

MacKinnon Environmental Consulting

2834 San Antonio Drive
Walnut Creek, CA 94598
(415) 930-9272

CALIFORNIA REGIONAL WATER

MAR 5 - 1991

QUALITY CONTROL BOARD

February 27, 1991

Mr. Gilbert Wistar
Alameda County HCS
Hazardous Materials Prgm.
80 Swan Way #200
Oakland, CA 94621

Dear Mr. Wistar:

ADDENDUM TO PHASE II CUSTOM ALLOY REPORT

We suspect that the December "Phase II Subsurface Investigation" report may have been submitted with a typographical error. The mistake is in the footnote to Table 4, page 13 where it says "results are expressed in milligrams per kilogram (mg/kg)" it should read "micrograms per liter (ug/L)." The lab data attached to the December report showed the actual figures of course, and the "Conclusions" were based on these correct figures.

MacKinnon Environmental regrets this oversight. Please remove page 13 from your copy of the report and replace with the amended page (attached). Thank you.

Sincerely,



Cinda C. MacKinnon, R.G.

cc: P.O'Brien, CASS
K.Krause, KTW
L. Feldman, RWQCB

MacKinnon Environmental Consulting

2834 San Antonio Drive
Walnut Creek, CA 94598
(415) 930-9272

February 27, 1991

Mr. Gilbert Wistar
Alameda County HCS
Hazardous Materials Program
80 Swan Way #200
Oakland, CA 94621

01

SUBJECT: QUARTERLY MONITORING AT CASS FACILITY, OAKLAND

Dear Mr. Wistar:

This letter reports the results of the latest monitor well water sampling, updates water level data and addresses other general issues. An updated schedule for work proposed at Custom Alloy Sales and Services Inc (CASS) is attached as per your request dated Feb. 8, 1991.

SAMPLING

2730 Peralta

On January 28, 1991 the wells were purged and sampled. Purged water was stored in separate drums on site and labeled. Sampling equipment was carefully decontaminated before initial use and between each well. Ground water samples were withdrawn from the wells by bailers which had been steam cleaned before arriving at the site. The bailers were scrubbed before each use with a TSP solution and a bottle brush. They were then rinsed with clean tap water, rinsed with reagent-grade methanol and finally, rinsed with distilled water. A new rope was tied to the end of each bailer and every effort was made to keep the rope above the water in the well. As an extra precaution a separate teflon bailer was assigned to MW5 (the clean well) and the remaining wells were sampled from "clean to dirty" i.e. as contamination was anticipated to be low in MW4 it was sampled first and wells with higher levels of contamination were sampled last. MW1 and MW2 were not sampled due to the presence of free product.

Ground water was transferred, with minimal agitation, into glass bottles certified clean by the laboratory doing the analysis. The bottles for volatile organic analyses were checked to ensure that air bubbles were not present. Sample containers were immediately sealed, labeled and placed on ice. All samples were delivered under chain-of custody procedures.

RESULTS OF ANALYSES

Soil and water samples were sent to Superior Analytical Laboratory, Martinez, California. This laboratory is certified by the state of California for drinking water and hazardous waste testing and analysis. Samples were analyzed following procedures developed and verified by the Environmental Protection Agency (EPA) or the California Department of Health Services (DHS) as follows:

EPA 8015 - Total petroleum hydrocarbons as diesel
 EPA 8020/5030 - Benzene, toluene, ethylbenzene, and xylene (BTEX)
 EPA 5030/8015 - Total petroleum hydrocarbons as gasoline

The two outside wells, MW4 and MW5, were also analyzed for total petroleum hydrocarbons as oil and grease by Method EPA SM552-F. Finally, MW5, the well in the approximate (presumed) downgradient location, and MW6 were analyzed for metals using EPA SW-846 methods. MW6 was included for metals analysis as it had not been previously tested for metals and lead was of concern due to the presence of gasoline.

The analytical results shown in the tables below include both previous and recent results. Complete laboratory reports for the recent tests are attached in Appendix A.

RESULTS FOR GROUND WATER SAMPLES
TABLE 1

	Well	Gasoline	Diesel	Benzn	Toluene	Ethylbnzn	Xylenes	TOG
		mg/L	mg/L	ug/L				
6/90	MW1	ND	ND	0.4	ND	1.0	0.7	
	MW3	ND	ND	1.8	ND	0.5	ND	
	Duplicate(MW3)	NA	NA	1.8	ND	0.5	ND	
10/90	MW3	ND	0.27	0.9	ND	ND	1.6	ND
	MW4	ND	0.35	0.3	ND	ND	0.4	ND
	MW5	ND	ND	ND	ND	ND	ND	ND
	MW6	0.22	0.80	4.9	4.6	0.9	4.8	ND
01/28/91 (current)	MW3	ND	0.32	2.1	ND	ND	ND	NA
	MW4	ND	0.18	ND	ND	ND	ND	ND
	MW5	ND	0.05*	ND	ND	ND	ND	ND
	MW6	1.7	5.3	43.0	6.0	4.3	12.0	NA

a) Results for diesel and gasoline are expressed in milligrams per liter (mg/L). Mg/L is roughly equivalent to parts per million (ppm).

b) BTEX results are expressed in micrograms per liter (ug/L).

c) ND = not detected NA = not analyzed

d) TOG = Total oil & grease expressed in milligrams per liter

* {The .05 mg/l noted in MW5 was discussed with the chemist. He said a "negligible" spike was detected on the chromatogram which is not diesel, kerosene, gasoline, motor oil, jet fuel or any other fuel. He further stated such a low result could be due to natural hydrocarbons in the soil and should be ignored.

Chromatograms for this sample, a blank, and a diesel standard are attached (Appendix A) for comparison. MW5 is the boring which was wet above the water table during drilling - ostensibly due to leakage from the nearby sewer line.)

TABLE 2

		<u>Nickel</u>	<u>Chromium</u>	<u>Lead</u>	<u>Zinc</u>	<u>Cadmium</u>	
10/90	MW3	ND	ND	ND	ND	NA	
	MW4	ND	ND	ND	ND	NA	
	MW5	ND	NA	ND	ND	ND	
1/91							<u>Copper</u>
	MW5	ND	ND	ND	ND	ND	ND
	MW6	ND	ND	ND	0.3	ND	0.3

- a) Results are expressed in milligrams per liter (mg/L). Mg/L is roughly equivalent to parts per million (ppm).
 b) ND = not detected
 NA = not analyzed

Diesel, the main contaminant of concern, generally shows moderately low results consistent with the previous sampling. Gasoline contamination was not detected in any wells except MW6 (the well in the north end of the property); nor has gasoline been detected in previous testings of the other wells.

Lead, nickel, cadmium, and chromium continue to be undetected in the ground water. The absence of lead in MW6 is significant because the detection of gasoline in that well suggested the potential presence of lead. Trace amounts of zinc and copper were detected in MW6, however, at levels well below even drinking water standards (DHS 1988 maximum contaminant level=5000 for Zn and 1000 ug/L for Cu).

Due to the continued absence (or trace amounts) of metals in the ground water, MEC supports KTW's evaluation (Work Plan, January, 1991) which further documents a lack of metal leaching. KTW concluded "we do not find any evidentiary support that metal is leaching into the ground water". Thus we recommend testing for metals of concern on an annual rather than quarterly basis hereafter.

Neither gasoline nor oil and grease has been detected in ground water in the diesel pit area in any of the three sampling episodes. This indicates these analyses are also an unwarranted

Mr. Gilbert Wistar

2/27/91

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expense on a quarterly basis and annual testing of these constituents is proposed.

WATER LEVELS

In December and January water levels were measured in four wells (MW3, MW4, MW5 and MW6) to gather both seasonal and tidal data. Wells which contain any free product are not used as part of this program. Water levels were measured with an electric sounder and field dates were chosen during times of maximum-minimum tides. Rainfall data has been collected and is presented in Table 3. The water level data and conversions to elevations (Tables 4 and 5) include previous as well as recent measurements.

Not enough data has been gathered to really assess the seasonal effects on water levels at the site, nonetheless minor trends are noted. As anticipated, water levels fell between June and October. Between October and December 17th water levels in 3 of the 4 wells rose approximately .4 feet. Most of this rise can be attributed to .32 inches of rainfall the day before. (Note the rise in the fourth well, MW6, on this date appears too large and is probably unequilibrated, artificial recharge.) Very little difference is recorded between December and January measurements; although .42 inches of rain fell in that time period, it did not occur in the two weeks preceding the January field work. Water levels in MW6 however fell to a more normal level over the same time period.

Tidal fluctuations are not evident in December. This could indicate tidal effects are negligible, but the time difference between measurements was only slightly over 3.5 hours which may not have been sufficient to register a change. In January the water level in MW6 dropped .04 feet (~5 inches) over a 7-hour period. Changes in water levels in MW4 and MW5 are negligible in January, but MW3 also shows a possible response to a dropping tide over a 4-hour period. More data is needed however to conclude if tides are influencing water levels and flows at the CASS site.

/.../.../

TABLE 3
PRECIPITATION IN OAKLAND 1990-1991

12-17-90 Oakland ppc (reported in Chronicle) .32" as of 1700 hrs on 16th

State precipitation

Precipitation at	24 hrs. ending Friday	July 1- Dec. 28 1990	Pct. of norm	July 1- Dec. 28 1989	Pct. of norm	July 1- Dec. 28 norm	July 1- June 30 norm
Bakersfield	0.00	0.81	48	0.60	35	1.70	5.72
Eureka	0.18	8.86	57	6.20	40	15.57	38.51
Fresno	0.00	1.34	41	2.06	63	3.20	10.52
Los Angeles	0.00	0.21	6	1.07	28	4.16	14.85
Oakland Museum	0.00	2.48	38	4.43	68	6.56	18.03

Th Jan 10 (only w/ ppc rec. in at least 2 weeks)
TEMPERATURES AND PRECIPITATION 24 hours ending yesterday 5 p.m.

	Yesterday	Hi/Lo	Prcp.	Yesterday	Hi/Lo	Prcp.
0	Napa	56/45	**	Sanoma	53/42	.30
9	Oakland	56/48	.24	Stinson Beach	M/M	**
4	Pacifica	52/44	.50	Vallejo	52/45	.19
1	Petaluma	54/45	.21	Walnut Creek	55/47	**
1	Pittsburg	54/46	**	SAN FRANCISCO REPORT		
	Redwood City	57/47	.25	Today's normal hi/lo 56/43		
	Richmond	53/45	.31	Record high 68 in 1932		
	San Francisco	55/48	.42	Record low 32 in 1949		
	S.F. Airport	53/47	.20	Sea level barometer yesterday 4 pm 30.04"		
	San Jose	59/48	.16			
	San Rafael	51/44	.29			
	Santa Rosa	53/46	.14			

M = missing ** = data not available

RAINFALL

Precipitation data for selected California cities 4 p.m. Jan. 28, 1991 (Season: July 1 to June 30)

	Last 24 hours	Season to date	Last year to date	Normal to date	Season normal
Bakersfield	0.00	1.43	1.35	2.65	5.72
Eureka	0.00	10.48	11.98	22.55	38.51
Fresno	0.00	1.47	4.81	5.31	10.52
Los Angeles	0.00	1.38	2.17	7.75	14.85
Oakland	0.00	2.90	8.48	10.52	18.03

RAINFALL

Precipitation data for selected California cities 4 p.m. Feb. 3, 1991 (Season: July 1 to June 30)

	Last 24 hours	Season to date	Last year to date	Normal to date	Season normal
Bakersfield	0.00	1.44	1.46	2.89	5.72
Eureka	0.43	12.46	14.60	23.81	38.51
Fresno	0.00	1.68	4.95	5.73	10.52
Los Angeles	0.00	1.38	2.31	8.47	14.85
Oakland	0.00	4.12	9.09	11.30	18.03

RAINFALL

Precipitation data for selected California cities 4 p.m. Feb. 4, 1991 (Season: July 1 to June 30)

	Last 24 hours	Season to date	Last year to date	Normal to date	Season normal
Bakersfield	0.00	1.44	1.82	2.93	5.72
Eureka	0.43	12.89	14.63	24.01	38.51
Fresno	0.00	1.68	5.64	5.80	10.52
Los Angeles	0.00	1.38	2.92	8.59	14.85
Oakland	0.12	4.24	9.53	11.41	18.03

RAINFALL

Precipitation data for selected California cities 4 p.m. Feb. 10, 1991 (Season: July 1 to June 30)

	Last 24 hours	Season to date	Last year to date	Normal to date	Season normal
Bakersfield	0.00	1.44	1.96	3.17	5.72
Eureka	0.00	13.05	15.96	25.17	38.51
Fresno	0.00	1.84	5.71	6.22	10.52
Los Angeles	0.00	1.38	2.92	9.27	14.85
Oakland	0.00	5.28	9.79	12.06	18.03
Sacramento	0.00	4.96	11.37	11.57	17.10

2-24-91

	Last 24 hours	Season to date	Last year to date	Normal to date	Season normal
Bakersfield	0.00	1.44	2.38	3.72	5.72
Eureka	0.00	13.12	18.06	27.71	38.51
Fresno	0.00	1.84	6.21	7.13	10.52
Los Angeles	0.00	1.38	5.43	10.71	14.85
Oakland	0.00	5.28	11.12	13.38	18.03
Sacramento	0.00	4.96	13.42	12.95	17.10

1-31-91: no ppc noted since 1-10-91

State precipitation

Precipitation at	24 hrs. ending Friday	July 1- Feb. 1 1991	Pct. of norm	July 1- Feb. 1 1990	Pct. of norm	July 1- Feb. 1 norm	July 1- June 30 norm
Bakersfield	0.00	1.43	51	1.46	52	2.81	5.72
Eureka	0.00	10.48	45	13.94	60	23.40	38.51
Fresno	0.00	1.47	26	4.95	89	5.59	10.52
Los Angeles	0.00	1.38	17	2.31	28	8.23	14.85
Oakland Museum	0.00	2.90	28	8.54	60	11.02	18.03
Sacramento	0.00	2.51	24	10.66	101	10.53	17.10
San Diego	0.00	2.91	44	4.32	82	5.27	9.32

TEMPERATURES AND PRECIPITATION 24 hours ending yesterday 5 p.m. 2-5-91

Yesterday	Hi/Lo	Prcp.	Yesterday	Hi/Lo	Prcp.	Yesterday	Hi/Lo	Prcp.
Bodega Bay	61/50	.40	Napa	64/48	.20	Sanoma	54/43	.15
Concord	53/48	.11	Oakland	59/51	.12	Stinson Beach	60/51	.15

TEMPERATURES AND PRECIPITATION 24 hours ending yesterday 5 p.m. 2-24-91

Yesterday	Hi/Lo	Prcp.	Yesterday	Hi/Lo	Prcp.	Yesterday	Hi/Lo	Prcp.
Bodega Bay	61/42	—	Napa	72/42	**	Sanoma	79/37	—
Concord	74/41	**	Oakland	75/47	—	Stinson Beach	68/50	—

Table 4
WELL ELEVATIONS AT CASS
(in feet above sea level)

Well	GRD	TOC Elev	Installation Date
MW1	5.82	5.64	05-90
MW2	4.66	4.19	05-90
MW3	6.38	5.84	05-90
MW4	5.66	5.40	10-90
MW5	4.17	3.82	10-90
MW6	6.36	6.06	10-90

Table 5
WATER LEVEL DEPTHS AND ELEVATIONS AT CASS

Date/ Time	Well	Depth	Elev.	Tide Hi-Lo Time	Date/ Time	Depth	Elev.	Tide Hi-Lo Time/notes
05-18 1990	MW1	10.80	-5.16	1921/1233	6-20 1990	10.2	-4.56	2200/1500
	MW2	9.59	-5.40	(5' / 0.4')		---	---	(6.9' / 2.8')
	MW3	11.08	-5.24			10.3	-4.46	
10-30 1990	MW3	11.46	-5.62	0833/1434	12-17 (noon)	11.1	-5.26	1040/1741
	MW4	10.46	-5.06	(5.5' / 0.9')		9.94	-4.54	(6.2' / -0.5')
	MW5	9.92	-6.10			9.51	-5.69	ppc=.32"
	MW6	10.38	-4.32		8.82	-2.76		
	MW4				12-17 (1530)	9.93	-4.53	
	MW6					8.80	-2.74	
01-28 1990 (1030)	MW3	10.99	-5.15	0913/1607				
	MW4	10.02	-4.62	(7.1' / -1.3')				
	MW5	9.43	-5.61					
	MW6	9.60	-3.54					
(1500)	MW3	11.01	-5.17					
	MW4	10.01	-4.61					
	MW5	9.43	-5.61					
(1630)	MW6	9.64	-3.58					

(Times are approximate)

Mr. Gilbert Wistar

2/27/91

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Work continues at the CASS site between KTW, who will be handling remediation, and MEC. MEC will be responsible for quarterly reporting and coordinating efforts. An updated schedule is attached, however several dates have not been confirmed with KTW.

I realize that all of your concerns have not been addressed in this short report, however I have no further information at this time. The next quarterly monitoring report will be submitted the first week of June. However, a report may be forthcoming to your office before that time as additional work is scheduled or remediation progress proceeds.

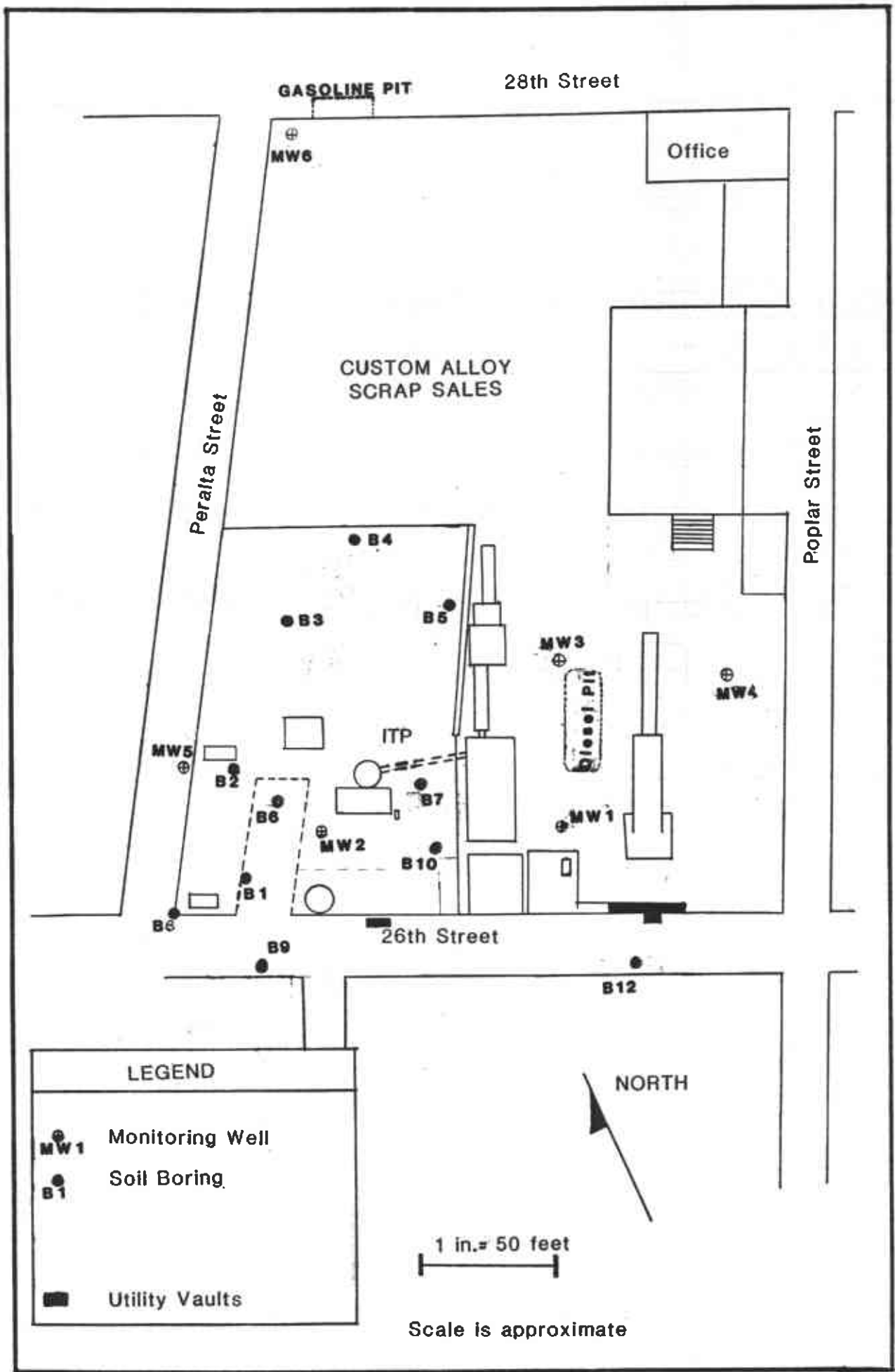
Sincerely,



Cinda Crabbe MacKinnon
Registered Geologist



cc: P. O'Brien, CASS
K. Krause, KTW
L. Feldman, RWB



Location of Boreholes and Monitoring Wells

WORK SCHEDULE FOR CUSTOM ALLOY SCRAP SALES

Project No. 5900K MacKinnon Environmental Consulting

March 1, 1991	W E E K S												
T A S K	0	1	2	4	6	8	10	12	14	16	18	20	25
<u>Phase I:</u> Complete	✓												
<u>Phase II:</u> wells installation, Sampling, reporting: Complete	✓												
Remediation workplan: submitted	✓												
(expansion of workplan under consideration) XX													
Free product removal initiated.....													?
Re-excavation of diesel pit													XX.....?
Bioremediation (soils)													XX.....?
Removal of piping ITP yard													XX
Sampling below piping													XX
Further sampling north ITP *													
Re-sample wells													XX
Lab analyses													XX
Quarterly report													XX
Water level measurements		XX											XX
Remediation progress report													XX
Business (HM) plan													XX
Employee training (main- tenance dept)		XX											

* inaccessible(on hold while crane to move heavy equipment is being repaired)

SUPERIOR ANALYTICAL LABORATORIES, INC.

825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 82372
CLIENT: Mackinnon Environmental
CLIENT JOB NO.: CASS-0191

DATE RECEIVED: 01/29/91
DATE REPORTED: 02/03/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 8015

LAB #	Sample Identification	Concentration (mg/L) Diesel Range
1	W3	0.32
2	W4	0.18
3	W5	0.05*
4	W6	5.3

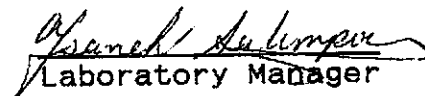
mg/L - parts per million (ppm)

* Not typical diesel pattern present.
Method Detection Limit for Diesel in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 200mg/L: RPD Gasoline = 6
RPD Diesel = 7
MS/MSD Average Recovery = 96%: Duplicate RPD = 11

Richard Srna, Ph.D.


Laboratory Manager

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DOHS #319
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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 82372
CLIENT: Mackinnon Environmental
CLIENT JOB NO.: CASS-0191

DATE RECEIVED: 01/29/91
DATE REPORTED: 02/03/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

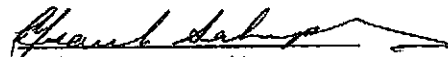
LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	W3	ND<0.05
2	W4	ND<0.05
3	W5	ND<0.05
4	W6	1.7

Method Detection Limit for Gasoline in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery =106 %: Duplicate RPD =0

Richard Srna, Ph.D.


Laboratory Manager

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DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 82372
CLIENT: Mackinnon Environmental
CLIENT JOB NO.: CASS-0191

DATE RECEIVED: 01/29/91
DATE REPORTED: 02/03/91

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/L)			
		Benzene	Toluene	Ethyl Benzene	Xylenes
1	W3	2.1	ND<0.3	ND<0.3	ND<0.3
2	W4	ND<0.3	ND<0.3	ND<0.3	ND<0.3
3	W5	ND<0.3	ND<0.3	ND<0.3	ND<0.3
4	W6	43	6.0	4.3	12


ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15%
MS/MSD Average Recovery =110%: Duplicate RPD = .3

Richard Srna, Ph.D.


Laboratory Manager

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DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 82372
CLIENT: Mackinnon Environmental
CLIENT JOB NO.: CASS-0191

DATE RECEIVED: 01/29/91
DATE REPORTED: 02/06/91

ANALYSIS FOR TOTAL OIL AND GREASE by Standard Method 5520F

LAB #	Sample Identification	Concentration(mg/L) Oil & Grease
2	W4	ND<5
3	W5	ND<5

mg/L - parts per million (ppm)

Method Detection Limit for Oil and Grease in Water: 5mg/L

QAQC Summary: Duplicate RPD : 2
MS/MSD Average Recovery : 81%

Richard Srna, Ph.D.

Richard Srna
Laboratory Director

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DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 82372
CLIENT: Mackinnon Environmental
CLIENT JOB NO.: CASS-0191

DATE RECEIVED: 01/29/91
DATE REPORTED: 02/03/91

ANALYSIS FOR TOTAL NICKEL by SW-846 Method 7520

LAB #	Sample Identification	Concentration(mg/L) Total Nickel
3	W5	ND<0.2
4	W6	ND<0.2

mg/L - parts per million (ppm)

Method Detection Limit for Nickel in Water: 0.2 mg/L

QAQC Summary: MS/MSD Average Recovery : 97%
Duplicate RPD : 4

Richard Srna, Ph.D.


Laboratory Manager

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DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 82372
CLIENT: Mackinnon Environmental
CLIENT JOB NO.: CASS-0191

DATE RECEIVED: 01/29/91
DATE REPORTED: 02/05/91

ANALYSIS FOR CADMIUM, CHROMIUM, LEAD & ZINC
by EPA SW-846 Methods 7130, 7190, 7420, 7950 Respectively

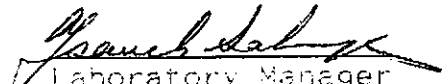
LAB #	Sample Identification	Concentration(mg/L)			
		Cadmium	Chromium	Lead	Zinc
3	W5	ND<0.03	ND<0.3	ND<0.5	ND<0.01
4	W6	ND<0.03	ND<0.3	ND<0.5	0.3

mg/L - parts per million (ppm)

Method Detection Limit for Cadmium in Water: 0.03 mg/L
Method Detection Limit for Chromium in Water: 0.3 mg/L
Method Detection Limit for Lead in Water: 0.5 mg/L
Method Detection Limit for Zinc in Water: 0.01 mg/L

QAQC Summary: MS/MSD Average Recovery : 98%
Duplicate RPD : 2

Richard Srna, Ph.D.


Laboratory Manager

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DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 82443
CLIENT: Mackinnon Environmental
CLIENT JOB NO.: CASS-0191

DATE RECEIVED: 02/09/91
DATE REPORTED: 02/13/91

ANALYSIS FOR TOTAL COPPER by SW-846 Method 7210

LAB #	Sample Identification	Concentration(mg/L) Total Copper
1	W5	ND<0.1
2	W6	0.3

mg/L - parts per million (ppm)

Method Detection Limit for Copper in Water: 0.1 mg/L

QAQC Summary: MS/MSD Average Recovery : 94%
Duplicate RPD : 1

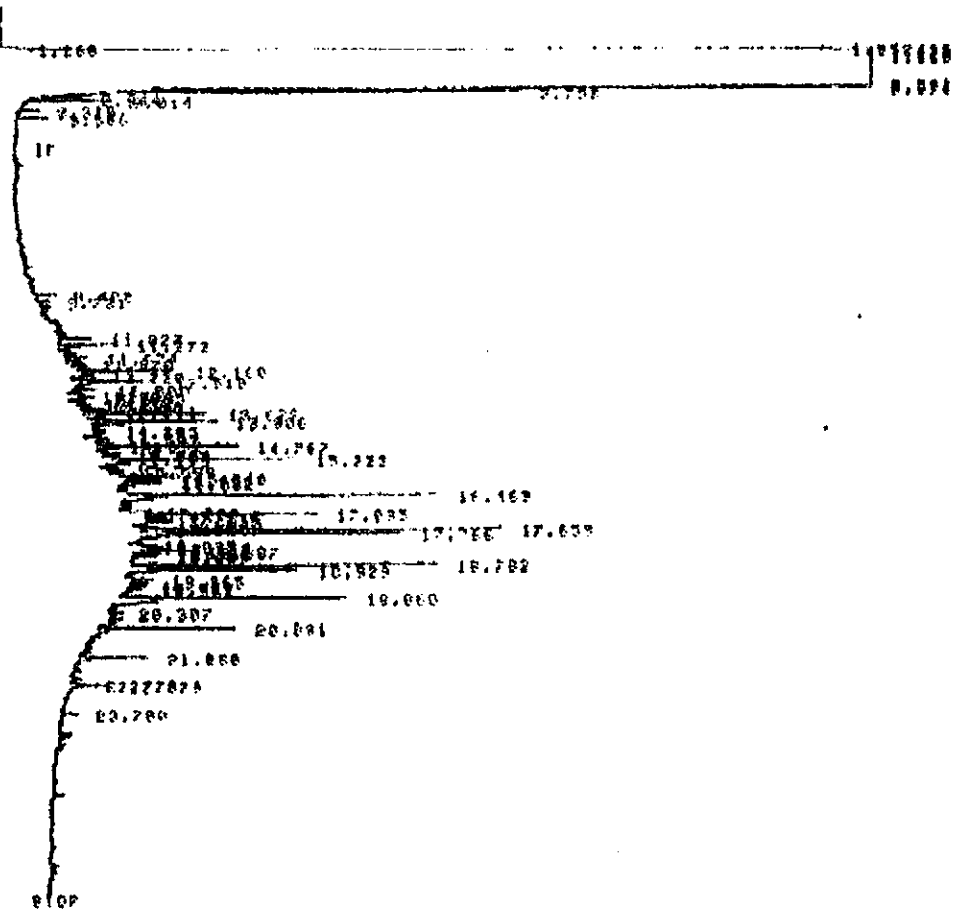
Richard Srna, Ph.D.

Richard Srna
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL
 TOTAL PETROLEUM HYDROCARBON ANALYSES
 FEB 1, 1991

Messing for Eastern Roadshows
 Run # 4166 FEB 1, 1991 ORIGIN
 STAFI



STANDARD

=====

ANALYSE: 4166
 BOTTLE #1 4

DIESEL-----
 RT
 4.59 TO
 10.8

AREA SUM = 1936.
 CONCENTRATION 1.97892

MGP SUM-----
 RT
 5 TO
 10

AREA SUM = 1739.
 CONCENTRATION 33.1376

DIESEL-----
 RT
 10.8 TO
 24

AREA SUM = 82784.
 CONCENTRATION 213.890

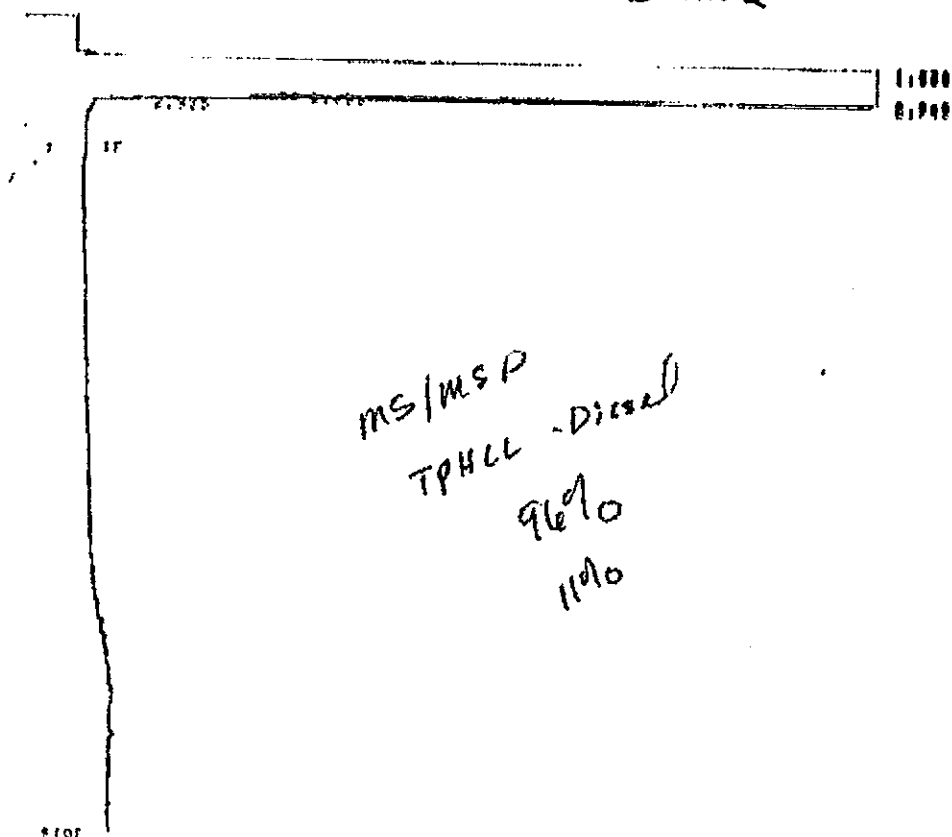
diesel 7%

MULTIPLICATION FACTOR =
 1.
 A 5. B

SUPERIOR ANALYTICAL
TOTAL PETROLEUM HYDROCARBON ANALYSIS
FEB 1, 1991

Method for SVENH RESINETS
RUN # 4167 FEB 1, 1991 AMIDEX
START

BLANK



.....

ADDITION 4167

BOTTLE # 2

PLC

PAROLINE-----

RT

4.28 TO
10.8

AREASUM = 2
CONCENTRATION 5.

HDF SUM-----

RT

3 TO
10

AREASUM = 2
CONCENTRATION 22.6

DIESEL-----

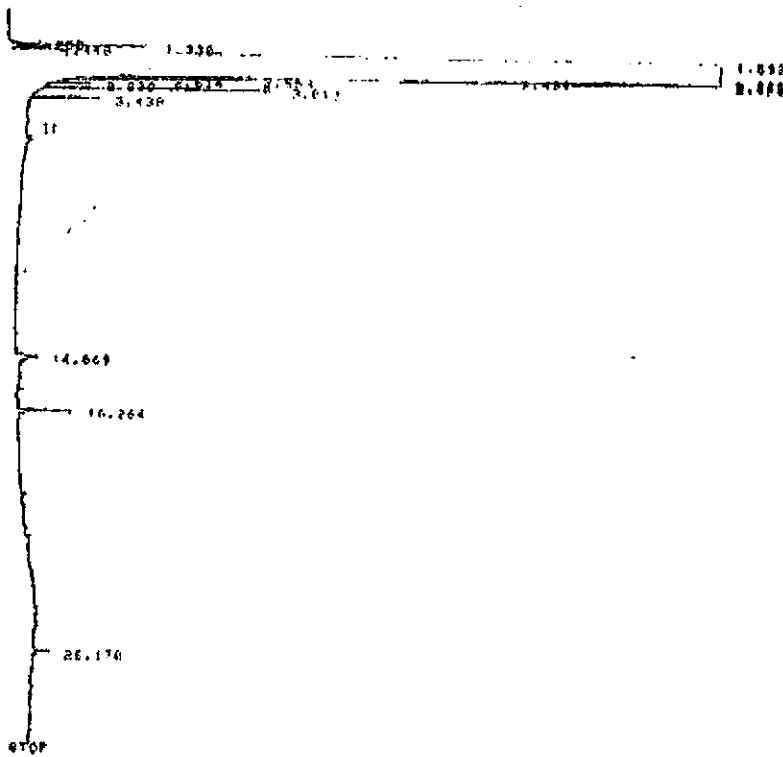
RT

10.5 TO
24

AREASUM = 0
CONCENTRATION 13.

MULTIPLICATION FACTOR =
1.

Missing for System Readiness
RUN # 4174 FEB 1, 1991 20:51:14
START



KW5.

MINIMUM 41.74

UNITILE 64 12

6707-3

GASOLINE-----

4.39 10
10.7

OK

APCARBUN = 0
CONCENTRATION 0.0000

MET GUN-----

5 10
10

APCARBUN = 0
CONCENTRATION 0.004116

DIESEL-----

10.8 10
14

* not typical

APCARBUN = 0.176
CONCENTRATION 0.000000

MULTIPLICATION FACTOR =

0.00165
0 10 12

SUPERIOR ANALYTICAL
TOTAL PETROLEUM HYDROCARBON ANALYSES
FEB 1, 1991

Missing for System Readiness
RUN # 4175 FEB 1, 1991 21:30:49
START

