: (Signature and Printed Name) Fedex	Date: 10/25/91	Time: 19:00
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:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

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

Method of Shipment: Fedex

Shipment ID: 12174095 61

Circle or Add Analysis(es) Requested

a) Identify specific metals requested under Special Instructions

	Sample ID Number	Sample Description: Date	Time	Description	TAT	Container(s): #	Type	FOR LABORATORY USE ONLY: Lab ID
1	187005	10/25/91	1300	W-7	4	1	A(NP)	
2	187012	10/25/91	1435	W-20				
3	187025	10/25/91	1550	W-24				
4	187028	10/25/91	1700	W-19				
5	186011	10/25/91	1640	W-5				
6								
7								
8								
9								
10								

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)
625/8270 (BNA-GC/MS)
TPH/G (Gasoline-GC)
TPH/D (Diesel-GC)
418.1 (IR)
8015 Modified (GC)
Metals-Total a
Metals-Soluble a
Fluoride/Perchlorate
Chloride/pH
TDS/Percent Solid
Specific Conductivity (EC)
HFS: X

Special Instructions/Comments:
HFS = Hydrocarbon Fingerprint Analysis

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

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt:

SEND DOCUMENTATION AND RESULTS TO (Check one):
☐ Project Manager/Office:
☑ Client Name: Julie Menack
Company: McLaren / Hart
Address: 1135 Atlantis Ave Alameda CA 94501
Phone: (510) 521 5200 Fax: