BASELINE

ENVIRONMENTAL CONSULTING

4 January 1996
93333-B0

Mr. George Muehleck
Woodward-Clyde Consultant
500 12th Street, Suite 100
Oakland, CA 94607-4014

Subject: Groundwater Monitoring Event at the City of Oakland, Municipal Service Center, 7101 Edgewater Drive - November 1995

Dear Mr. Muehleck:

This letter documents the groundwater monitoring activities performed by BASELINE at the Municipal Service Center (MSC) in November 1995 (Figure 1). All field work was performed by a BASELINE geologist. Sampling procedures and analytical results are summarized below.

GROUNDWATER SAMPLING AND ANALYSES

Groundwater Sampling

Groundwater samples were collected from groundwater monitoring wells MW-1, MW-2, MW-5, MW-6, and MW-7 (Figure 2) on 20 November 1995. Sample bottles were provided by the analytical laboratory. Groundwater sampling forms are provided in Attachment A. Sampling procedures were performed as follows:

- Monitored vapor in well casing using an HNu instrument upon opening well cap.
- Measured product/water level and total depth of well from top of casing using dual-interface probe; decontaminated probe by washing in TSP solution and rinsing with DI water.
- Purged monitoring well using double diaphragm pump and new disposable hose; the purge water was discharged into a 55-gallon drum.
- Measured temperature, pH, and conductivity of the purged water.
- Purged a minimum of 3.5 well volumes until parameters had stabilized.
- Collected groundwater samples using new disposable PVC bailers after the water level had recovered to at least 97 percent of original level.
- Filled sample bottles for volatile organic analyses using volatile organic compound attachments to minimize turbulence and to prevent air bubbles; filled other sample bottles directly from bottom of bailer.
- Collected duplicate sample from MW-6 (labeled sample MW-6A).
- Submitted trip blank with samples (labeled MW-500).

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Emeryville Petaluma San Francisco

- Stored labeled sample bottles in plastic cooler with blue ice; samples were picked up by Chromalab laboratory using chain-of-custody procedures.
- Labeled and secured 55-gallon drums containing purge and decontamination water.

Petroleum odor was identified during purging of MW-1, MW-5, and MW-6. Sulfur odor was identified in MW-2.

Analytical Results

The analyses performed on each sample is summarized in Table 1. The samples were analyzed by Chromalab, Inc., a State-certified laboratory located in Pleasanton. Analytical results for groundwater monitoring events performed in April, July, and November 1995 are summarized in Tables 2 and 3. The laboratory report for this groundwater monitoring event is provided in Attachment B.

MONITORING WELL SURVEY AND GROUNDWATER LEVEL MEASUREMENTS

On 20 November 1995, well locations, cap elevations, and top of casing elevations for monitoring wells MW-3 and MW-4 were surveyed by Bates and Bailey (Figure 2). The elevations were based on the City of Oakland Datum and a copy of the survey map was submitted to your office on 28 November 1995.

A groundwater level survey was conducted on 21 December 1995 to evaluate possible tidal influence on groundwater flow direction and gradient. The survey included collecting two sets of water level measurements on monitoring wells MW-1 through MW-7; one set of water level measurements was collected at the highest high tide and the second at the lowest low tide. The National Oceanic and Air Administration projected the highest high and lowest low tides for the remainder of 1995 and throughout 1996 to occur on 21 December 1995. Accordingly, that day was selected for assessing tidal influence on shallow groundwater. The site groundwater elevation data are shown in Table 4 and groundwater elevation contour maps for the high and low tide are shown on Figures 3 and 4, respectively.

The groundwater elevation contour maps were prepared with the assumption of a hydraulic connection between all the monitoring wells. The groundwater flow gradient throughout the site was 0.01 foot/foot. At the northern portion of the site (MW-1 through MW-4), the calculated groundwater flow direction was toward the northwest at approximately N40W during low tide and N38W during high tide. At the southern portion of the site (MW-5 through MW-7), the calculated groundwater flow direction was toward the southwest at approximately S49W during low tide and S41W during high tide.

Review of the groundwater elevation data indicate that the groundwater levels observed in the monitoring wells are not significantly influenced by tidal fluctuations. Significant water elevation differences were observed in monitoring wells located on either side of the dike that extends along the western portion of the site. Elevation differences of about 0.7 foot between monitoring wells MW-1 (west of dike) and MW-2 (east of dike), and about 1.5 feet between monitoring wells MW-6 (west of dike) and MW-5 (east of dike) and MW-7 (east of dike) were observed.

Please contact us at your convenience if you have any questions regarding these groundwater monitoring activities or need additional information.

Sincerely,

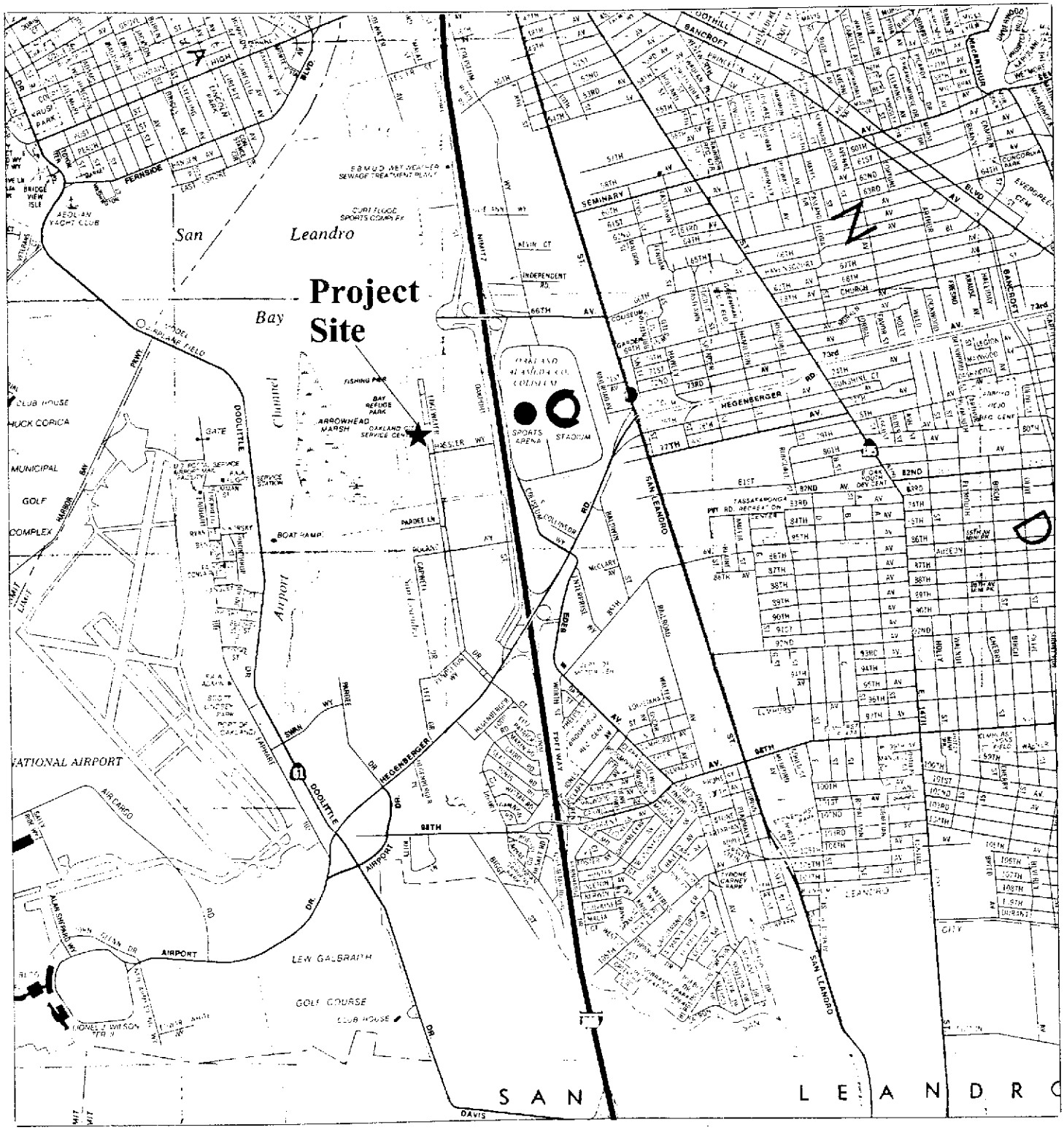
Rhodora Del Rosario
Civil Engineer

Yane Nordhav
Principal
Reg. Geologist No. 4009

RPD:YN:cr
Attachments

REGIONAL LOCATION

Figure 1



City of Oakland
Municipal Service Center
Oakland, California

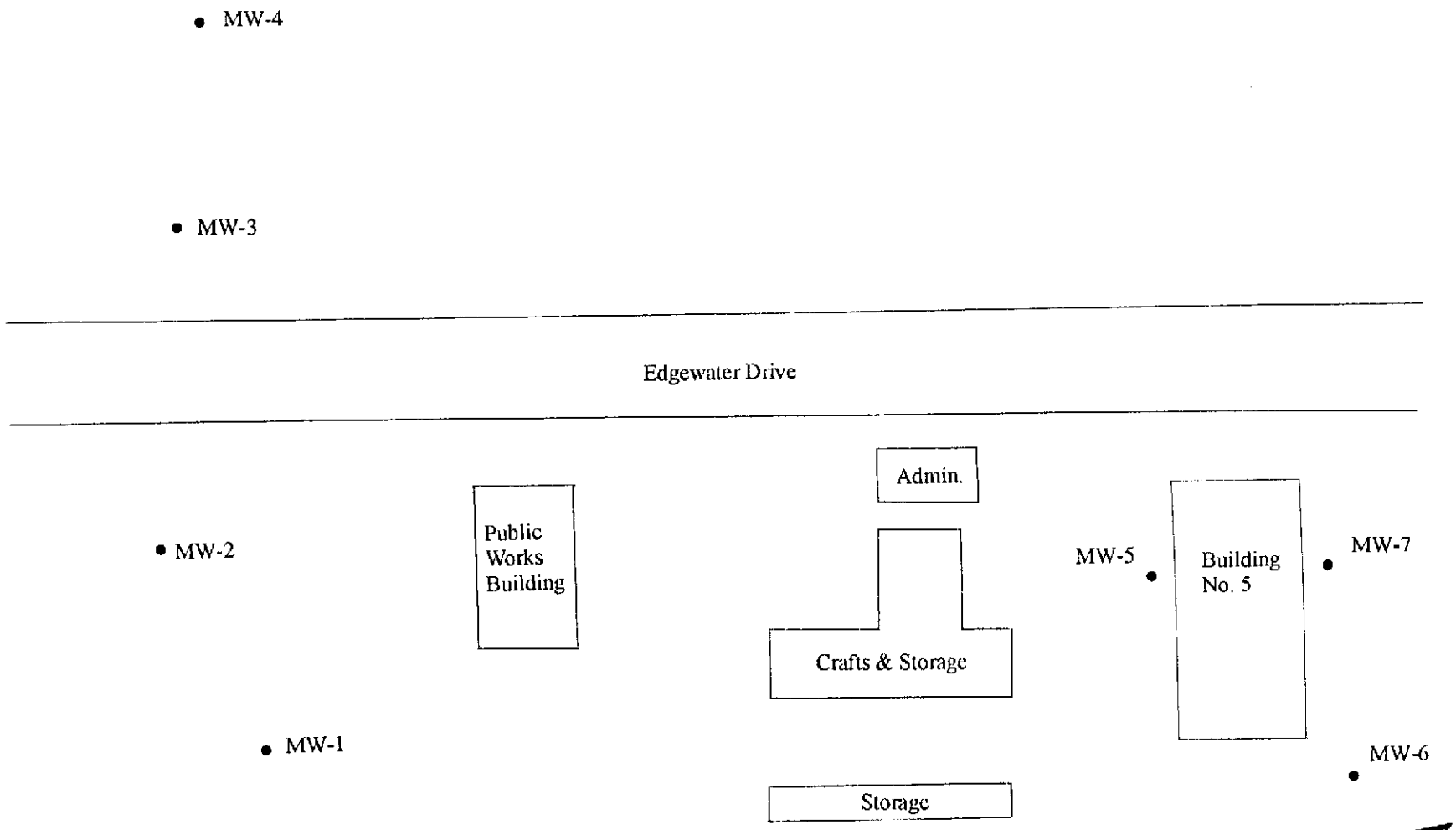
0 3000 Feet

BASELINE

93333-BO 6/2/95

SITE LAYOUT

Figure 2



City of Oakland
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Oakland, California

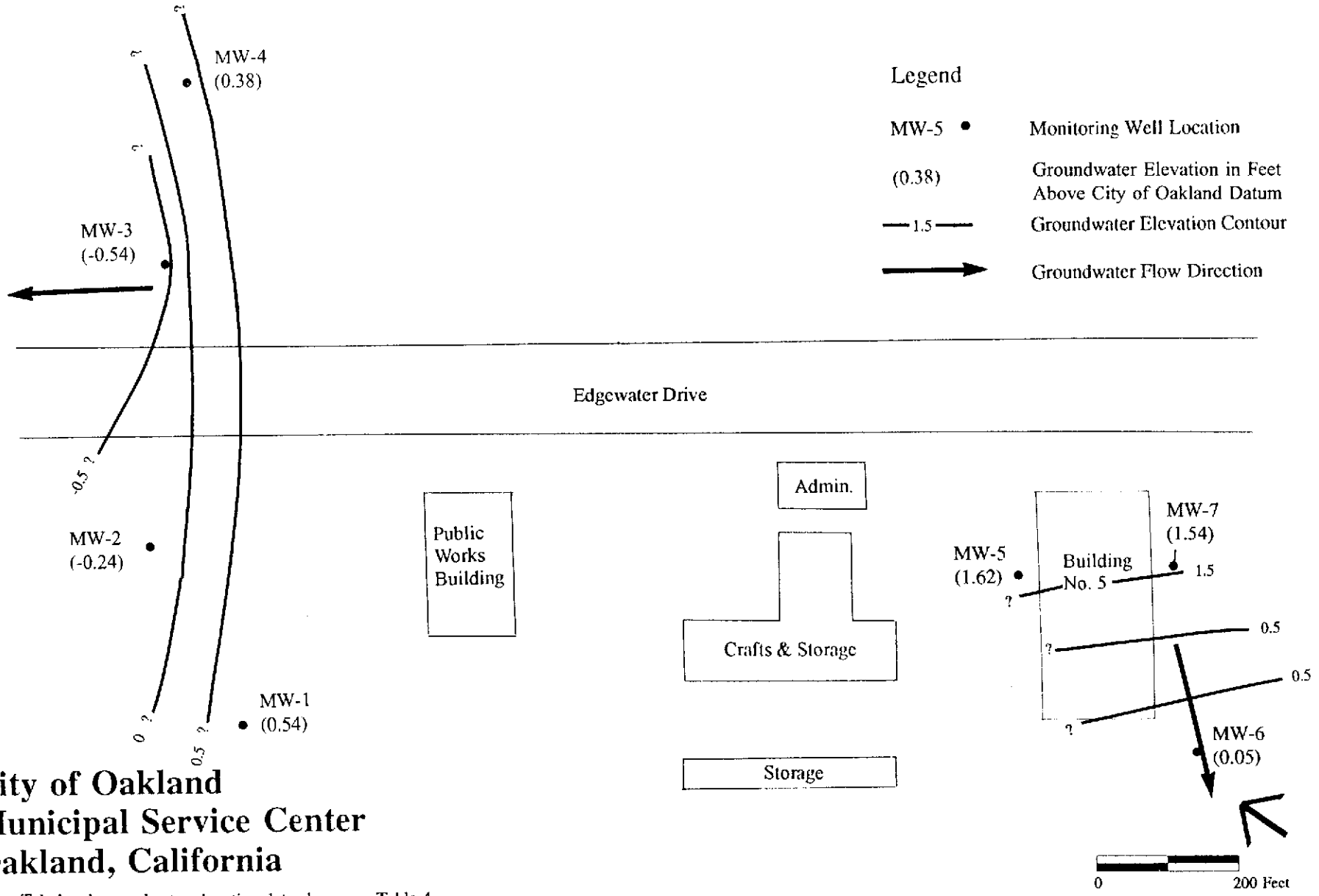
Source: City of Oakland, MSC Parking, 6/27/74; Bates & Bailey Survey Maps, 7/14/95 and 11/21/95.

BASELINE

93333-BO 11/30/95

GROUNDWATER ELEVATIONS DURING HIGH TIDE - DECEMBER 1995

Figure 3



City of Oakland
Municipal Service Center
Oakland, California

Note: Tabulated groundwater elevation data shown on Table 4.
Source: City of Oakland, MSC Parking, 6/27/74; Bates & Bailey Survey Maps, 7/14/95 and 11/21/95.

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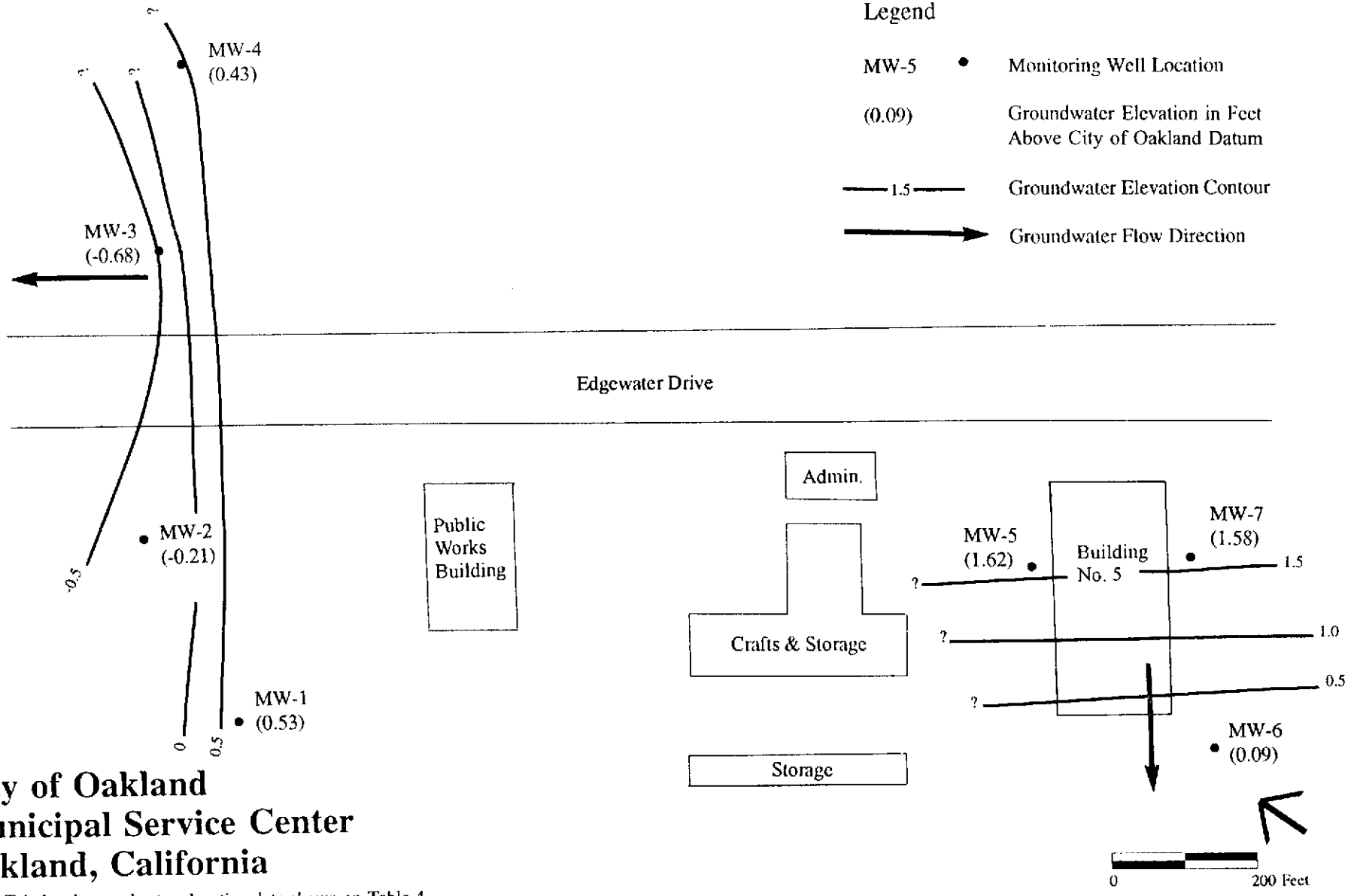
93333-B0 12/28/95

GROUNDWATER ELEVATIONS DURING LOW TIDE - DECEMBER 1995

Figure 4



City of Oakland
Municipal Service Center
Oakland, California

Note: Tabulated groundwater elevation data shown on Table 4.
Source: City of Oakland, MSC Parking, 6/27/74; Bates & Bailey Survey Maps, 7/14/95 and 11/21/95.

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TABLE 1

LABORATORY ANALYSES PERFORMED ON GROUNDWATER SAMPLES

Oakland Municipal Service Center

November 1995

Location	TOTAL PETROLEUM HYDROCARBONS				BTEX[1] (8020)	METALS[2]				
	Gasoline (5030/8015)	Diesel (3510/8015)	Kerosene (3510/8015)	Motor Oil (3510/8015)		Cadmium (6010)	Chromium (6010)	Lead (6010)	Nickel (6010)	Zinc (6010)
MW-1	✓	--	--	--	✓	--	--	✓	--	--
MW-2	✓	--	--	--	✓	--	--	✓	--	--
MW-5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW-6	✓	✓	--	--	✓	✓	✓	✓	✓	✓
MW-6A[3]	✓	✓	--	--	✓	✓	✓	✓	✓	✓
MW-7	✓	✓	--	--	✓	✓	✓	✓	✓	✓
Trip Blank[4]	✓	--	--	--	✓	--	--	--	--	--

Notes: -- = Not analyzed.
Number shown in parenthesis indicates the EPA method used for analysis.

1 BTEX = Benzene, toluene, ethylbenzene, and xylenes.
2 All samples for metals analyses were filtered in the laboratory.
3 Duplicate sample of MW-6.
4 Labeled MW-500 on chain-of-custody form.

TABLE 2
METAL CONCENTRATIONS, GROUNDWATER
Oakland Municipal Service Center
(mg/L)

Sample	Date	Cadmium	Chromium	Lead	Nickel	Zinc
MW-1	4/19/95	--	--	<0.01	--	--
	7/27/95	--	--	<0.01	--	--
	11/20/95	--	--	<0.01	--	--
MW-2	4/19/95	--	--	**0.10**	--	--
	7/27/95	--	--	**0.07**	--	--
	11/20/95	--	--	<0.01	--	--
MW-5	4/19/95	<0.005	<0.01	<0.01	<0.01	**0.02**
	7/27/95	<0.005	<0.01	<0.01	<0.01	<0.01
	11/20/95	<0.005	<0.01	<0.01	<0.01	<0.01
MW-6	4/19/95	--	--	**0.41**	--	--
	7/27/95	--	--	<0.01	--	--
	11/20/95	<0.005	<0.01	<0.01	**0.01**	**0.01**
MW-6A	4/19/95	--	--	**0.39**	--	--
	7/27/95	--	--	<0.01	--	--
	11/20/95	<0.005	<0.01	<0.01	**0.02**	<0.01
MW-7	4/19/95	**0.069**	**0.071**	<0.01	**0.08**	**0.04**
	7/27/95	<0.005	<0.01	<0.01	**0.08**	**0.11**
	11/20/95	<0.005	<0.01	<0.01	**0.14**	**0.02**

Notes: Groundwater samples were filtered by the laboratory prior to analysis.
Analyzed by EPA method 6010.
<x.x = Metal not identified at or above the laboratory reporting limit of x.x.
x.x = Concentrations detected above laboratory reporting limit.
Laboratory report is provided in Attachment B for the most recent sampling event.
Sampling locations are shown on Figure 2.
-- = No analyses performed.
6A = Duplicate sample of MW-6.

TABLE 3
PETROLEUM AND ORGANIC COMPOUND CONCENTRATIONS, GROUNDWATER
Oakland Municipal Service Center
(mg/L)

Sample	Date	TPH as Gasoline[1]	TPH as Kerosene[2]	TPH as Diesel[2]	TPH as Motor Oil[2]	TRPH[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Xylenes[4]
MW-1	4/19/95	3.2	--	--	--	--	0.88	0.015	0.023	0.021
	7/27/95	0.98	--	--	--	--	0.13	0.0036	0.0014	0.0056
	11/20/95	0.40	--	--	--	--	0.099	0.0028	0.0011	0.0046
MW-2	4/19/95	<0.05	--	--	--	--	0.0018	<0.0005	<0.0005	<0.0005
	7/27/95	<0.05	--	--	--	--	0.0023	<0.0005	<0.0005	<0.0005
	11/20/95	<0.05	--	--	--	--	0.0022	<0.0005	<0.0005	<0.0005
MW-5	4/19/95	14	--	0.88[5]	--	4.7	0.49	0.051	0.61	1.2
	7/27/95	22	--	0.05[6]	--	5.0	1.3[7]	0.054[7]	1.5[7]	2.4[7]
	11/20/95	8.9	<0.05[8]	<0.05	<0.5	--	0.43	0.031	0.61	0.88
MW-6	4/19/95	5.7	--	6.7[5]	--	--	0.04	<0.0008	0.0039	0.029
	7/27/95	6.1	--	3.9	--	--	0.43	0.015	0.2	0.6
	11/20/95[9]	6.8	--	0.85	--	--	0.16	0.0046	0.008	0.24
MW-6A	4/19/95	3.0	--	3.7[5]	--	--	0.31	0.0031	0.0027	0.1
	7/27/95	6.3	--	2.6	--	--	0.42	0.015	0.2	0.6
	11/20/95[9]	3.6	--	0.83	--	--	0.13	0.011	0.0044	0.2
MW-7	4/19/95	<0.05	--	<0.05	--	<1.0	<0.002	<0.002	<0.002	<0.002
	7/27/95	<0.05	--	<0.05	--	<1.0	<0.002[10]	<0.002[10]	<0.002[10]	<0.002[10]
	11/20/95	<0.05	--	<0.05	--	--	<0.0005	<0.0005	<0.0005	0.0015
MW-500	4/19/95	<0.05	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005
	7/27/95	<0.05	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005
	11/20/95	<0.05	--	--	--	--	<0.0005	<0.0005	0.0005	<0.0005

Notes: TPH = Total Petroleum Hydrocarbons.
TRPH = Total Recoverable Petroleum Hydrocarbons.
-- = Compound not analyzed.
<x.x = Compound not identified at or above the laboratory reporting limit of x.x
x.x = Concentrations detected at or above laboratory reporting limit.
Laboratory report is provided in Attachment B for the most recent sampling event.
Sampling locations are shown on Figure 2.
MW-500 = Trip blank sample.

1 Analyzed by EPA Method 5030/8015M.
2 Analyzed by EPA Method 3510/8015M.
3 Analyzed by EPA Method 418.1.
4 Analyzed by EPA Method 8020.
5 Laboratory report indicated sample chromatogram did not resemble chromatogram of any of the petroleum standards. Quantification listed in the table was based on the laboratory's diesel standard.
6 Unknown hydrocarbon in the diesel range was identified by the laboratory at a concentration of 0.59 mg/L.
7 This sample was also analyzed for volatile organic compounds using EPA Method 8240. Only BTEX was identified above the reporting limits.
8 Unknown hydrocarbon in the kerosene range was identified by the laboratory at a concentration of 1.9 mg/L.
9 Unknown hydrocarbon in the kerosene range was identified by the laboratory.
10 This sample was analyzed for volatile organic compounds using EPA Method 8240. No compounds were identified above the laboratory reporting limits.

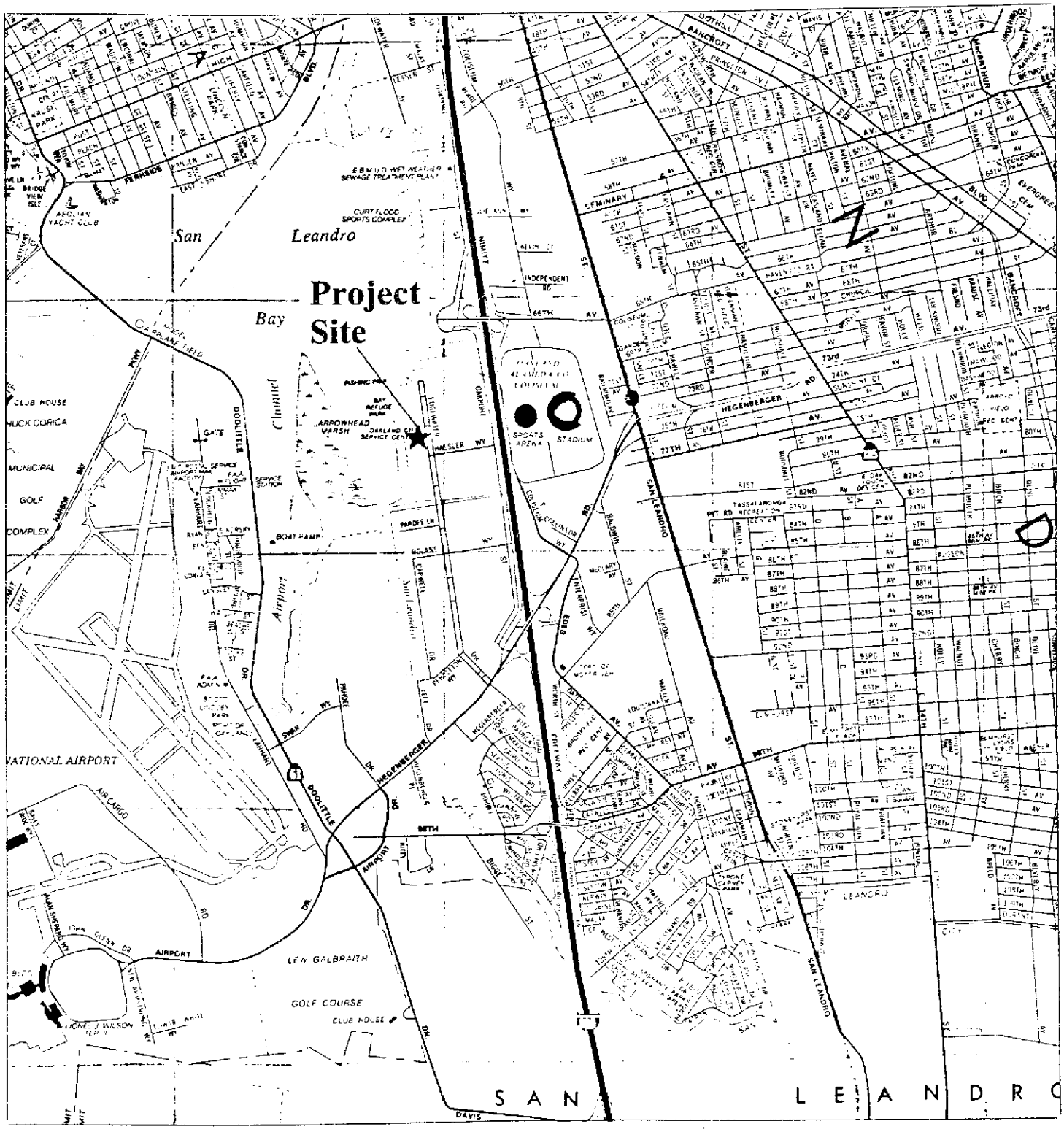
TABLE 4
GROUNDWATER ELEVATIONS
Oakland Municipal Service Center
December 1995

Location	Time	Tide	Depth to Water (feet bgs)	Top of Casing Elevation (feet above COD)	Water Surface Elevation (feet above COD)
MW-1	10:25	High	6.29	6.83	0.54
	17:21	Low	6.30		0.53
MW-2	10:50	High	7.51	7.27	-0.24
	17:20	Low	7.48		-0.21
MW-3	10:40	High	4.48	3.94	-0.54
	17:38	Low	4.62		-0.68
MW-4	10:32	High	4.26	4.64	0.38
	17:32	Low	4.21		0.43
MW-5	10:35	High	6.53	8.15	1.62
	17:26	Low	6.53		1.62
MW-6	10:40	High	7.88	7.93	0.05
	17:36	Low	7.84		0.09
MW-7	10:50	High	6.94	8.48	1.54
	17:33	Low	6.90		1.58

Notes: bgs = below ground surface
COD = City of Oakland Datum.
Water levels were surveyed on 21 December 1995.
Monitoring wells were surveyed by Bates & Bailey.

REGIONAL LOCATION

Figure 1



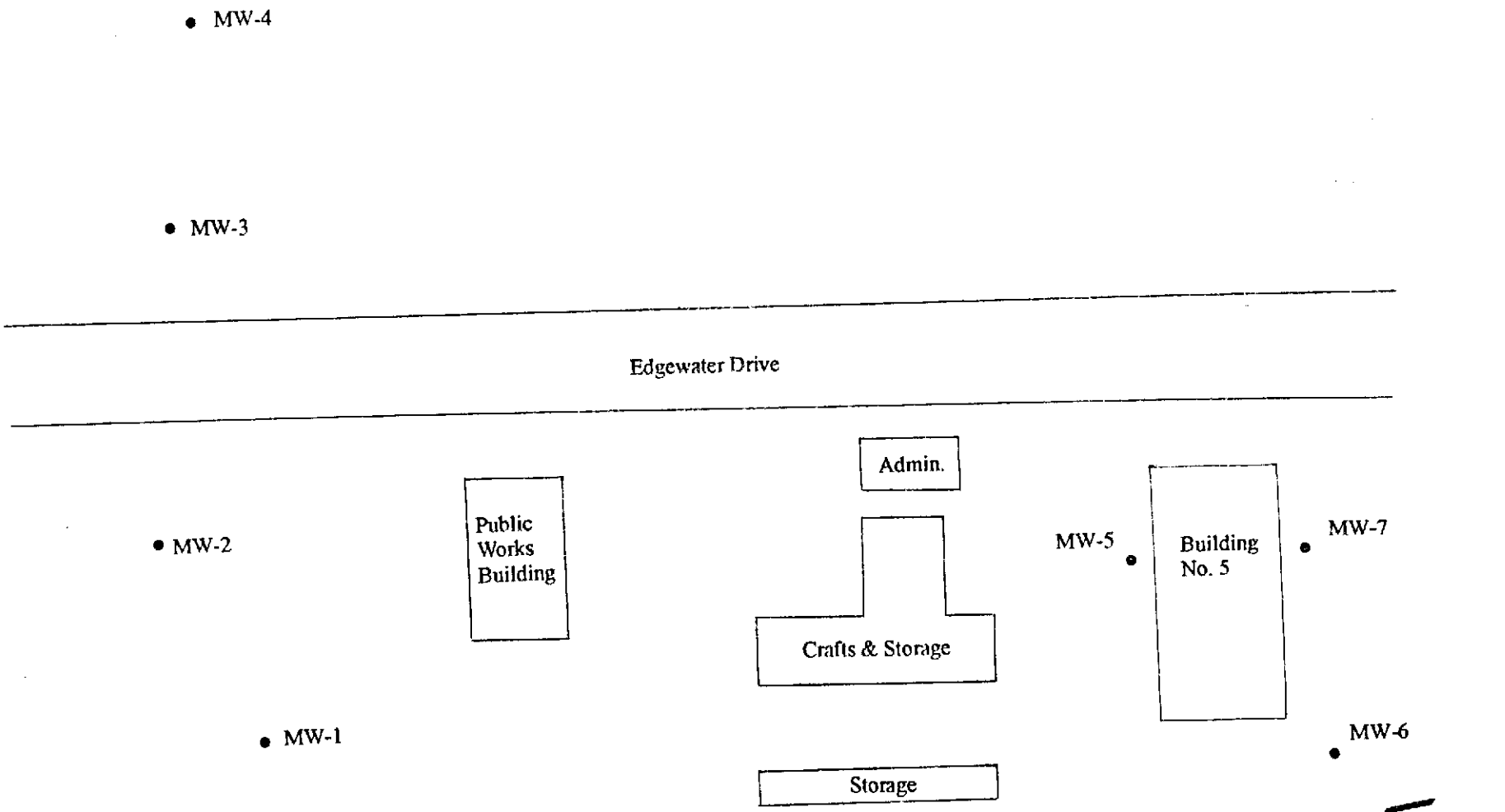
City of Oakland
Municipal Service Center
Oakland, California

BASELINE

93333-BO 6/2/95

SITE LAYOUT

Figure 2



City of Oakland
Municipal Service Center
Oakland, California

Source: City of Oakland, MSC Parking, 6/27/74; Bates & Bailey Survey Maps, 7/14/95 and 11/21/95.

93333-BO 11/30/95

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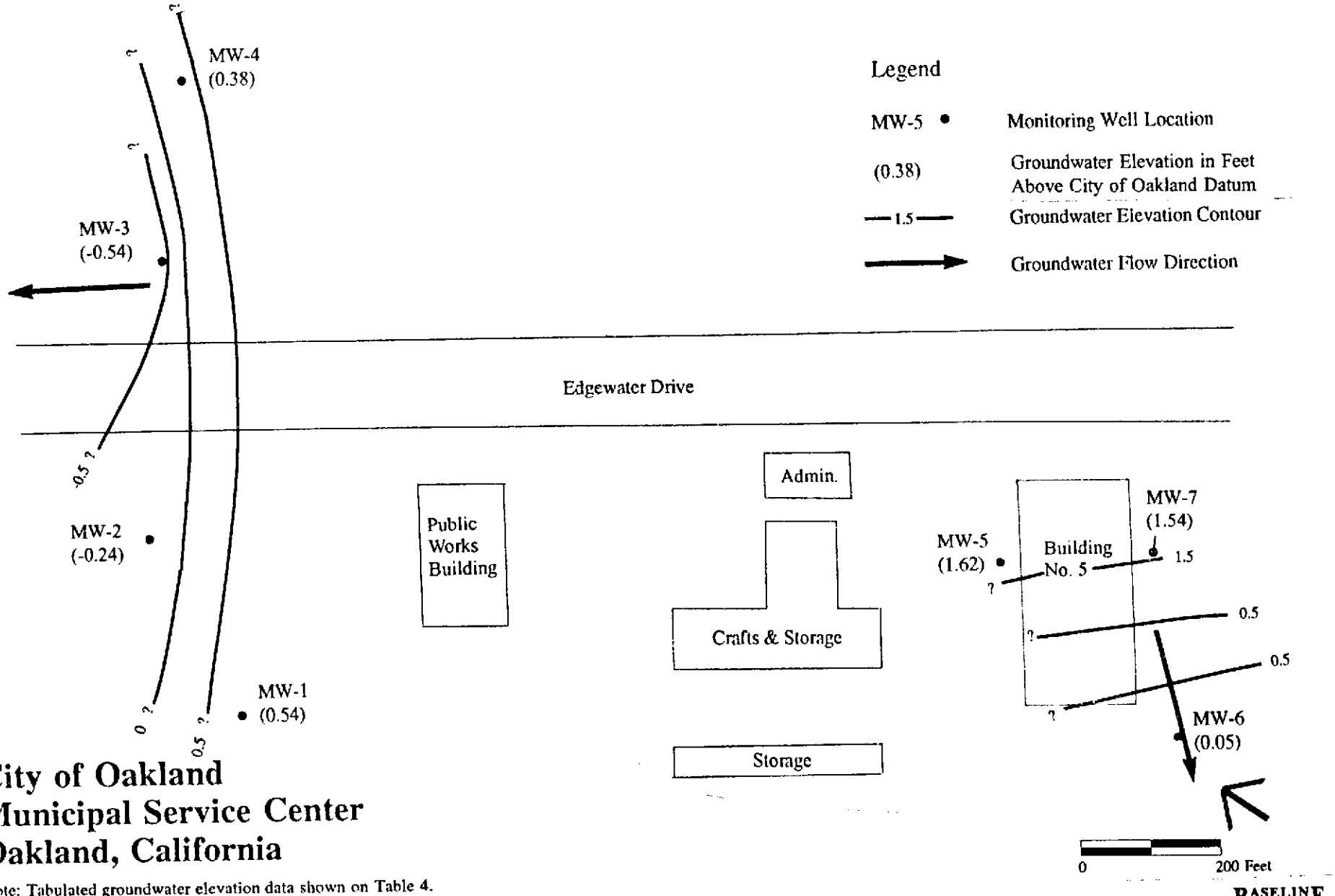
GROUNDWATER ELEVATIONS DURING HIGH TIDE - DECEMBER 1995

Figure 3



City of Oakland
Municipal Service Center
Oakland, California

Note: Tabulated groundwater elevation data shown on Table 4.
Source: City of Oakland, MSC Parking, 6/27/74; Bates & Bailey Survey Maps, 7/14/95 and 11/21/95.

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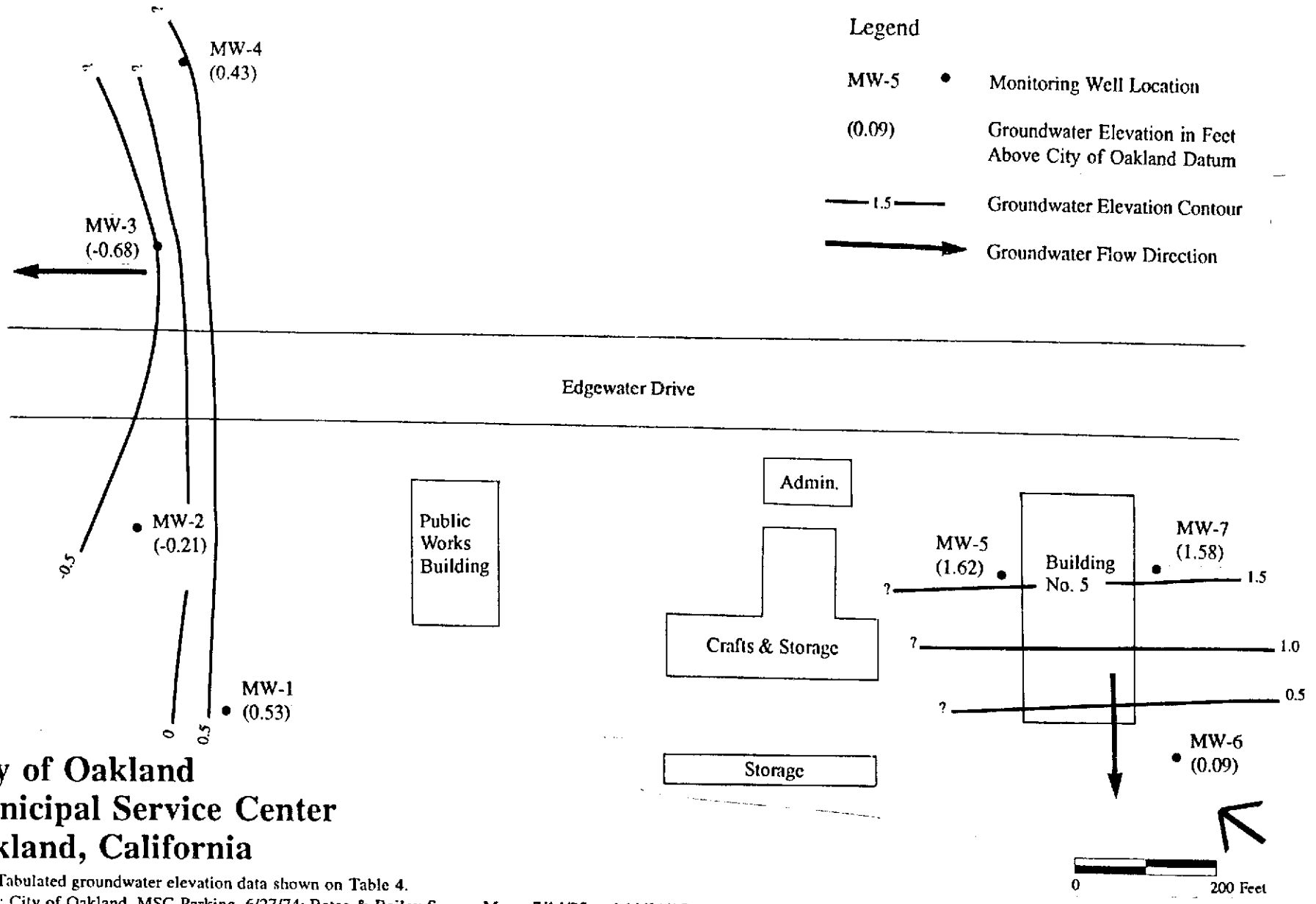
93333-B0 12/28/95

GROUNDWATER ELEVATIONS DURING LOW TIDE - DECEMBER 1995

Figure 4



City of Oakland
Municipal Service Center
Oakland, California

Note: Tabulated groundwater elevation data shown on Table 4.
Source: City of Oakland, MSC Parking, 6/27/74; Bates & Bailey Survey Maps, 7/14/95 and 11/21/95.

93333-BO 12/29/95

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ATTACHMENT A

GROUNDWATER SAMPLING FORMS

GROUNDWATER SAMPLING

Project No: 93333-80
Project Name: WNC-MSC
Location: 7101 Edgewater Oakland, CA
Recorded by: WKS
Weather Conditions: Sunny
Precip. in last 5 days (inch): 0

Well No.: MW-1 Date: 11/20/95
Depth of Well from TOC (feet): 15.8
Well Diameter (inch): 2
Screened Interval (feet): 6-15.8
TOC Elevation (feet): 6.83
Water Level from TOC (feet): 6.08 Time: 8:19
Product Level from TOC (feet): — Time: —
Water Level Measurement: Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(15.8 ft) – (6.08 ft)] x (0.083 ft)² x 3.14 x 7.48 =
(Well Depth – Water Level, Well radius)

1.6 gallons on one well volume.
7.86 gallons in 5 well volumes.
8.5 total gallons removed.

CALIBRATION:

	Time	Temp (°C)	pH	EC (µmhos/cm)
Calibration Standard:	8:20	18.5	7.00/10.01	10,000
Before Purging:	8:21	18.5	7.00/10.01	7,000
After Purging:	11:05	18.4	6.69/9.90	7,000

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	EC	Cumulative Gallons Removed	Appearance
9:00					
9:05	21.6	7.01	11,000	1.0	Slightly turbid w/ slight petroleum odor
9:10	21.7	7.05	11,000	3.0	clear / petroleum odor
9:15	22.1	6.95	11,000	4.5	" / petroleum odor
9:21	21.9	7.02	11,000	6.0	" / " "
9:25	21.9	6.98	14,000	8.5	very slightly turbid w/ petroleum odor

Pump rate = 0.34 gpm
Hnu = 0 ppm in wellhead

Water Level After Purging Prior to Sampling (feet): 6.25 Time: 12:27
Appearance of Sample: Slightly turbid Time: 12:28
Duplicate/Blank No.: → Time:
Purge Method: Double diaphragm pump w/ new disposable hose
Sampling Equipment: Disposable PVC bailer VOC Attachment: Used for VOAs
Sample Containers: 3 VOAs; 2-500 ml plastic bottles
Sample Analyses: TPH gasoline, BTEX, lead Laboratory: Chromalab
Decontamination Method: TSP and water, DI water rinse Rinsate Disposal: Drum MW-1

(3/18/91)

GROUNDWATER SAMPLING

Project No: 93333 - B0
Project Name: WNC - MSC
Location: 7101 Edgewater Oakland CA
Recorded by: WKS
Weather Conditions: Sunny
Precip. in last 5 days (inch): 0

Well No.: MW-2 Date: 11/20/95
Depth of Well from TOC (feet): 15.7
Well Diameter (inch): 2
Screened Interval (feet): 6 - 15.7
TOC Eleveation (feet): 7.27 (Oakland datum)
Water Level from TOC (feet): 7.49 Time: 8:05
Product Level from TOC (feet): — Time: —
Water Level Measurement: Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(15.7 ft) – (7.49 ft)] x (0.083 ft)² x 3.14 x 7.48 =
(Well Depth – Water Level, Well radius)

1.33 gallons on one well volume.
6.64 gallons in 5 well volumes.
9.0 total gallons removed.

CALIBRATION:

	Time	Temp (°C)	pH	EC
Calibration Standard:				
Before Purging:				
After Purging:				

See MW-1

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	EC	Cumulative Gallons Removed	Appearance
8:18					
8:24	19.7	6.38	19,000	2.0	Very slightly turbid / sulphur odor
8:29	19.9	6.45	20,000	5.0	clear / sulphur odor
8:35	21.0	6.52	21,000	7.0	" / "
8:39	20.6	6.52	21,000	8.0	" / "
8:42	21.0	6.54	21,000	9.0	" / "

Pump rate = 0.38 gpm
Water Level After Purging Prior to Sampling (feet): 7.75
Appearance of Sample: Slightly turbid
Duplicate/Blank No.: NA
Purge Method: Double diaphragm pump w/ new disposable hose
Sampling Equipment: Disposable PVC bailer VOC Attachment: Used for VOAs
Sample Containers: 3 VOAs, 1-500ml plastic bottle
Sample Analyses: TPH gasoline, BTEX, Pb Laboratory: Chromalab
Decontamination Method: TSP and water, DI water rinse Rinsate Disposal: MW-2 Drum

Hnu = 0ppm in well head
Time: 12:14
Time: 12:15
Time: —

(3/18/91)

GROUNDWATER SAMPLING

Project No: 93333 - B0
Project Name: WWC - MSC
Location: 7101 Edgewater Oakland
Recorded by: WKS
Weather Conditions: Sunny, warm
Precip. in last 5 days (inch): ∅

Well No.: MW-5 Date: 7/20/95
Depth of Well from TOC (feet): 14.30
Well Diameter (inch): 2
Screened Interval (feet): 4-14.3
TOC Eleveation (feet): 8.15 (City of Oakland)
Water Level from TOC (feet): 6.98 Time: 9:05
Product Level from TOC (feet): — Time: —
Water Level Measurement: Dual Interface Probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(14.30 ft) – (6.98 ft)] x (0.083 ft)² x 3.14 x 7.48 =
(Well Depth – Water Level; Well radius)

1.18 gallons on one well volume.
5.92 gallons in 5 well volumes.
6.5 total gallons removed.

CALIBRATION:

	Time	Temp (°C)	pH	EC
Calibration Standard:				
Before Purging:	SEE MW-1			
After Purging:				

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	EC	Cumulative Gallons Removed	Appearance
9:45	Start pumping				
9:48	21.3	6.34	33,000	1.0	Clear / Strong Petroleum Oder
9:56	20.7	6.46	10,000	4.0	" / " " "
9:59	21.4	6.45	10,000	5.0	" / " " "
10:03	21.3	6.43	10,000	6.5	" / " " "

Pump rate: 0.33 gallons/minute

Water Level After Purging Prior to Sampling (feet): 6.97
Appearance of Sample: Clear
Duplicate/Blank No.: —
Purge Method: Double diaghragm pump
Sampling Equipment: Disposable PVC bailer VOC Attachment: Used for VOAs
Sample Containers: 3 VOAs, 2-500ml plastic bottles, 1-1liter amberglass jar
Sample Analyses: TPHgas, diesel, motor oil, BTEX; Pb, Cr, Cu, Ni, Zn Laboratory: Chromalab
Decontamination Method: TSP and water, DI water rinse Rinsate Disposal: Drum MW-5

Hnu = 25 ppm in wellhead
Time: 12:40 pm
Time: 12:45 pm
Time: —

(3/18/91)

GROUNDWATER SAMPLING

Project No: 93333-80
Project Name: WNE Oakland M&C
Location: 7101 Edgewater
Oakland, CA
Recorded by: WKS
Weather Conditions: Sunny, warm
Precip. in last 5 days (inch): 0

Well No.: MW-6 Date: 11/20/95
Depth of Well from TOC (feet): 14.27
Well Diameter (inch): 2
Screened Interval (feet): 4-14.27
TOC Eleveation (feet): 7.93 (City of Oakland)
Water Level from TOC (feet): 7.89 Time: 9:12 am
Product Level from TOC (feet): None Time: —
Water Level Measurement: Dual Interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(14.27 ft) − (7.89 ft)] x (0.083 ft)² x 3.14 x 7.48 =
(Well Depth − Water Level) x (Well radius)² x 3.14 x 7.48

1.03 gallons on one well volume.
5.16 gallons in 5 well volumes.
6.0 total gallons removed.

CALIBRATION:

	Time	Temp (°C)	pH	EC
Calibration Standard:				
Before Purging:	See MW-1			
After Purging:				

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	EC (µmhos)	Cumulative Gallons Removed	Appearance
10:08					
10:10	19.5	7.47	4,600	1	Sheen on purge water
10:13	20.7	7.49	4,500	2.5	clear | slight petroleum odor
10:16	20.8	7.72	4,500	4.0	" "
10:19	19.8	7.45	4,400	6.0	" "
					"

Pump rate: 0.55 gpm
HNU reading = 15 ppm in wellhead
Water Level After Purging Prior to Sampling (feet): 7.92 Time: 13:07
Appearance of Sample: Slightly turbid Time: 13:10
Duplicate/Blank No.: ~~Duplicate~~ MW-6a Time: 13:12
Purge Method: Double diaphragm pump w/ new disposable hose
Sampling Equipment: Disposable PVC bailer VOC Attachment: Used for VOAs
Sample Containers: 3 VOAs, 1-liter plastic bottle; 1-1/2 liter amber glass jar
Sample Analyses: TPH g BTEX, TPH diesel, Metals (Cd, Cr, Ni, Zn, Pb) Laboratory: Chromalab
Decontamination Method: TSP and water, DI water rinse Rinsate Disposal: Drum MW-6

(3/18/91)

GROUNDWATER SAMPLING

Project No: 93333 - B0
Project Name: WNC - Oakland MSC
Location: 7101 Edgewater Oakland CA
Recorded by: WKS
Weather Conditions: Cunny warm
Precip. in last 5 days (inch): 0

Well No.: MW-7 Date: ~~March~~ 11/20/95
Depth of Well from TOC (feet): 14.3 (measured)
Well Diameter (inch): 2
Screened Interval (feet): 4 - 14.3
TOC Eleveation (feet): 8.48 (City of Oakland D)
Water Level from TOC (feet): 7.49 Time: 8:50
Product Level from TOC (feet): None Time: —
Water Level Measurement: Dual ~~face~~ Interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(14.3 ft) Well Depth − (7.49 ft) Water Level)] x (0.083 ft)² Well radius x 3.14 x 7.48 =

1.10 gallons on one well volume.
5.51 gallons in 5 well volumes.
5.5 total gallons removed.

CALIBRATION:

	Time	Temp (°C)	pH	EC
Calibration Standard:				
Before Purging:		See MW-1		
After Purging:				

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	EC	Cumulative Gallons Removed	Appearance
10 49					
10:46	21.1	6.09	21,000	0.5	clear
10:49	21.6	6.41	11,000	1.5	clear
10:53	21.5	6.40	11,000	3.0	clear
10:56	21.2	6.29	11,000	4.5	clear
11:02	21.3	6.25	11,000	5.5	clear

HNu = 0 ppm Purge Pump rate = 0.31 gpm
Water Level After Purging Prior to Sampling (feet): 7.50 Time: 13:20
Appearance of Sample: CLEAR Time: 13:28
Duplicate/Blank No.: — Time: —
Purge Method: Double diaphragm pump
Sampling Equipment: Disposable PVC bailer VOC Attachment: used for VOAS
Sample Containers: 3 VOAS, 1-1ltr plastic bottles, 1-1ltr amber glass jar
Sample Analyses: TPHgasoline, diesel, BTEX, Pb, Cu, Cr, Zn, Ni Laboratory: Chromalab
Decontamination Method: TSP and water, DI water rinse Rinsate Disposal: Drum MW-7

(3/18/91)

ATTACHMENT B

LABORATORY REPORTS

CHROMALAB, INC.

Environmental Services (SDB)

November 29, 1995

Submission #: 9511307

BASELINE ENVIRONMENTAL/EMRYVL
5900 Hollis St., Suite D
Emeryville, CA 94608

Attn: Rhodora Del Rosario

RE: Analysis for project 7101 Edgewater/G.Muehleck, number 93333-BO/92C04

REPORTING INFORMATION

Samples were received cold and in good condition on November 20, 1995. They were refrigerated upon receipt and analyzed as described in the attached report. ChromaLab followed EPA or equivalent methods for all testing reported.

No discrepancies were observed or difficulties encountered with the testing.

Unknown hydrocarbon in the kerosene range was found in sample MW-6.

Unknown hydrocarbon in the kerosene range was found in sample MW-6A.

Kayvan Kimyai
Chemist

Alex Tam
Semivolatiles Supervisor

CHROMALAB, INC.

Environmental Services (SDB)

November 21, 1995 *Submission #:* 9511307

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Rhodora Del Rosario

Project: 7101 Edgewater/G.Muehleck *Project#:* 93333-BO/92C0414A
Received: November 20, 1995

re: 2 samples for Lead analysis.
Method: EPA 3010A M/6010

Sampled: November 20, 1995 *Matrix:* WATER *Extracted:* November 21, 1995
Run: 9479-C *Analyzed:* November 21, 1995

Spl #	Sample ID	LEAD (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE RESULT (%)
111292	MW-1	N.D.	0.01	N.D.	104
111293	MW-2	N.D.	0.01	N.D.	104

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

November 27, 1995 *Submission #:* 9511307

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Rhodora Del Rosario

Project: 7101 Edgewater/G.Muehleck *Project#:* 93333-BO/92C0414A
Received: November 20, 1995

re: One sample for Soluble Metals analysis.
Method: EPA 3005A M/6010

SampleID: **MW-5**
Sample #: 111297 *Matrix:* WATER *Extracted:* November 21, 1995
Sampled: November 20, 1995 *Run:* 9489-C *Analyzed:* November 22, 1995

Analyte	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE RESULT (%)
CADMIUM	N.D.	0.005	N.D.	111
CHROMIUM	N.D.	0.01	N.D.	110
LEAD	N.D.	0.01	N.D.	109
NICKEL	N.D.	0.01	N.D.	111
ZINC	N.D.	0.01	N.D.	115

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

CHROMALAB, INC.

Environmental Services (SDB)

November 27, 1995 *Submission #:* 9511307

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Rhodora Del Rosario

Project: 7101 Edgewater/G.Muehleck *Project#:* 93333-BO/92C0414A
Received: November 20, 1995

re: One sample for Soluble Metals analysis.
Method: EPA 3005A M/6010

SampleID: **MW-6**
Sample #: 111294 *Matrix:* WATER *Extracted:* November 21, 1995
Sampled: November 20, 1995 *Run:* 9489-C *Analyzed:* November 22, 1995

Analyte	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE RESULT (%)
CADMIUM	N.D.	0.005	N.D.	111
CHROMIUM	N.D.	0.01	N.D.	110
LEAD	N.D.	0.01	N.D.	109
NICKEL	0.01	0.01	N.D.	111
ZINC	0.01	0.01	N.D.	115

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

CHROMALAB, INC.

Environmental Services (SDB)

November 27, 1995 *Submission #:* 9511307

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Rhodora Del Rosario

Project: 7101 Edgewater/G.Muehleck *Project#:* 93333-BO/92C0414A
Received: November 20, 1995

re: One sample for Soluble Metals analysis.
Method: EPA 3005A M/6010

SampleID: **MW-6A**
Sample #: 111296 *Matrix:* WATER *Extracted:* November 21, 1995
Sampled: November 20, 1995 *Run:* 9489-C *Analyzed:* November 22, 1995

Analyte	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE RESULT (%)
CADMIUM	N.D.	0.005	N.D.	111
CHROMIUM	N.D.	0.01	N.D.	110
LEAD	N.D.	0.01	N.D.	109
NICKEL	0.02	0.01	N.D.	111
ZINC	N.D.	0.01	N.D.	115

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

November 27, 1995 *Submission #:* 9511307

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Rhodora Del Rosario

Project: 7101 Edgewater/G.Muehleck *Project#:* 93333-BO/92C0414A
Received: November 20, 1995

re: One sample for Soluble Metals analysis.
Method: EPA 3005A M/6010

SampleID: **MW-7**
Sample #: 111295 *Matrix:* WATER *Extracted:* November 21, 1995
Sampled: November 20, 1995 *Run:* 9489-C *Analyzed:* November 22, 1995

Analyte	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE RESULT (%)
CADMIUM	N.D.	0.005	N.D.	111
CHROMIUM	N.D.	0.01	N.D.	110
LEAD	N.D.	0.01	N.D.	109
NICKEL	0.14	0.01	N.D.	111
ZINC	0.02	0.01	N.D.	115

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

November 29, 1995 *Submission #:* 9511307

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Rhodora Del Rosario
Project: 7101 Edgewater/G.Muehleck *Project#:* 93333-BO/92C0414A
Received: November 20, 1995
re: 1 sample for Total Extractable Petroleum Hydrocarbons (TEPH) analysis.
Method: EPA 3510/8015M
Sampled: November 20, 1995 *Matrix:* WATER *Extracted:* November 27, 1995
Run: 9529-K *Analyzed:* November 28, 1995

Spl #	Sample ID	Kerosene (ug/L)	Diesel (ug/L)	Motor Oil (ug/L)
111297	MW-5	N.D.	N.D.	N.D.
	For above sample:	*Unknown hydrocarbons in the Kerosene range, conc.= 1900 ug/L.*		
Reporting Limits		50	50	500
Blank Result		N.D.	N.D.	N.D.
Blank Spike Result (%)		--	96	--

Kayvan Kimyai
Chemist

Alex Tam
Semivolatiles Supervisor

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CHROMALAB, INC.

Environmental Services (SDB)

November 29, 1995 *Submission #:* 9511307

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Rhodora Del Rosario

Project: 7101 Edgewater/G.Muehleck *Project#:* 93333-BO/92C0414A
Received: November 20, 1995

re: 3 samples for Diesel analysis.
Method: EPA 3510/8015M

Sampled: November 20, 1995 *Matrix:* WATER *Extracted:* November 27, 1995
Run: 9529-K *Analyzed:* November 28, 1995

Spl #	Sample ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
111294	MW-6	850	50	N.D.	96
111295	MW-7	N.D.	50	N.D.	96
111296	MW-6A	830	50	N.D.	96

Kayvan Kimyai
Chemist

Alex Tam
Semivolatiles Supervisor

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CHROMALAB, INC.

Environmental Services (SDB)

November 29, 1995 *Submission #:* 9511307

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Rhodora Del Rosario

Project: 7101 Edgewater/G.Muehleck *Project#:* 93333-BO/92C0414A
Received: November 20, 1995

re: 7 samples for Gasoline and BTEX analysis.
Method: EPA 5030/8015M/602/8020

Sampled: November 20, 1995 *Matrix:* WATER
Run: 9551-1 *Analyzed:* November 27, 1995

Spl #	Sample ID	Gasoline (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
111292	MW-1	0.40	99	2.8	1.1	4.6
111293	MW-2	N.D.	2.2	N.D.	N.D.	N.D.
111294	MW-6	6.8	160	4.6	8.0	240
111295	MW-7	N.D.	N.D.	N.D.	N.D.	1.5
111296	MW-6A	3.6	130	11	4.4	200
111297	MW-5	8.9	430	31	610	880
111298	MW-500	N.D.	N.D.	N.D.	0.5	N.D.
Reporting Limits		0.05	0.5	0.5	0.5	0.5
Blank Result		N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)		109	112	110	111	111

Analyst

Eric Tam, Lab Director

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CHROMALAB, INC.
Environmental Services (SDB)

QA NARRATIVE SUMMARY

Submission # 9511307

Project 7101 Edgewater/G. Muehleck, # 93333-BO/92C04

Sample I.D.: MW-5, MW-6 & MW-6A

1.0 The unknown hydrocarbon in the kerosene range is the last part of the gas eluting for samples MW-5, MW-6 & MW-6A. See attached chromatograms.

Jill Thomas
Quality Assurance Manager

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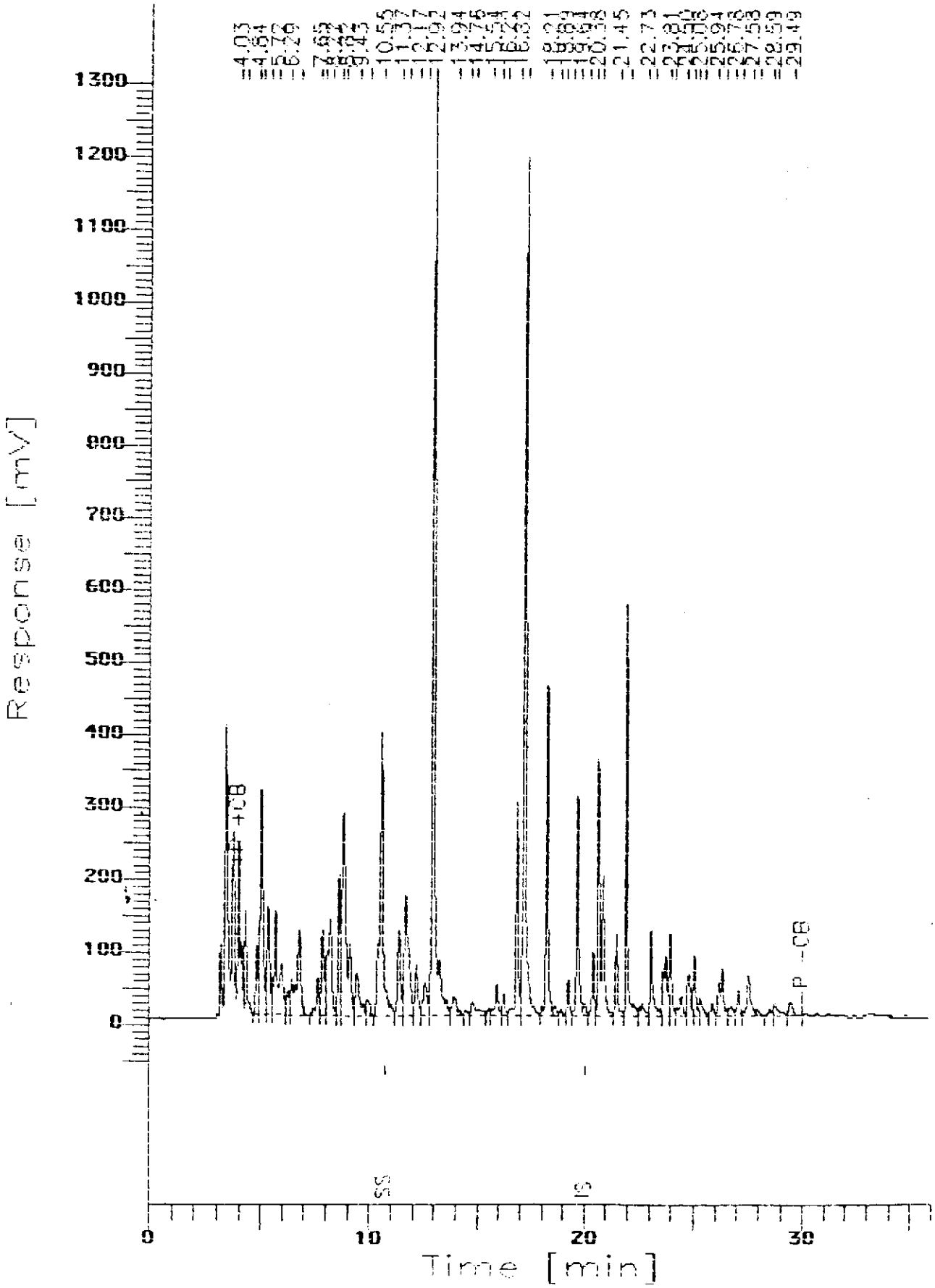
Federal ID #68-0140157

Gasoline Chromatogram

Sample Name : GASOLINE 510 MS330
FileName : d:\3400-1\1GHZ723.raw
Method : 1BTEX03.ins
Start Time : 0.00 min End Time : 36.00 min
Scale Factor: 1 Plot Offset: -55 mV

Sample #: 23 Page 1 of 1
Date : 11/28/95 09:48 AM
Time of Injection: 11/28/95 09:11 AM
Low Point : -55.42 mV High Point : 1307.94 mV
Plot Scale: 1363 mV



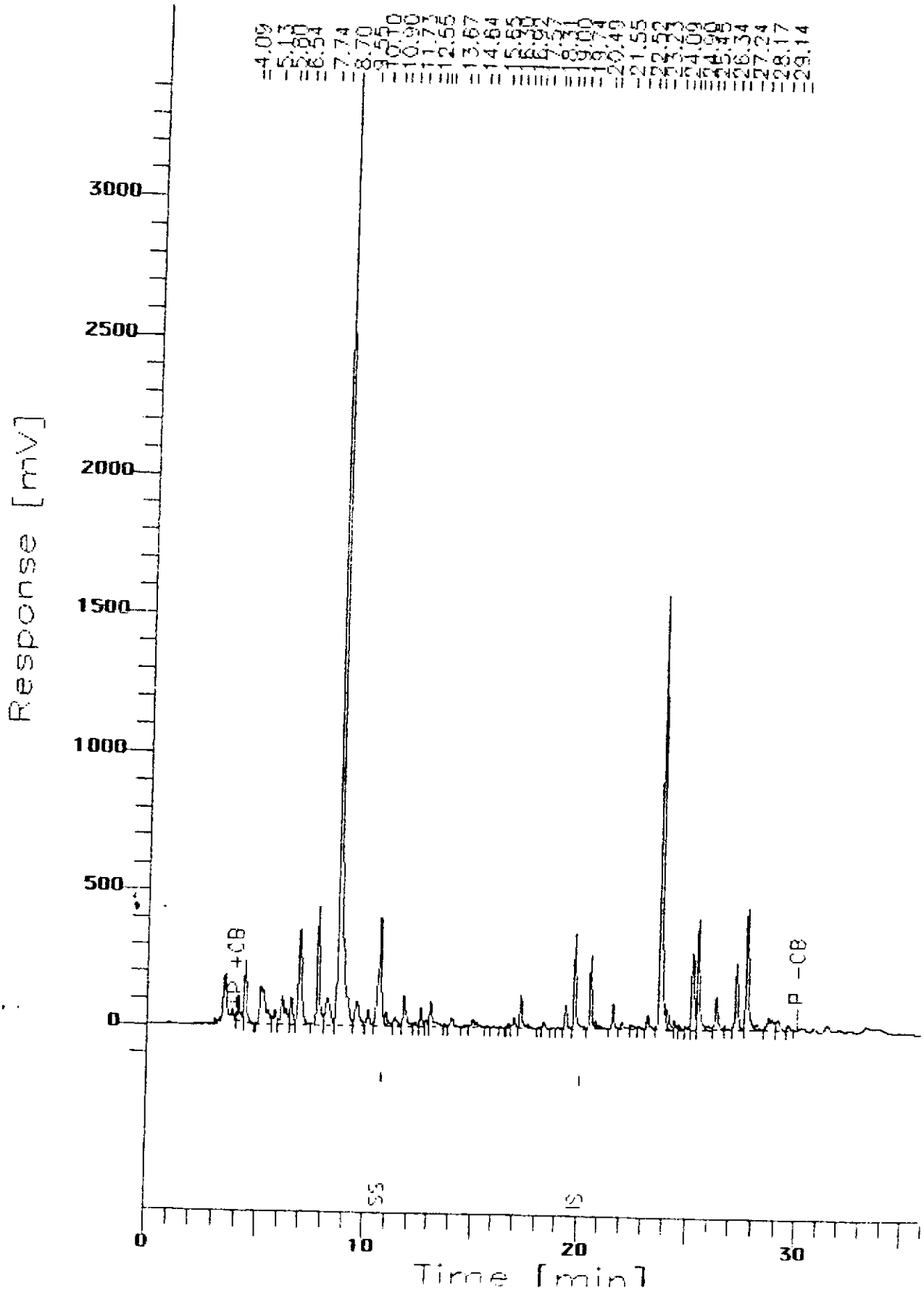
Gasoline Chromatogram

Sample Name : 9511307/MW-1
FileName : d:\3400-1\1GN2711.raw
Method : 18TEX03.ins
Start Time : 0.00 min
Scale Factor: 1

End Time : 36.00 min
Plot Offset: -162 nV

Sample #: 111292
Date : 11/28/95 01:47 PM
Time of Injection: 11/28/95 01:11 PM
Low Point : -161.51 nV
Plot Scale: 3587 nV

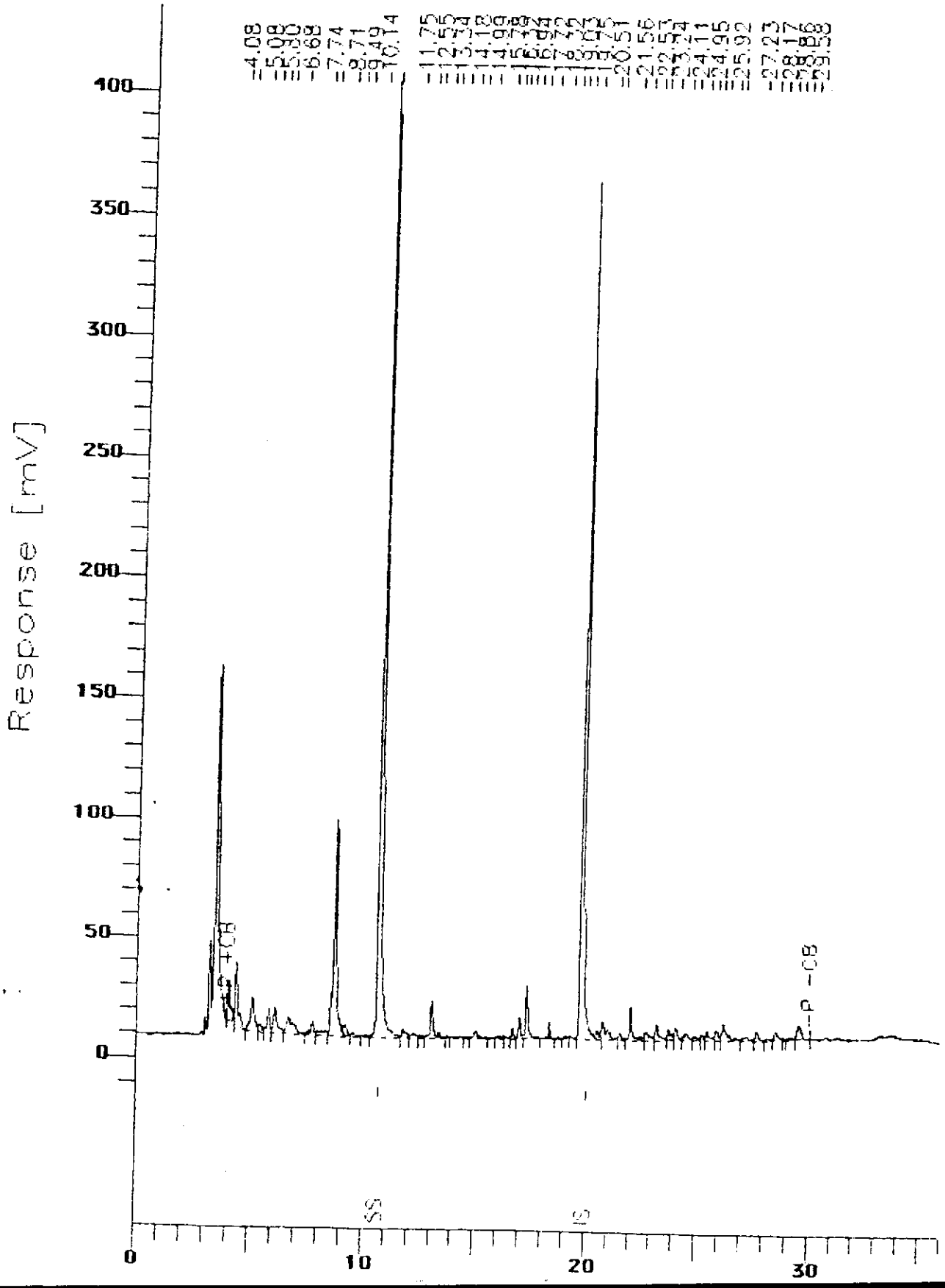
High Point : 3425.93 nV



Gasoline Chromatogram

Sample Name : 9511307/MW-2
FileName : d:\3400-1\1GM2712.raw
Method : 1BTEX03.ins
Start Time : 0.00 min
End Time : 36.00 min
Scale Factor: 1
Plot Offset: -11 mV

Sample #: 111293
Date : 11/28/95 02:27 AM
Time of Injection: 11/28/95 01:51 AM
Low Point : -10.56 mV
High Point : 405.52 mV
Plot Scale: 416 mV

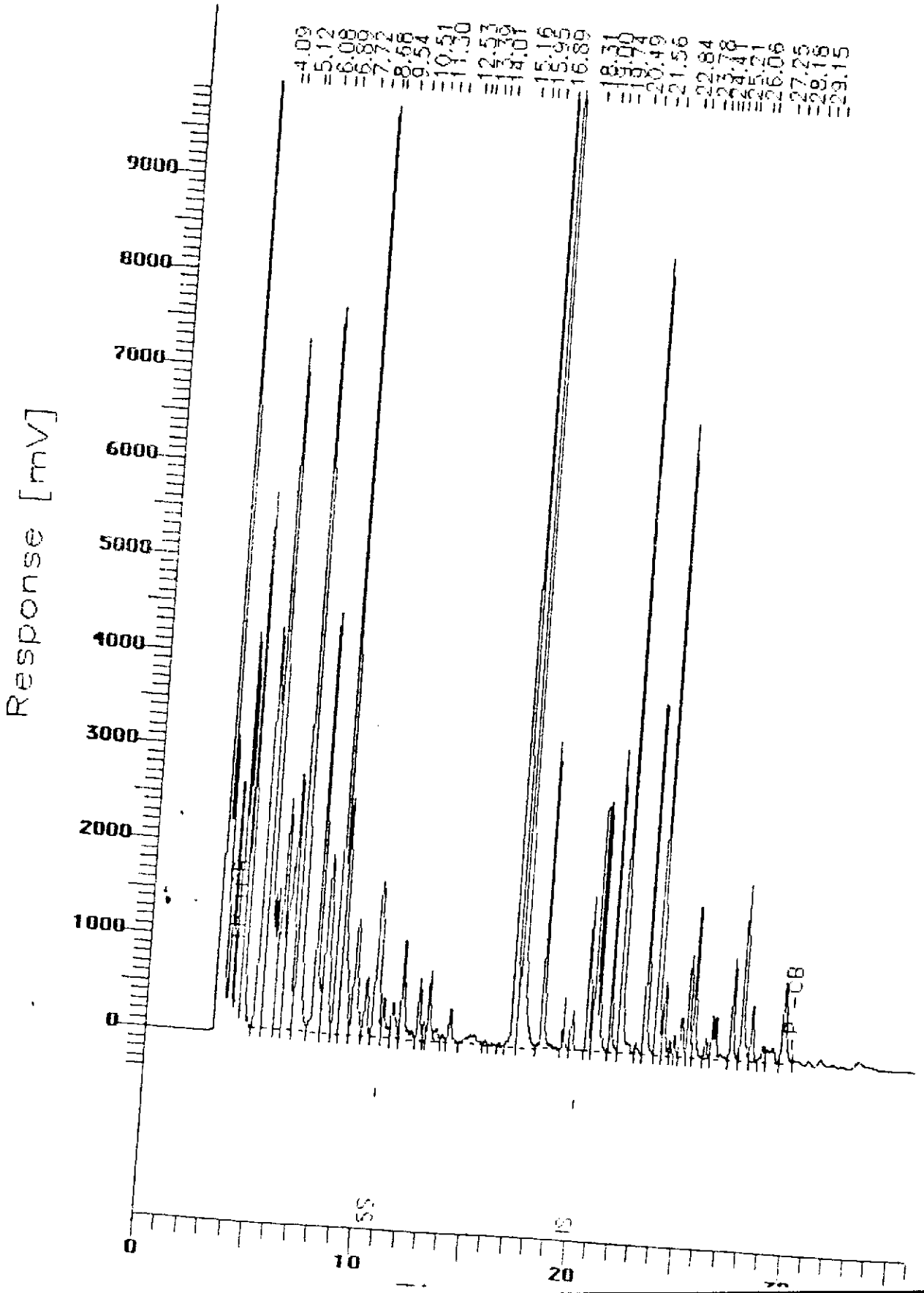


Gasoline Chromatogram

Sample Name : 9511307/MW-5
FileName : d:\3400-1\1GN2717.raw
Method : 181EN03.ins
Start Time : 0.00 min
Scale Factor: 1

End Time : 36.00 min
Plot Offset: -491 nV

Sample #: 111297
Date : 11/28/95 05:17 AM
Time of Injection: 11/28/95 05:11 AM
Low Point : -490.64 nV
Plot Scale: 10491 nV
High Point : 9999.99 nV

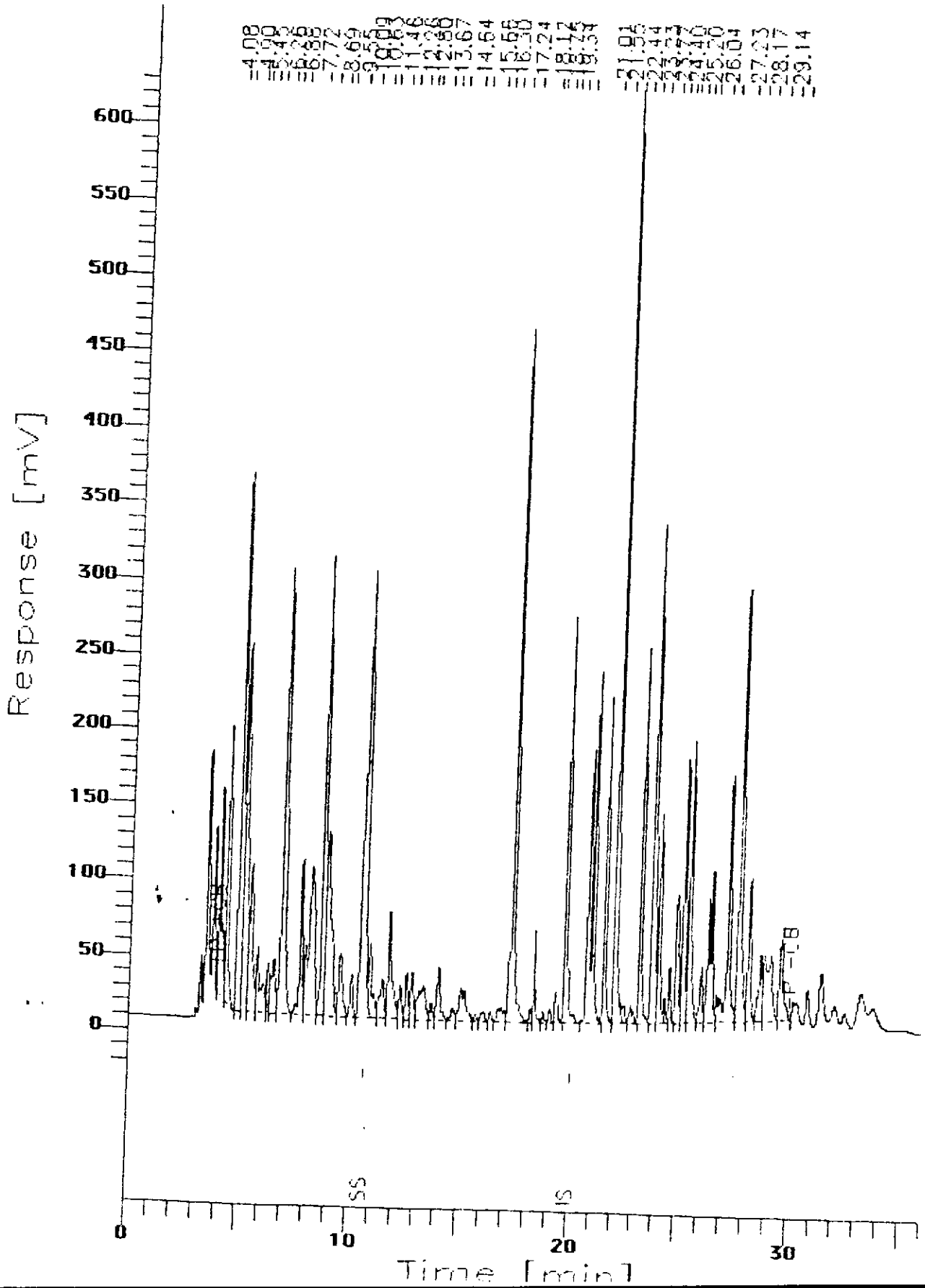


Gasoline Chromatogram

Sample Name : 9511307/MW-6
FileName : d:\3400-1\1GMZ713.raw
Method : 1BTEX03.ins
Start Time : 0.00 min
Scale Factor: 1

End Time : 36.00 min
Plot Offset: -22 mV

Sample #: 111294
Date : 11/28/95 03:07 PM
Time of Injection: 11/28/95 02:31 PM
Low Point : -22.23 mV
High Point : 630.01 mV



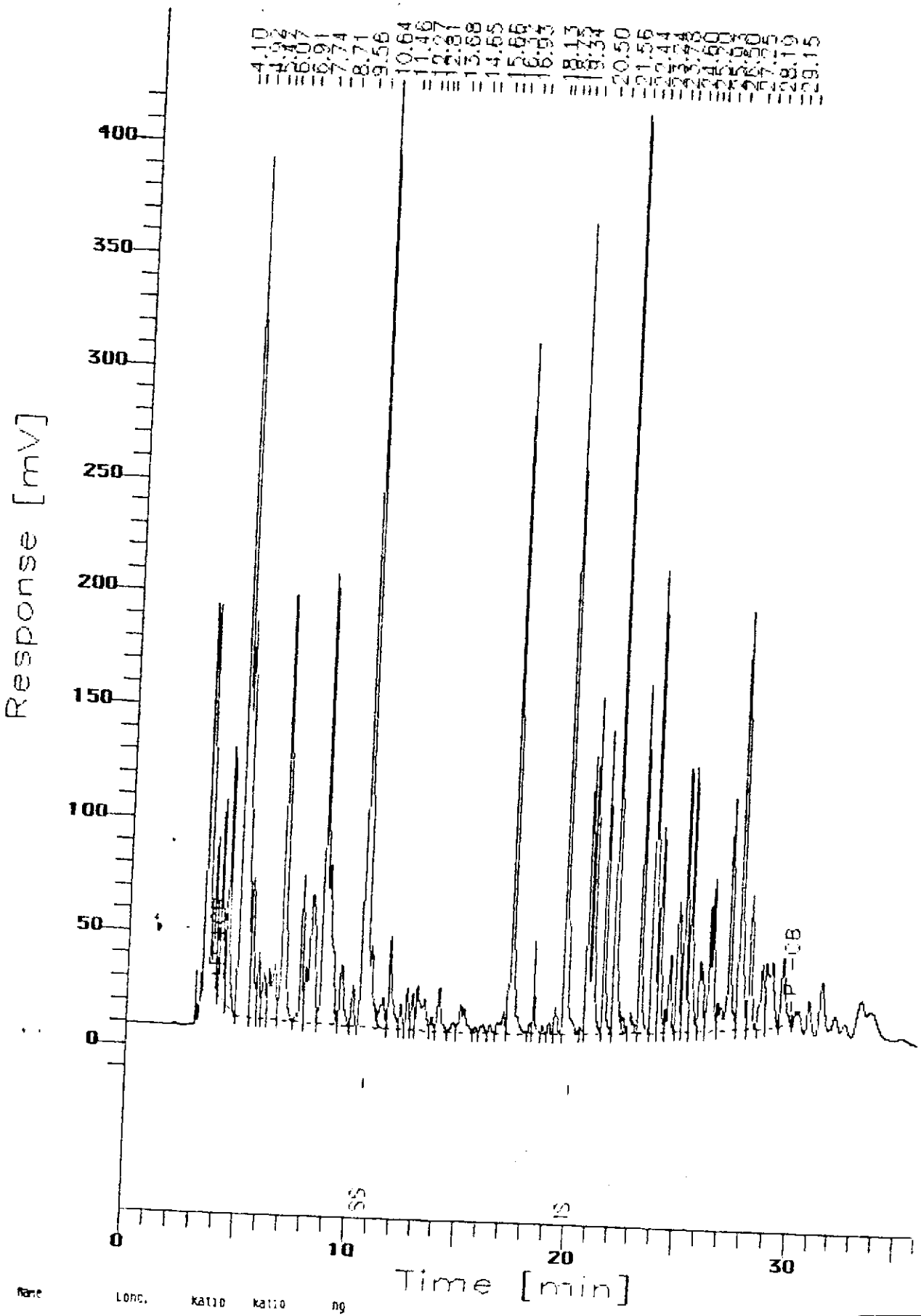
Gasoline Chromatogram

Sample Name : 9511307/MW-6R
FileName : d:\3400-1\1GM2715.raw
Method : 18TEX03.ins
Start Time : 0.00 min
Scale Factor: 1

End Time : 36.00 min
Plot Offset: -12 mV

Sample #: 111296
Date : 11/28/95 04:27 PM
Time of Injection: 11/28/95 03:51 PM
Low Point : -11.80 mV
Plot Scale: 438 mV

High Point : 425.82 mV

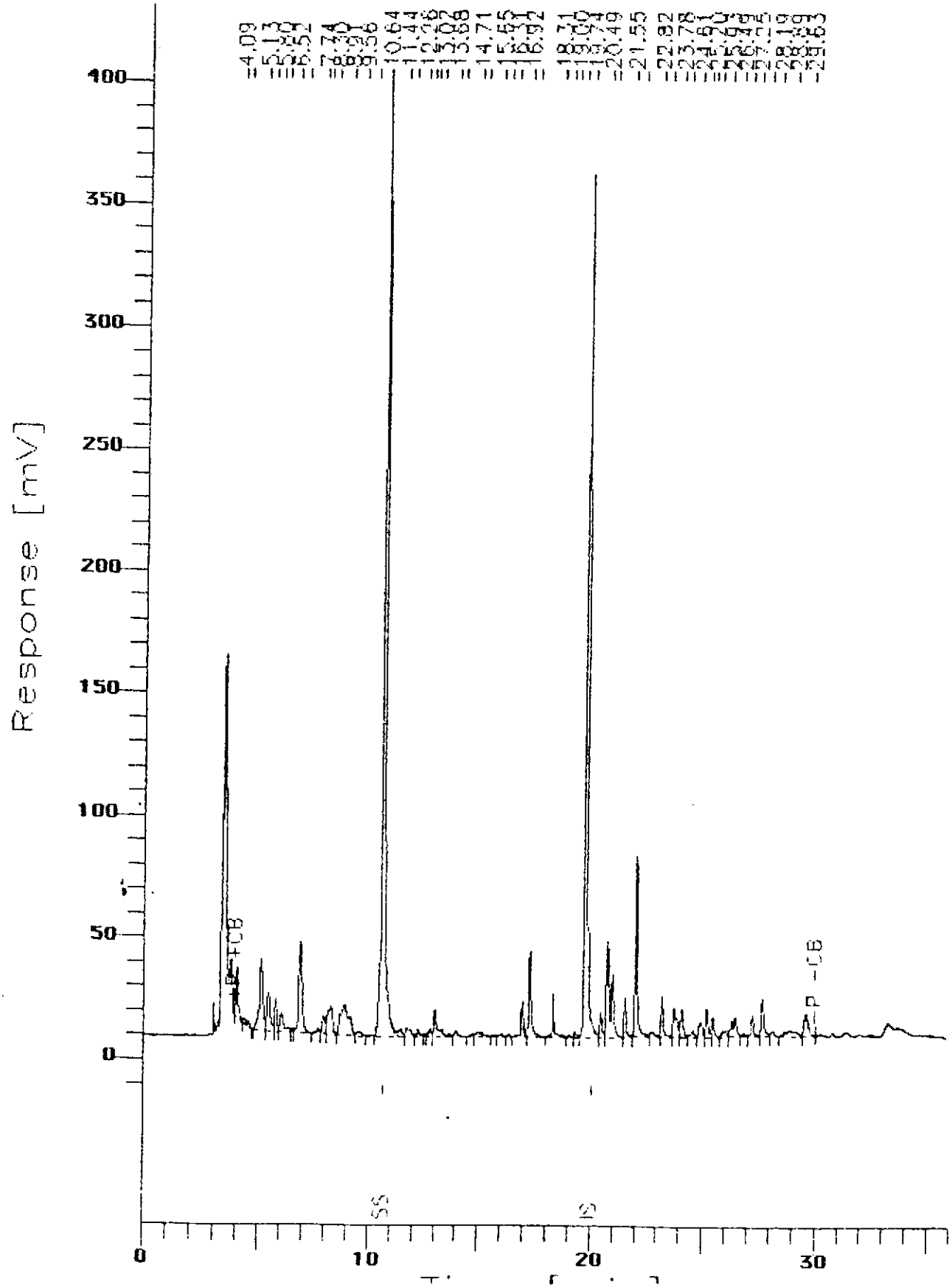


Name	Conc.	Ratio	Ratio	ng

Gasoline Chromatogram

Sample Name : 95I1307/MW-7
FileName : d:\3400-1\1GM2716.raw
Method : 1B1EX03.ins
Start Time : 0.00 min End Time : 36.00 min
Scale Factor: 1 Plot Offset: -10 mV

Sample #: 111295 Page 1 of 1
Date : 11/28/95 05:07 AM
Time of Injection: 11/28/95 04:31 AM
Low Point : -10.28 mV High Point : 401.95 mV
Plot Scale: 412 mV

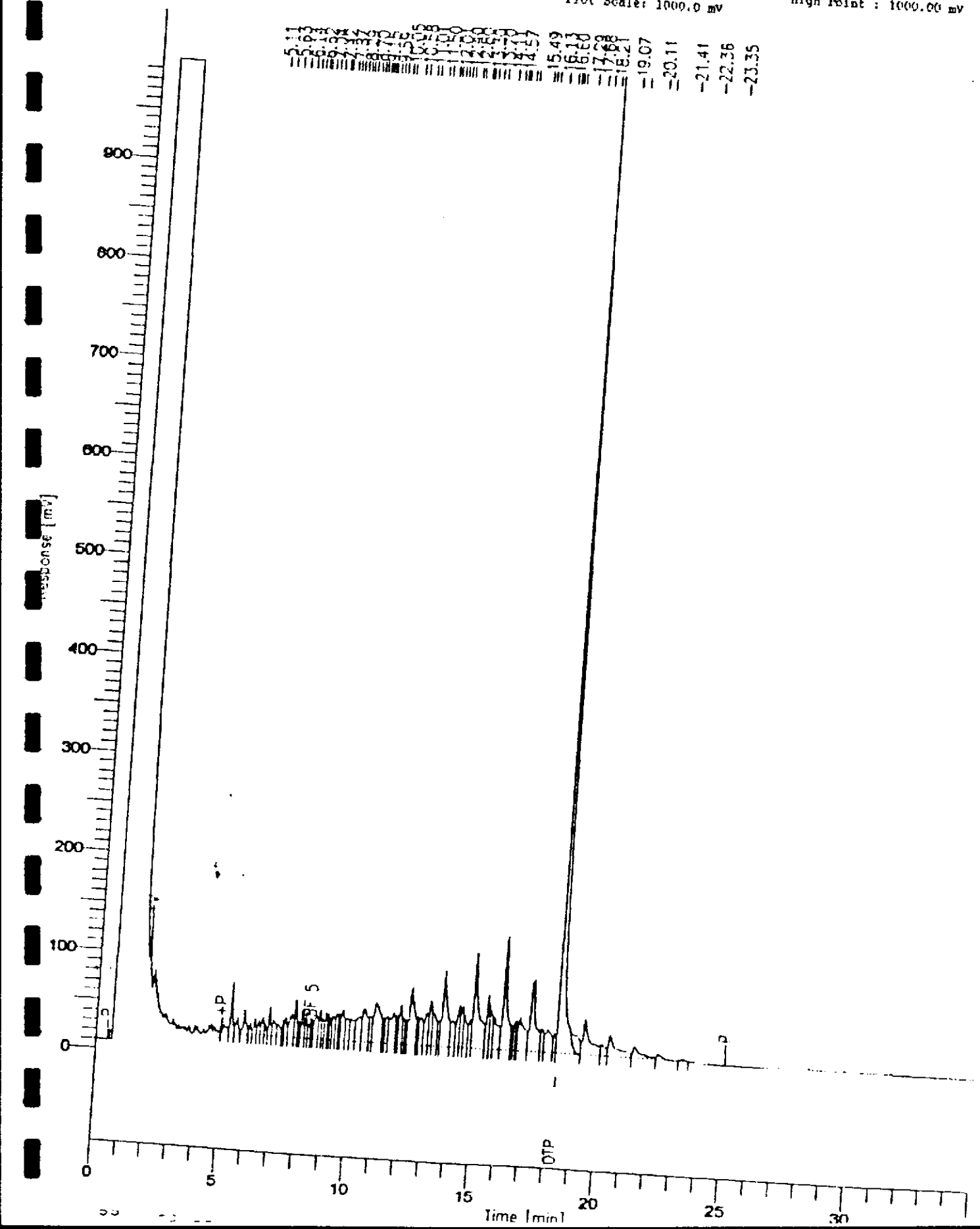


diesel analysis

Sample Name : DIESEL STD 100PPM
FileName : D:\6500DIES\TW28002.raw
Method : TDIESELB
Start Time : 0.00 min
Scale Factor: 0.0

End Time : 35.00 min
Plot Offset: 0 mV

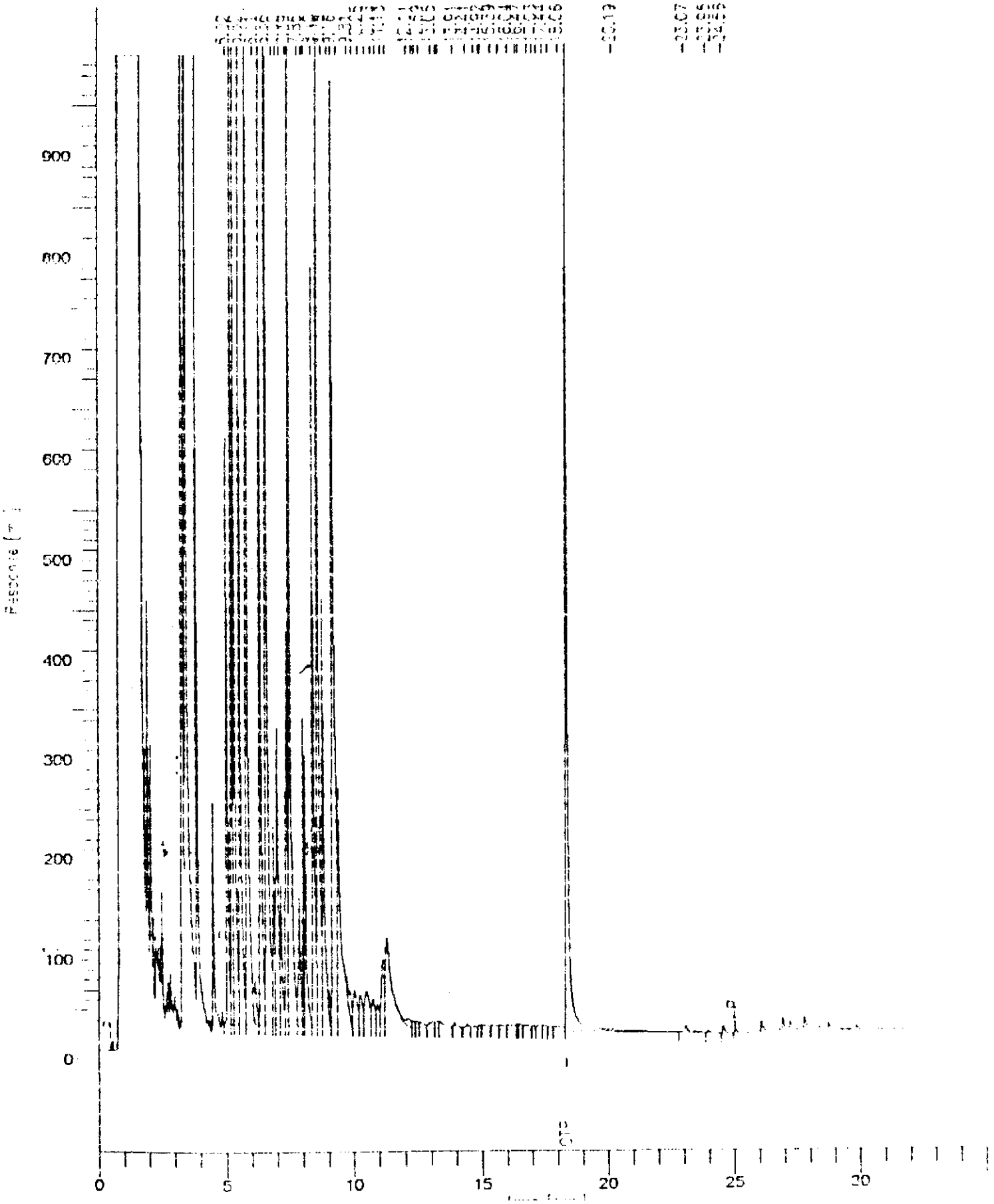
Sample #: GC-694
Date : 11/28/95 11:32 AM
Time of Injection: 11/28/95 10:57 AM
Low Point : 0.00 mV
Plot Scale: 1000.0 mV
High Point : 1000.00 mV



diesel analysis

Sample Name : 11307/MW5
FileName : D:\6500DTE3\TN20019.raw
Method : TDIE3EUD
Start Time : 0.00 min End Time : 35.00 min
Scale Factor: 0.0 Plot Offset: 0 mV

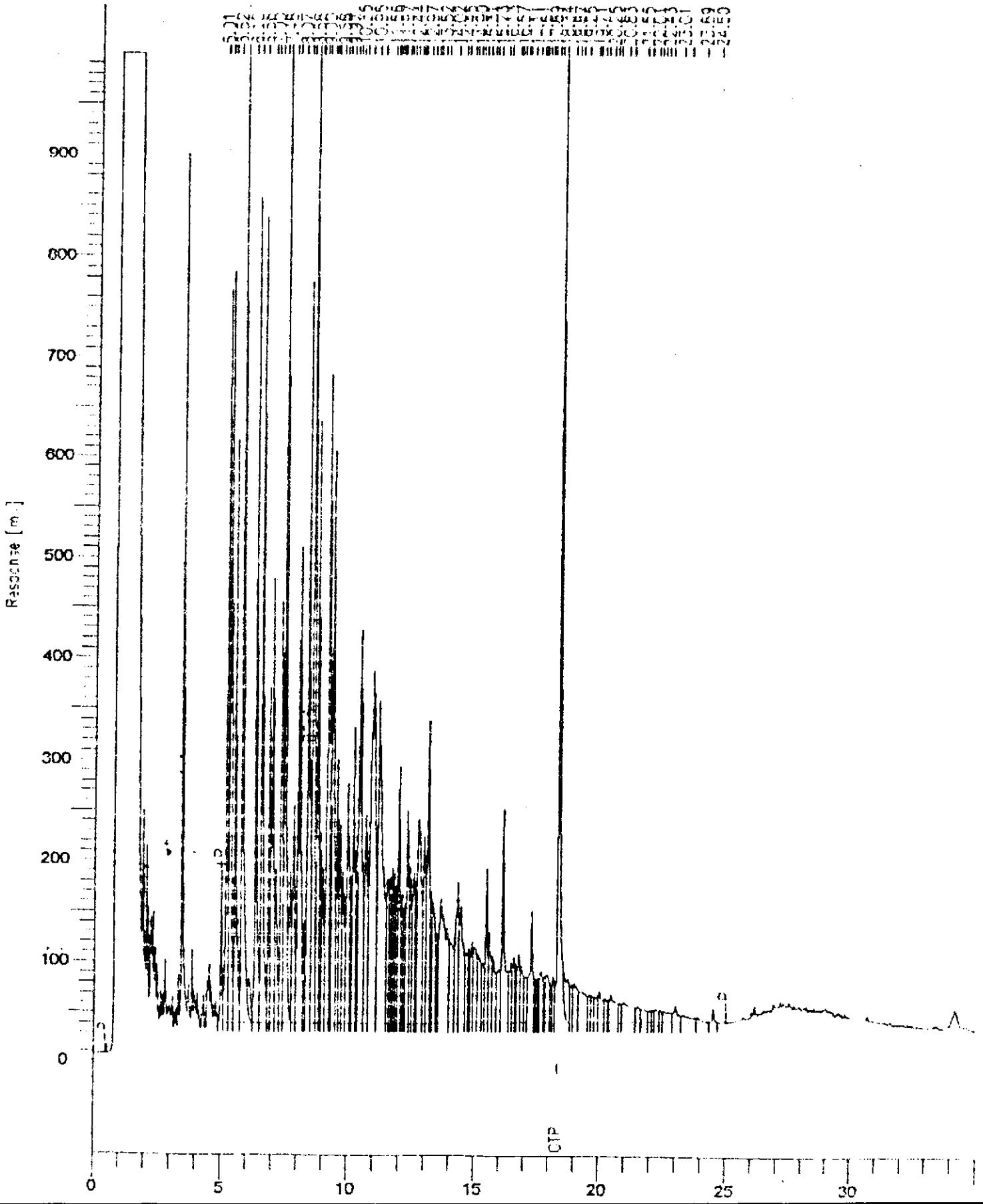
Sample #: 111297 Page 1 of 1
Date : 11/29/95 11:21 AM
Time of Injection: 11/28/95 10:36 PM
Low Point : 0.00 mV High Point : [illegible] mV
Plot Scale: [illegible] mV



diesel analysis

Sample Name : 11307/MW6A
FileName : D:\6500DIES\TN28013.raw
Method : TDIESELB
Start Time : 0.00 min End Time : 35.00 min
Scale Factor: 0.0 Plot Offset: 0 mV

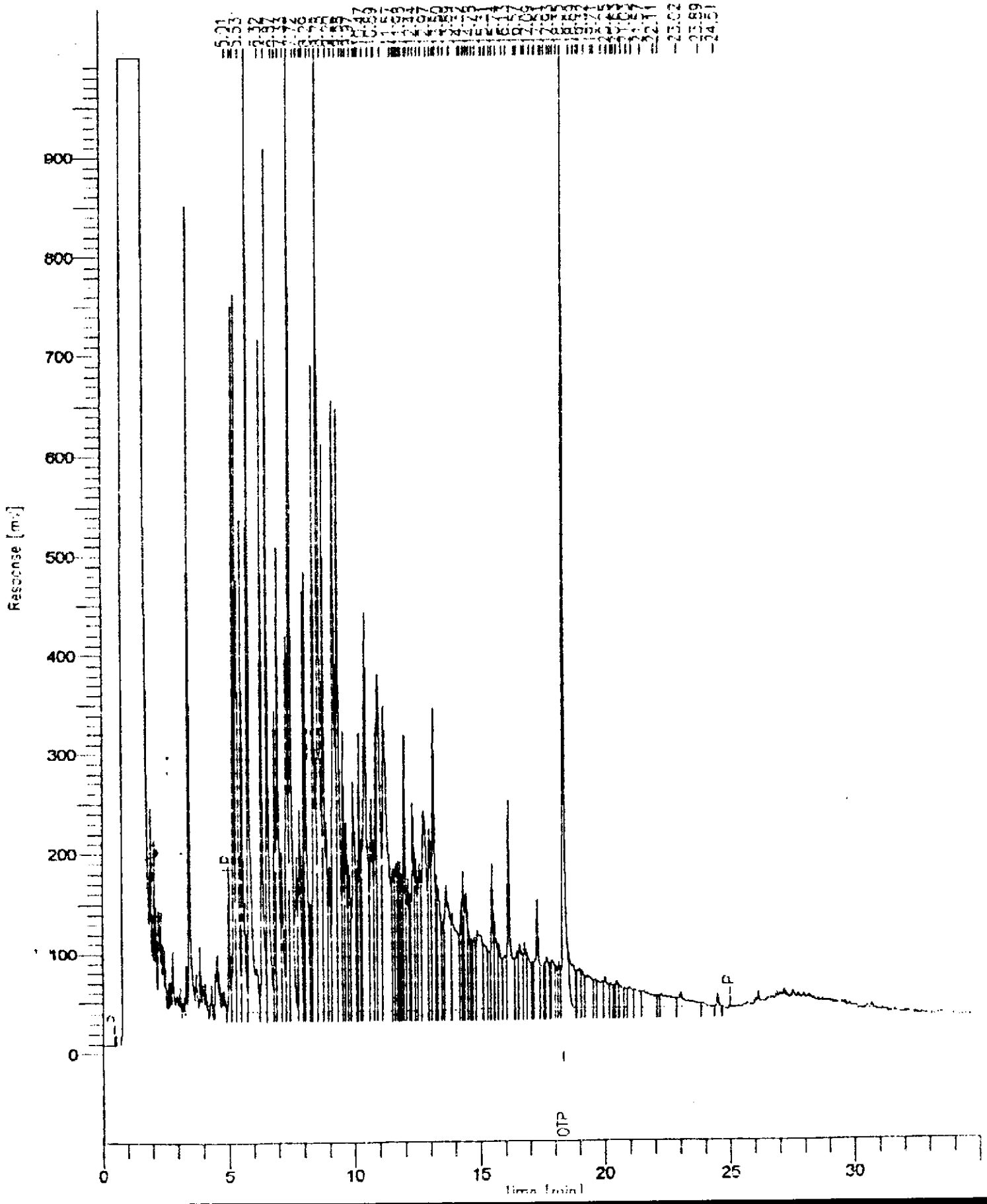
Sample #: 111296 Page 1 of 1
Date : 11/29/95 07:11 PM
Time of Injection: 11/28/95 06:36 PM
Low Point : 0.00 mV High Point : 1000.00 mV
Plot Scale: 1000.0 mV



diesel analysis

Sample Name : 11307/MW6
FileName : D:\6500DIES\TW28012.raw
Method : TDIE35LB
Start Time : 0.00 min End Time : 35.00 min
Scale Factor: 0.0 Plot Offset: 0 mV

Sample #: 111294 Page 1 of 1
Date : 11/28/95 06:30 PM
Time of Injection: 11/28/95 05:54 PM
Low Point : 0.00 mV High Point : 1000.00 mV
Plot Scale: 1000.0 mV

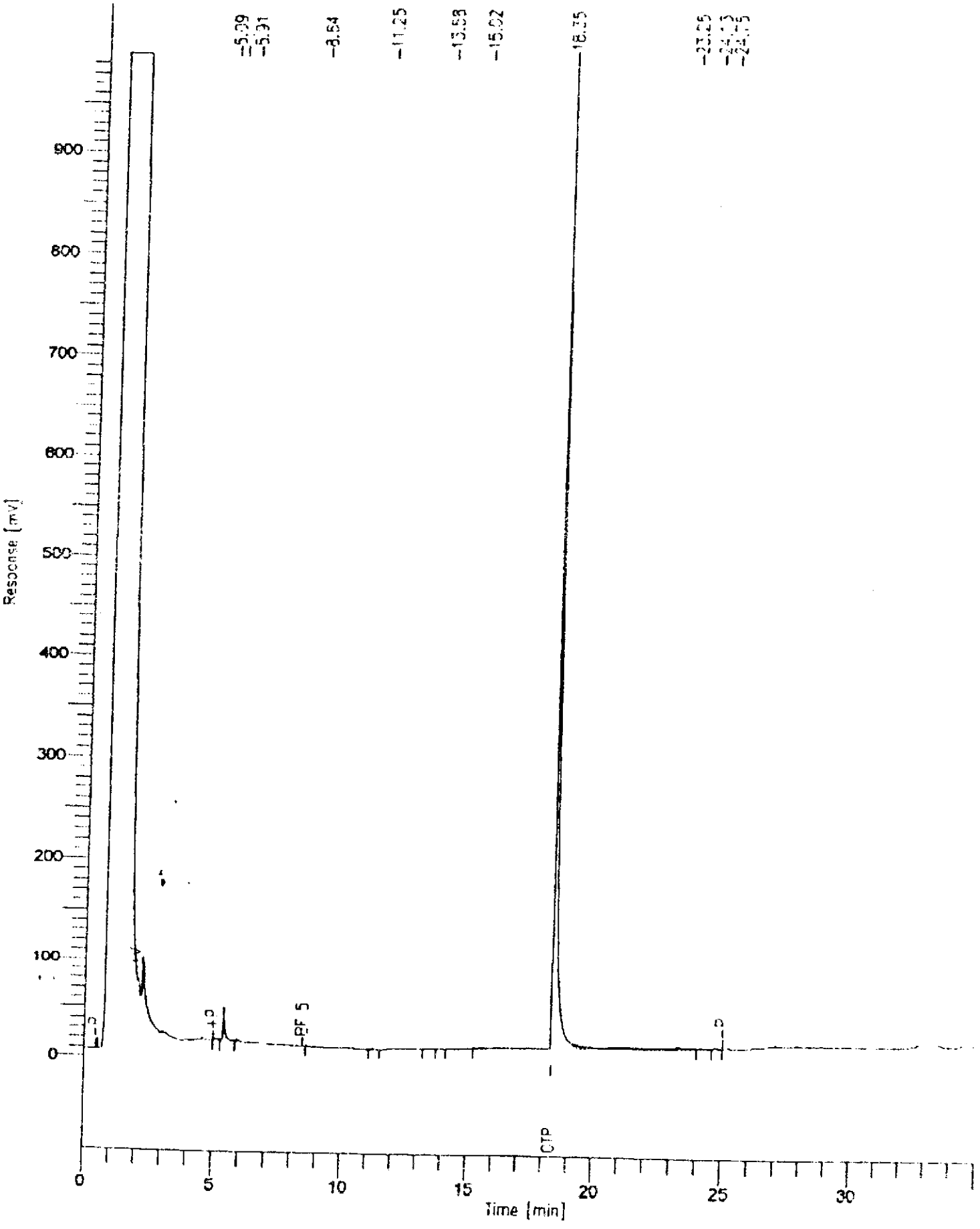


diesel analysis

Sample Name : 11307/MW7
FileName : D:\6500DIES\TW28011.raw
Method : TDIESELB
Start Time : 0.00 min
Scale Factor: 0.0
End Time : 35.00 min
Plot Offset: 0 mV

Sample #: 111295
Date : 11/28/95 05:48 PM
Time of Injection: 11/28/95 05:13 PM
Low Point : 0.00 mV
Plot Scale: 1000.0 mV

High Point : 1000.00 mV



CHROMALAB, INC.
SAMPLE RECEIPT CHECKLIST

Client Name BASELINE

Date/Time Received 11/20/95 (Date) 1610 (Time)

Project WWC OAKLAND MSC

Received by M Snyder / M Park

Reference/Subm # 25099/95 11307

Carrier name

Checklist completed by: C Rowley (Signature) / 11/21/95 (Date)

Logged in by M Park (Initials) / 11/20/95 (Date)

Matrix H2O

Shipping container in good condition?			NA____	Yes____ No____
Custody seals present on shipping container?	Intact____	Broken____	Yes____	No____
Custody seals on sample bottles?	Intact____	Broken____	Yes____	No____
Chain of custody present?			Yes✓	No____
Chain of custody signed when relinquished and received?			Yes✓	No____
* Chain of custody agrees with sample labels?			Yes____	No✓
Samples in proper container/bottle?			Yes✓	No____
Samples intact?			Yes✓	No____
Sufficient sample volume for indicated test?			Yes✓	No____
VOA vials have zero headspace?			NA____ Yes✓	No____
Trip Blank received?			NA____ Yes____	No✓
All samples received within holding time?			Yes✓	No____

Container temperature? 17.2°C

pH upon receipt _____ pH adjusted _____ Check performed by: _____ NA____

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted? YES Date contacted? 11/21/95

Person contacted? Rhodera Del Rosario Contacted by? C Rowley

Regarding?

Comments: * SAMPLE ID'S + "TIME" SAMPLED INCORRECT

Corrective Action: Sampling time on COC changed as per client

SMPLRECD.CK

[redacted]7 [redacted]12[redacted]2 - [redacted]29[redacted] [redacted]09[redacted]

BASELINE
5900 Hollis Street, Suite D
Emeryville, CA 94608
(510) 420-8686

CHAIN OF CUSTODY RECORD

Turn-around Time: Standard
Lab: Chromalab / Gary Cook
BASELINE Contact Person: Rhodora Del Rosario

SUBM #: 9511307 REP: PM
CLIENT: BASELINE
DUE: 11/29/95
REF #:25099

Project No.: 93333-BO

Project Name and Location: WWC Oakland MSC, 7701 Edge Water Drive, Oakland

Samplers (Signature): [signature]

Sample ID No. Station	Date	Time	Media	Depth	No. of Containers	TEH Diesel 8015M	TPH with BTXE 8020 / Gasoline 8015	[crossed out]	Motor Oil 8015M	Filtered by lab 6010 Cd, Cr, Ni, Zn	[crossed out]	Total Lead EPA 7421							Remarks/ Composite	Detection Limits
MW-1	11/20/95	12:28	Water	–	4		X					X								
MW-2	11/20/95	12:15	Water	–	4		X					X								
MW-4	11/20/95	13:10	Water	–	5	X	X			X		X								
MW-7	11/20/95	13:28	Water	–	5	X	X			X		X								
MW-6A	11/20/95	13:12	Water	–	6	[illegible]	X			X		X								
MW-500	11/20/95	13:32	Water	–	2		X													
MW-5	11/20/95	12:45	Water	–	6	X	X		X	X		X								

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time	Conditions of Samples upon Arrival at Laboratory
[signature]	11/20/95 15:23	~~Received~~ Relinquished by (Signature): [signature]	11/20/95 15:28	
[signature]	11/20/95 16:10	[signature]	11/20/95 16:10	Remarks: SEND INVOICE DIRECTLY TO WOODWARD-CLYDE

chncsdy.frm-10/23/95