

Golder Associates Inc.

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Our ref: 943-7017

August 2, 1994

Alameda County Health Agency
Department of Environmental Health

1131 Harbor Bay Parkway Alameda, CA 94502

Attention: Ms. Juliet Shin

RE: GROUNDWATER MONITORING RESULTS

J&M INC. FACILITY - HAYWARD, CALIFORNIA

Dear Ms. Shin:

This report summarizes the results of groundwater monitoring conducted to date at the J&M, Inc. Facility located at 3826 Depot Road in Hayward, California (Figure 1). Groundwater monitoring is being conducted at the facility to evaluate the potential impact of fuel hydrocarbons on groundwater from two former underground diesel storage tanks. Groundwater monitoring has been conducted at the site on four occasions beginning in April 1991 with the most recent sampling event occurring in September 1993.

The results of groundwater monitoring performed prior to the September 1993 sampling event have been previously transmitted to the Alameda County Department of Environmental Health (ACDEH). This report summarizes the results of the September 1993 sampling including three prior sampling events, and survey and groundwater elevation data for the January 1992, March 1993 and September 1993 monitoring events.

BACKGROUND

In June 1990, one, 4,000-gallon and one, 7,000-gallon underground diesel storage tank (UST) (identified as Tank Nos. 1 and 2) were removed from the northwest corner of the J&M facility (Figure 2; Terrasearch, 1991). In August 1990, the area of the former USTs was re-excavated and four soil samples and one groundwater sample were collected and analyzed for total petroleum hydrocarbons as diesel (TPH-D) and benzene, toluene, ethyl benzene, and xylene (BTEX). The results of the analyses identified the presence of low concentrations of TPH-D (110 milligrams per kilogram, mg/kg) and toluene (6.2 mg/kg) in one of the four soil samples. The other three soil samples were nondetect for TPH-D and BTEX. TPH-D and BTEX was also reported in the groundwater sample collected from the excavation pit at concentrations of 8,100, 4.7, 9.1, 22 and 6 micrograms per liter (ug/l), respectively.

In April 1991, three groundwater monitoring wells (MW-1, MW-2 and MW-3) were installed and sampled by Terrasearch Inc. to assess the potential impact of residual hydrocarbons in soil on groundwater at the site (Figure 2). Two subsequent rounds of groundwater sampling were performed by Geoenvironmental and Geologic Services (GGS) in January 1992 and March 1993 (GGS, 1992, 1993).

Groundwater samples collected during the April 1991 event were analyzed for TPH-D, BTEX and TPH as gasoline (TPH-G) (J&M Inc.,1992). Groundwater samples collected during the January 1992 and March 1993 sampling events were analyzed for TPH-D and BTEX. With the exception of TPH-D reported at a concentration of 57 ug/l in one groundwater sample collected from monitoring well MW-2 in January 1992, no TPH-D or BTEX was reported for the three sampling events. In addition, no TPH-G was reported in groundwater samples collected during the April 1991 sampling event.

SITE DESCRIPTION

The site is located approximately 1.1 miles east of the San Francisco Bay and is situated at an elevation of approximately 8 feet above mean sea level. The land use in the vicinity of the site includes a mixture of commercial offices and small to medium-sized industrial businesses. The site is bordered on the east by a automotive wrecking yard, on the south by a pallet storage business, on the west by an electrical contractor vehicle storage yard and on the north by Depot Road and commercial office buildings.

HYDROGEOLOGIC SETTING

The site is located near the edge of the San Francisco Bay within the San Lorenzo Alluvial Cone hydrogeologic unit of the East Bay Plain. The region is bounded on the north by the San Leandro Alluvial Cone, on the east by the foothills of the Diablo Range, on the south by the Niles Cone and on the west by San Francisco Bay.

The East Bay Plain is situated on the eastern side of the San Francisco Bay depression. The East Bay Plain includes an alluvial area close to the foothills of the Hayward Hills and a marshland area adjacent to San Francisco Bay. The alluvial materials in the vicinity of the site are included as part of the San Lorenzo Alluvial Cone.

In the vicinity of the site, estuarine deposits were laid down during times of transgressive seas associated with Pleistocene interglacial periods. These sediments are primarily bluish gray clays (Bay Mud) which are fairly continuous beneath the present-day San Francisco Bay. The Bay Mud deposits generally exhibit a low permeability and yields small quantities of groundwater to wells. The Bay Mud is not considered a useable source of groundwater because of its low permeability and general poor water quality.

The Alameda County Flood Control and Water Conservation District Geohydrology and Groundwater Quality Overview, East Bay Plain Area 205J Report (June, 1988) reports groundwater movement in a westerly direction towards San Francisco Bay in the vicinity of the J&M facility.

WELL ELEVATION SURVEY AND GROUNDWATER SAMPLING AND ANALYSIS

Well Elevation Survey

On September 29, 1993, a survey was conducted using a level to establish reference point elevations for monitoring wells MW-1, MW-2 and MW-3 and evaluate groundwater flow direction and gradient at the site. Each of the three wells were tied to an existing City of Hayward benchmark located at the intersection of Cabot Boulevard and Depot Road. Table 1 provides a summary of the well elevation data.

Groundwater Sampling and Analysis

The following is a summary of the groundwater sampling and analysis performed in September 1993.

Monitoring wells MW-1, MW-2 and MW-3 were sampled on September 29, 1993. Prior to sampling, a water level measurement was taken referenced to the top of the well casing (Table 1). Following water level measurements, a hand pump constructed of PVC was lowered to a depth of approximately one foot from the bottom of the well and the wells were purged of three well volumes (one well volume equals the approximate volume of the standing water in the well casing). Field parameters pH, specific conductivity, and temperature were measured during purging and were stable prior to collecting groundwater samples using a clean stainless steel bailer. One, one-liter amber bottle and three, 40-milliliter VOA vials were filled, labeled, and placed in a cooler for shipment to the analytical laboratory. The groundwater samples were transported under chain-of-custody to APPL, Inc. laboratory in Fresno, California, for analysis of TPH-D (EPA Methods 3510/8015 [modified]) and BTEX (modified EPA Method 8020).

Table 2 summarizes the current and historical groundwater analytical results and the laboratory analytical report for the September 1993 sampling event is included as Attachment 1.

DISCUSSION OF GROUNDWATER SAMPLING RESULTS

Groundwater Level Monitoring

Groundwater levels have been periodically measured in monitoring wells MW-1, MW-2 and MW-3 since April 1991. Table 1 presents a summary of depth to groundwater measurements and groundwater elevations for the January 1992 and March and

September 1993 monitoring events. No groundwater measurement data has been presented to date for the April 1991 sampling event. The depth to groundwater has ranged from a low of 4.78 feet below ground surface (bgs) in well MW-2 (March 1993) to a depth of 7.38 feet bgs in well MW-3 (September 1993). The differences in groundwater surface elevations observed between monitoring events are likely due to seasonal effects (i.e., precipitation).

Groundwater elevation contour maps were developed for the January 1992, March and September 1993 water level data to evaluate the groundwater flow direction and gradient. Groundwater elevation contour maps for the three monitoring events are shown on Figures 2, 3 and 4, respectively. Based on the pattern of groundwater contours, the groundwater flow direction at the site is to the northwest. This is generally consistent with the anticipated regional groundwater flow direction. The regional groundwater direction is expected to be in a more westerly direction, based on the relative location of the site to San Francisco Bay. The more northwesterly flow direction observed at the site may be due to the influence of a surface water, sewage outfall channel present to the northwest (Figure 1).

Based on the groundwater elevation difference measured in wells MW-2 and MW-3 during the January 1992, and March and September 1993 monitoring events, the groundwater flow gradient is calculated to be approximately 0.035, 0.044, and 0.062 feet per foot, respectively. The magnitude of the estimated gradient is larger than would be expected given the fine-grained nature and expected low hydraulic conductivity of the sediments at the site. In general, the groundwater elevations observed in wells MW-1 and MW-2 are comparable, while the elevations observed in well MW-3 are consistently lower when compared to MW-1 and MW-2. The steeper than expected gradient may be due to differences in lithology between the wells.

Based on the pattern of the groundwater elevation contours, monitoring wells MW-1 and MW-2 are located hydrologically sidegradient and well MW-3 is located downgradient of former UST Nos. 1 and 2

Groundwater Quality

The results of the groundwater samples collected during the September 1993 sampling event was non-detect for TPH-D and BTEX. In addition, based on a review of the BTEX chromatogram by the analytical laboratory (APPL), no other petroleum hydrocarbons in the gasoline range were observed. Table 2 summarizes the September 1993 and the previous three rounds of groundwater analytical results.

The results of the last four rounds of groundwater sampling and analysis indicate non-detectable concentrations of BTEX, and with the exception of 57 ug/l detected in one groundwater sample collected in January 1992 from well MW-2, indicate non-detectable concentrations of TPH-D. In addition, the results of groundwater samples collected from wells MW-1, MW-2 and MW-3 in April 1991 and September 1993 indicate non-detectable concentrations of TPH-G.

SUMMARY AND CONCLUSIONS

The J&M facility is located in an area characterized by light industrial and commercial properties. The site is underlain by Bay Mud of the East Bay Plain which reportedly yields small amounts of groundwater to wells. The Alameda County Flood Control District has recommended that this water be used only for irrigation purposes and not as a source of drinking water.

Groundwater monitoring has been conducted at the J&M facility since April 1991. The results of groundwater elevation measurements collected in January 1992 and March and September 1993 indicate a groundwater flow gradient ranging from 0.035 to 0.062 feet per foot towards the northwest and San Francisco Bay. Based on the inferred groundwater flow direction, well MW-3 is located hydrologically downgradient, and Wells MW-1 and MW-2 are located sidegradient relative to the location of former UST Nos. 1 and 2.

The results of groundwater monitoring conducted to date indicate TPH-D has only been detected on one occasion in one sample collected from well MW-2 at a concentration of 57 ug/l. In addition, the results of TPH-G analyses conducted in April 1991 and September 1993 have been non-detect. BTEX has not been detected in any groundwater samples collected from Wells MW-1, MW-2 and MW-3. Based on these results, groundwater does not appear to have been affected by a release or releases from UST Nos 1 and 2.

If you have any questions or need any additional information, please contact Kent Reynolds in Golder's Alameda office at (510) 521-0400.

Sincerely,

GOLDER ASSOCIATES INC.

Had al Para

Kent R. Reynolds

Senior Hydrogeologist

Diane L. Sarmiento, P.E.

Senior Engineer

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Attachments

Mr. Manuel Marques, Jr. - J&M Inc. CC:

Table 1
Summary of Groundwater Elevation Data
J & M Inc. Facility - Hayward, California

Well No.	Date	Depth to Water (feet)	Elevation TOC (MSL)	Groundwater Surface Elevation (MSL)
MW-1	1/3/92	5.63	8.27	2.64
	3/6/93	5.21		3.06
	9/29/93	6.20		2.07
MW-2	1/3/92	5.34	8.31	2.97
	3/6/93	4.78		3.53
	9/29/93	6.35		1.96
MW-3	1/3/92	5.69	7.78	2.09
	3/6/93	5.34		2.44
	9/29/93	7.38		0.40

Notes:

Depth to water measured from top of PVC casing.

Elevation of TOC (MSL) = Elevation of top of casing in feet above mean sea level.

Table 2
Summary of Groundwater
Chemical Analyses Data

Well No.	MW-1					MV	V-2		MW-3				
Date Sampled	Apr-91	Jan-92	Mar-93	Sep-93	Apr-91	Jan-92	Mar-93	Sep-93	Apr-91	Jan-92	Mar-93	Sep-93	
Parameter or Compound													
TPH-D	ND50	ND50	ND50	ND50	ND50	57	ND50	ND50	ND50	ND50	ND50	ND50	
TPH-G	ND30	NA	NA	ND50	ND30	NA	NA	ND50	ND30	NA	NA	ND50	
Benzene	ND0.3	ND0.3	ND0.3	ND0.5	ND0.03	ND0.03	ND0.03	ND0.5	ND0.3	ND0.3	ND0.3	ND0.5	
Toluene	ND0.3	ND0.3	ND0.3	ND0.5	ND0.03	ND0.03	ND0.03	ND0.5	ND0.3	ND0.3	ND0.3	ND0.5	
Ethyl Benzene	ND0.3	ND0.3	ND0.3	ND0.5	ND0.03	ND0.03	ND0.03	ND0.5	ND0.3	ND0.3	ND0.3	ND0.5	
Xylene(s)	ND0.3	ND0.3	ND0.3	ND1.0	ND0.03	ND0.03	ND0.03	ND1.0	ND0.3	ND0.3	ND0.3	ND1.0	

Notes:

All concentrations reported in micrograms per liter or parts per billion (ppb).

TPH-D = Total petroleum hydrocarbons as diesel.

TPH-G = Total petroleum hydrocarbons as gasoline.

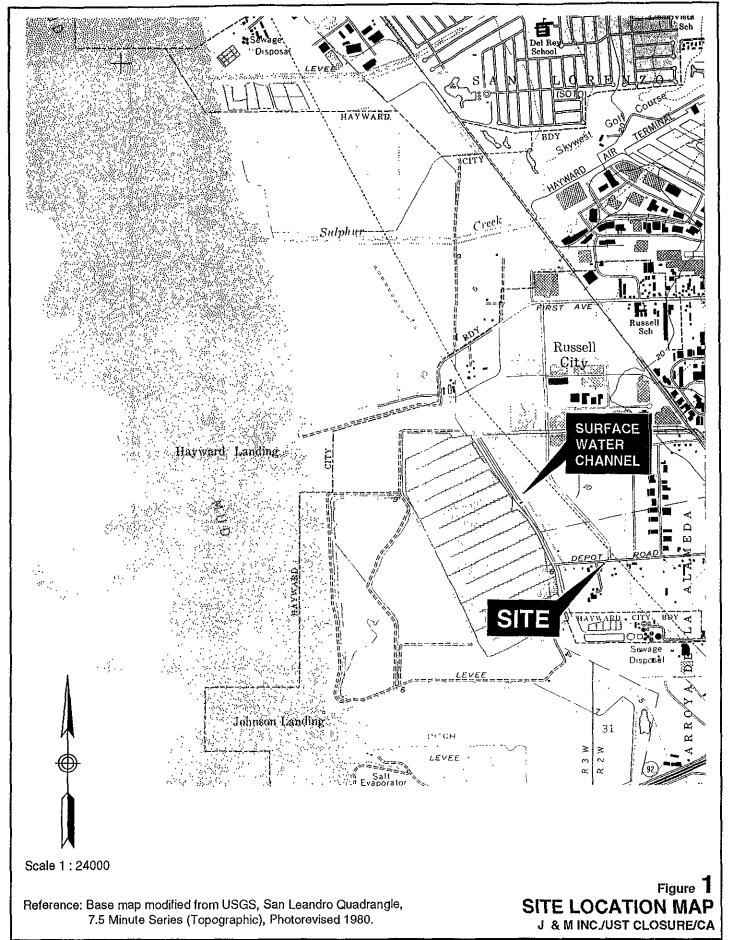
ND50 = Not detected at reporting limit.

NA = Not analyzed.

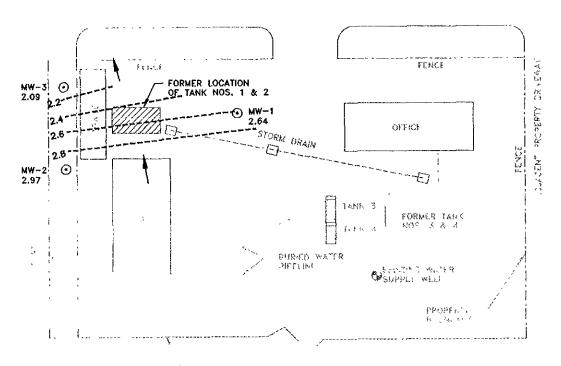
TPH-D, TPH-G and BTEX analyses performed using EPA Methods 3510/8015, 5030/8015 and 5030/8020, respectively.

Samples collected in April 1991, January 1992, and March 1993 analyzed by Sequoia Analytical.

Samples collected in September 1993 analyzed by APPL.







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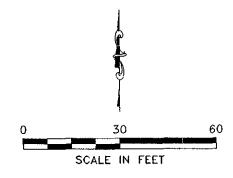
EXPLANATION.

MW-3 ⊙ 2.09 MONITORING WELL AND GROUNDWATER ELEVATION (MEASURED ON 1/3/92)

2.2 ----

GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL.

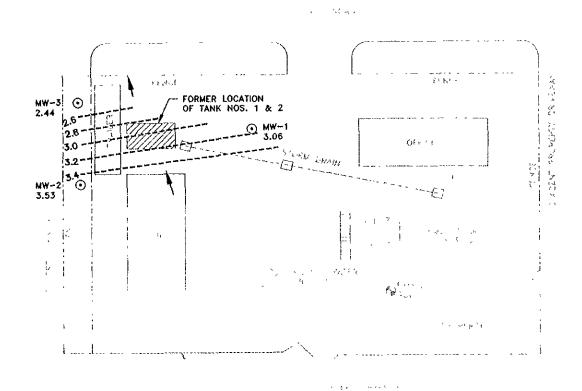
INFERRED GROUNDWATER FLOW DIRECTION



GROUNDWATER ELEVATION CONTOUR MAP JANUARY 1992

J & M INC./UST CLOSURE/CA

NOTE. Base map modified from Geoenvironmental and Geologic Services.



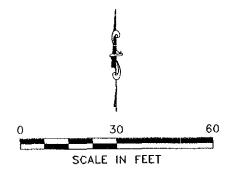
EXPLANATION:

MW-3 ⊙ 2.44

MONITORING WELL AND GROUNDWATER ELEVATION (MEASURED ON 3/6/93)

GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL

INFERRED GROUNDWATER FLOW DIRECTION

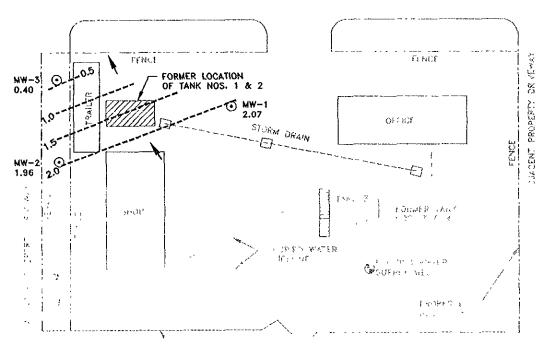


GROUNDWATER ELEVATION CONTOUR MAP MARCH 1993

NOTE: Base map modified from Geoenvironmental and Geologic Services.

J & M INC./UST CLOSURE/CA





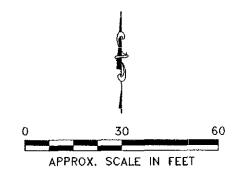
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EXPLANATION:

MW-3 → MONITORING WELL AND GROUNDWATER ELEVATION (MEASURED ON 9/29/93)

GROUNDWATER ELEVATION CONTOUR
15 ---- IN FEET ABOVE MEAN SEA LEVEL

INFERRED GROUNDWATER FLOW DIRECTION



GROUNDWATER ELEVATION CONTOUR MAP SEPTEMBER 1993

NOTE. Base map modified from Geoenvironmental and Geologic Services.

J & M INC./UST CLOSURE/CA

ATTACHMENT 1

September 1993 Laboratory Analytical Report



Alameda, California 94501

Attn: Kent Reynolds

Sample I.D. No: J & M Inc.

Hayward CA MW-1

APPL Sample No: R15388-96945W A-C

Sample Date: 09/29/93

Report Date: 10/12/93

Page 1 of 2

Date Received: 10/01/93

Date Extracted: 10/04/93

Test Results: **

Compound

Total hydrocarbons

Concentration μ**q/**L____

Detection Limit µg/L

ND*

50



Golder Associates

- * ND = None Detected
- ** Total hydrocarbons were analyzed by EPA Method 3510 and GC/FID, and quantitated using diesel as a standard.

Tested By Steven Tallman
Checked By Min Di

Alameda, California 94501

Attn: Kent Reynolds

Page 2 of 2

Sample I.D. No: J & M Inc.

Hayward CA MW-1

APPL Sample No: R15388-96945W A-C

Date Received: 10/01/93

Sample Date: 09/29/93 Report Date: 10/12/93

Date Extracted: 10/08/93

Modified Method 8020 Results:

Compound Concentration µg/L Detection limit	
Benzene ND* 0.5 Ethyl benzene ND 0.5 Toluene ND 0.5 Xylenes ND 1.0	

* ND = None Detected

Tested By_

Checked By_

3



Alameda, California 94501

Attn: Kent Reynolds

Sample I.D. No: J & M Inc.

Hayward CA MW-2

APPL Sample No: R15388-96946W A-C

Sample Date: 09/29/93

Report Date: 10/12/93

Page 1 of 2

Date Received: 10/01/93

Date Extracted: 10/04/93

Test Results: **

 $\begin{array}{ccc} & & & & & & & & & \\ \hline Compound & & & & & & \\ \hline \mu g/L & & & & & \\ \hline Limit & \mu g/L & & & \\ \hline \end{array}$

Total hydrocarbons ND* 50

Tested By StevenTallman
Checked By

^{*} ND = None Detected

^{**} Total hydrocarbons were analyzed by EPA Method 3510 and GC/FID, and quantitated using diesel as a standard.

Sample Date: 09/29/93 Report Date: 10/12/93

Alameda, California 94501

Attn: Kent Reynolds

Page 2 of 2

Sample I.D. No: J & M Inc. Hayward CA MW-2 Date Received: 10/01/93

APPL Sample No: R15388-96946W A-C

Date Extracted: 10/08/93

Modified Method 8020 Results:

Compound	Concentration μ g/L	Detection limit μ g/L
Benzene	ND*	0.5
Ethyl benzene	ND	0.5
Toluene	ND	0.5
Xylenes	ND	1.0

* ND = None Detected

Tested By Rula Jourge Checked By



Alameda, California 94501

Attn: Kent Reynolds

Sample I.D. No: J & M Inc.

Hayward CA MW-3

APPL Sample No: R15388-96947W A-C

Sample Date: 09/29/93 Report Date: 10/12/93

Page 1 of 2

Date Received: 10/01/93

Date Extracted: 10/04/93

Test Results: **

Concentration Detection Limit µg/L μg/L Compound ND* 50 Total hydrocarbons

- * ND = None Detected
- ** Total hydrocarbons were analyzed by EPA Method 3510 and GC/FID, and quantitated using diesel as a standard.

Tested By Steven Tallman
Checked By

Alameda, California 94501

Attn: Kent Reynolds

Page 2 of 2

Sample I.D. No: J & M Inc.

Hayward CA MW-3

APPL Sample No: R15388-96947W A-C

Date Received: 10/01/93

Sample Date: 09/29/93 Report Date: 10/12/93

Date Extracted: 10/08/93

Modified Method 8020 Results:

Compound	Concentration μ g/L	Detection limit μ g/L
Benzene	ND*	0.5
Ethyl benzene	ND	0.5
Toluene	ND	0.5
Xylenes	ND	1.0

* ND = None Detected

Tested By Paula Journa Checked By



Golder Associates, Incorporated Sample Date: 09/29/93 1451 Harbor Bay Parkway, Suite 1000 Report Date: 10/12/93

Alameda, California 94501

Attn: Kent Reynolds

Page 1 of 1

Sample I.D. No: J & M Inc.

Hayward CA TB

APPL Sample No: R15388-96948W

Date Received: 10/01/93

Date Extracted: 10/08/93

Modified Method 8020 Results:

Compound	Concentration µg/L	Detection limit µg/L
Benzene	ND*	0.5 0.5
Ethyl benzene	ND	0.5
Toluene	ND	0.5
Xylenes	ND	1.0

* ND = None Detected

Tested By

Checked By_

The state of



Golder Associates, Incorporated

1451 Harbor Bay Parkway, Suite 1000

Alameda, California 94501

Attn: Kent Reynolds

Page 1 of 4

Sample I.D. No: J & M Inc.

Hayward CA

Blank for samples taken 09/29/93

APPL Sample No: R15388-931004W

Date Extracted: 10/04/93

Sample Date: NA

Date Received: NA

Report Date: 10/12/93

Test Results: **

Concentration Detection $\mu g/L$ Limit $\mu g/L$

Total hydrocarbons ND* 50

* ND = None Detected

** Total hydrocarbons were analyzed by EPA Method 3510 and GC/FID, and quantitated using diesel as a standard.

Checked By

Alameda, California 94501 Attn: Kent Reynolds Report Date: 10/12/93

Page 2 of 4

Project ID No: J & M Inc. Hayward CA

APPL Spike ID: R15388 96945W-96947W 931004W (LCS)

Concentration Units: $\mu g/L$

SPIKES

Method		Results	Percent Recovery			
GC-FID	THC	10/04/93	00.0	1354	993	73.4

Comments:

Checked By

Golder Associates, Incorporated

1451 Harbor Bay Parkway, Suite 1000 Alameda, California 94501

Attn: Kent Reynolds

Sample Date: NA

Report Date: 10/12/93

Page 3 of 4

Sample I.D. No: J & M Inc.

Hayward CA

Blank for samples taken $09/29/9\overline{3}$

APPL Sample No: R15388-931008W

Date Received: NA

Date Extracted: 10/08/93

Modified Method 8020 Results:

Compound	Concentration μ g/L	Detection limit $\mu g/L$
Benzene Ethyl benzene Toluene Xylenes	ND* ND ND ND	0.5 0.5 0.5 1.0
· · · · · · · · · · · · · · · · · · ·		

* ND = None Detected

Alameda, California 94501

Attn: Kent Reynolds

Report Date: 10/12/93

Page 4 of 4

Project ID No: J & M Inc. Hayward CA

APPL Spike ID: R15388 96945W-96948W 1928A

Concentration Units: μ g/L

SPIKES

Method_	Analysis	Date	Amt in Sample	Amt Spiked	Results	Percent Recovery	RPD
8020	Benzene	10/08/93	0.00	5.00	4.62	92.4	1.9
8020	Toluene	10/08/93	0.00	5.00	4.72	94.4	1.5
8020	Ethyl benzene	10/08/93	0.00	5.00	4.89	97.8	0.4
8020	Xylenes	10/08/93	0.00	15.0	16.2	108	0.6

APPL Spike ID: R15388 96945W-96948W 1929B

Method_	Analysis	Date	Amt in Sample	Amt Spiked	Results	Percent Recovery	RPD
			• • • •	- 00	A 67.1	0.4.0	
8020	Benzene	10/08/93	0.00	5.00	4.71	94.2	1.9
8020	Toluene	10/08/93	0.00	5.00	4.79	95.8	1.5
8020	Ethyl benzene	10/08/93	0.00	5.00	4.91	98.2	0.4
8020	Xylenes	10/08/93	0.00	15.0	16.3	109	0.6

Comments:

Checked By

CHAIN OF CUSTODY RECORD

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ATTACHMENT 2

References

REFERENCES

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J&M Inc., January 28, 1992. Letter transmitting laboratory results for April 1991 groundwater sampling.