BASELINE ENVIRONMENTAL CONSULTING

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RO238

TRANSMITTAL

TO: Mr. Barney Chan
Alameda County Dept. of Env. Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Date: 4 March 1997

Project No: 92404-D1

SUBJECT: December 1996 Semi-Annual Groundwater Monitoring Report, 2662 Fruitvale Avenue, Oakland, CA

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Yane Nordhav, Principal

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BASELINE ENVIRONMENTAL PROTECTION

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10 February 1997
92404-D1

Mr. Joseph Cotton
City of Oakland
Environmental Services
1333 Broadway Suite 330
Oakland, CA 94612

Subject: December 1996 Semi-Annual Groundwater Monitoring Report, 2662 Fruitvale Avenue, Oakland, California

Dear Joseph:

This report documents the December 1996 groundwater monitoring event performed by BASELINE Environmental Consulting at the City of Oakland's property located at 2662 Fruitvale Avenue in Oakland, California (Figure 1). BASELINE has been performing groundwater monitoring at the site since August 1993. The purpose of the groundwater monitoring program is to identify changes in shallow groundwater quality at the site over time. Groundwater monitoring during this monitoring event also included evaluation of groundwater conditions that affect the activity of intrinsic bioremediation of petroleum hydrocarbons.

Background

A previous Phase I site assessment indicated that a service station, which included an auto repair facility, was present on the site from the 1940s to the 1980s. In 1983, the City of Oakland purchased the site from Texaco. The site was subsequently rented for use as a produce stand and Christmas tree sales lot.

In January and August 1993, BASELINE performed soil and groundwater investigations at the site. The results of these investigations identified the presence of petroleum hydrocarbons at varying concentrations in the soil at the sampled locations. The groundwater investigation, which included installation of three monitoring wells (MW-F1, MW-F2, and MW-F3), indicated that groundwater quality beneath the site was not significantly impacted by releases from the historic land use activities. Following the completion of these investigations, the City of Oakland demolished the structures on-site.

In September 1994, BASELINE installed a fourth monitoring well, MW-F4, and five soil borings on-site, as well as two well points, HP-F1 and HP-F3, off-site. Petroleum hydrocarbons were detected in the groundwater samples from MW-F4, HP-F1, and HP-F3.

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Oil and grease were detected in soil samples collected in the vicinity of a former sump location. An off-site well, MW-13, installed by others to investigate a release of petroleum hydrocarbons at 2681 Fruitvale Avenue, was also monitored by BASELINE. Approximately 0.5 foot of floating product was identified by BASELINE in MW-13 following purging of the well in 1994.

To assess the extent of gasoline in the groundwater downgradient of the site and downgradient of MW-13, two additional monitoring wells were installed in April and June 1995. Well MW-F5 was installed in April 1995 and well MW-F6 was installed in June 1995 along Fruitvale Avenue, south of Davis Street. The results of groundwater sampling performed in June 1995 indicated 0.10 mg/L of gasoline in a groundwater sample collected from MW-F5; all other petroleum hydrocarbon and BTEX results were below detection limits for both wells. Floating product continued to be present in MW-13. These results indicated that the limits of groundwater contamination at the site had been identified. Following the June 1995 sampling event, groundwater sampling was changed from quarterly to semi-annually.

Groundwater quality monitoring in December 1995 and June 1996 generally confirmed the previously collected data. The monitoring network data established that the extent of the plume of affected groundwater was limited to the area upgradient of MW-F5 and MW-F6 and downgradient of MW-F1. The location of the central area ("core") of the plume, located in the area of MW-F4 and MW-13, appeared to remain stable.

Groundwater Sampling Activities, December 1996

Groundwater samples were collected from monitoring wells MW-F1, MW-F2, MW-F3, MW-F4, and off-site wells, MW-F5, MW-F6, and MW-13, on 13 December 1996 (Figure 2). Prior to sampling activities, the presence of floating product was checked and water levels were measured in each of the wells using a dual-interface probe. The probe was decontaminated by washing in a trisodium phosphate solution and rinsing in deionized water after use in each well.

On 13 December 1996, approximately three well volumes were slowly purged from each well using a peristaltic pump and new, disposable polyethylene tubing. The temperature, pH, dissolved oxygen, and electrical conductivity of the groundwater were monitored during purging until they appeared to have stabilized. All decontamination rinsate and purge water were stored on-site in a sealed drum pending laboratory analysis of the samples.

Groundwater samples were collected from each monitoring well immediately after the wells were purged. Samples were collected into sample bottles directly from the peristaltic pump. The sample bottles were labeled, placed in a cooler containing blue ice, and transported using chain-of-custody procedures to Chromalab, Inc., a California-certified laboratory. The groundwater samples were analyzed for gasoline, BTEX, sulfate, nitrate, and total iron.

Groundwater sampling forms documenting the December 1996 sampling activities are included as Attachment A.

Analytical Results

Petroleum Hydrocarbons

Gasoline and BTEX were not identified in the groundwater samples collected from off-site monitoring wells MW-F5 and MW-F6 (Table 1). Low concentrations of gasoline were detected in the samples from MW-F2 (0.06 mg/L) and MW-F3 (0.18 mg/L). Gasoline was also detected in samples from MW-F4 (27 mg/L) and MW-13 (16 mg/L); these samples also contained BTEX (Table 1). The laboratory report for the December 1996 sampling event is included in Attachment B.

Intrinsic Bioremediation Indication Parameters

Concentrations of nitrate, sulfate, and iron (which were quantified in the laboratory) and values of temperature, pH, and DO (which were quantified in the field during sample collection), were determined at each monitoring well location (Table 2). The laboratory report for the nitrate, sulfate, and iron analyses is included in Attachment B. The parameters determined in the field are presented in the groundwater sampling forms included in Attachment A. These data were collected to provide information on availability at electron acceptors in groundwater at and adjacent to the project site.

The presence of electron acceptors is a controlling influence on intrinsic bioremediation of groundwater affected by petroleum hydrocarbons. Biodegradation of hydrocarbons is an oxidation-reduction reaction. Oxidation of the hydrocarbons results in loss of electrons, which, in turn, results in reduction of available electron acceptors. The results of this testing indicate relatively high dissolved oxygen (4.0 mg/L), nitrate (0.5 mg/L), and sulfate (38 mg/L) levels in groundwater at the upgradient position of MW-F1 (Table 2). The levels of these electron acceptors are also relatively high at wells MW-F5 and MW-F6 located downgradient of the plume of groundwater affected by hydrocarbons. Conversely, the electron acceptors are significantly depleted in the areas of high petroleum hydrocarbons in groundwater. Nitrate and sulfate are not detectable at MW-F4 and MW-13 and the dissolved oxygen level is low (0.35 to 0.50 mg/L).

The depletion of electron acceptors within the plume indicates that aerobic biodegradation of petroleum hydrocarbons is occurring. Relatively high Fe^{+2} levels at MW-F4 and MW-13 indicate that, under depleted oxygen, sulfate, and nitrate conditions within the plume, Fe^{+3} is also being used (and reduced) as an electron acceptor.

Groundwater Flow Direction and Gradient

The depth to groundwater measurements, collected in monitoring wells MW-F1 through MW-F6 and MW-13 during this groundwater monitoring event, ranged from 6.61 to 8.76 feet below ground surface. The direction of groundwater at the site was calculated to be directly toward the west, with a gradient magnitude of 0.033 ft/ft. Groundwater elevation data and calculated flow direction are summarized in Table 3 and shown on Figure 3.

Conclusions

- The groundwater quality at the southwestern corner of the site has been impacted by a release of gasoline. Gasoline and BTEX concentrations in samples from MW-F2, MW-F5, and MW-F6 have decreased or remained at levels below the laboratory reporting limit, suggesting that the margins of the plume affected by petroleum hydrocarbons are relatively stable. A slight increase in gasoline levels at MW-F3 from the results of the June 1996 sampling event does not represent a significant increase when compared to results from the December 1994, June 1995, and December 1995 sampling events.

- Floating product of measurable thickness was not present in the off-site well MW-13, downgradient of the project site. The lack of floating product suggests that previously detected floating product at this location has dissipated through evaporation, dilution, and/or intrinsic bioremediation.

- The westward groundwater flow direction calculated during this monitoring event is consistent with the groundwater flow directions from previous monitoring events (S47W to N87W).

- Depleted electron receptors (oxygen, sulfate, and nitrate) levels within the plume of groundwater affected by petroleum hydrocarbons indicate that natural aerobic biodegradation processes are active at the project site. The dissolved oxygen levels (4.0 mg/L) in the upgradient well MW-F1 are relatively high as are nitrate and sulfate levels. Oxygen levels of 1 to 2 mg/L are generally considered sufficient to support intrinsic aerobic bioremediation. The natural supply of electron receptors through groundwater flow would sustain the current level of bioremediation.

- The analytical results for the December 1996 groundwater monitoring event confirm previously collected data at the site. The extent of the plume of affected groundwater is reasonably defined by the existing monitoring well network. The plume has not migrated to the downgradient positions of MW-F5 and MW-F6, suggesting that the plume is small (less than 150 feet in length) and relatively stable.

- In response to a request made by Mr. Barney Chan of the Alameda County Department of Environmental Health (ACDEH), the appropriateness of placement of oxygen

releasing compounds (ORCs) in Monitoring Wells MW-13 and MW-F4 has been evaluated. Although an increase in oxygen levels in groundwater within the central portion of the hydrocarbon-affected plume would enhance aerobic bioremediation, placement of ORC's within the existing two-inch monitoring wells would not be an effective method of achieving this goal. To establish significant improvement in the mass balance between available oxygen and petroleum hydrocarbon concentrations, a large mass of oxygen (over 1,000 pounds) would be required. The wells would not provide an opportunity for placement of this amount of ORC or an appropriate distribution of the released oxygen. In addition, the function of the wells for monitoring water quality would be significantly reduced. The near-field effects of the released oxygen on groundwater at the wells would reduce the representativeness of the groundwater quality data.

Recommendations

- Semi-annual groundwater monitoring should be continued at MW-F2 through MW-F6 and MW-13 to confirm the stability of the plume of affected groundwater. The next groundwater monitoring event should be conducted in June 1997.

Copies of this report will be submitted to Mr. Barney Chan of the Alameda County Department of Environmental Health and Mr. Richard Hiett of the San Francisco Bay Regional Water Quality Control Board. Should you have any questions regarding this report or need further information, please do not hesitate to contact us at your convenience.

Sincerely,

Kevin O'Dea
Senior Geologist
Cert. Eng. Geologist No. 1702

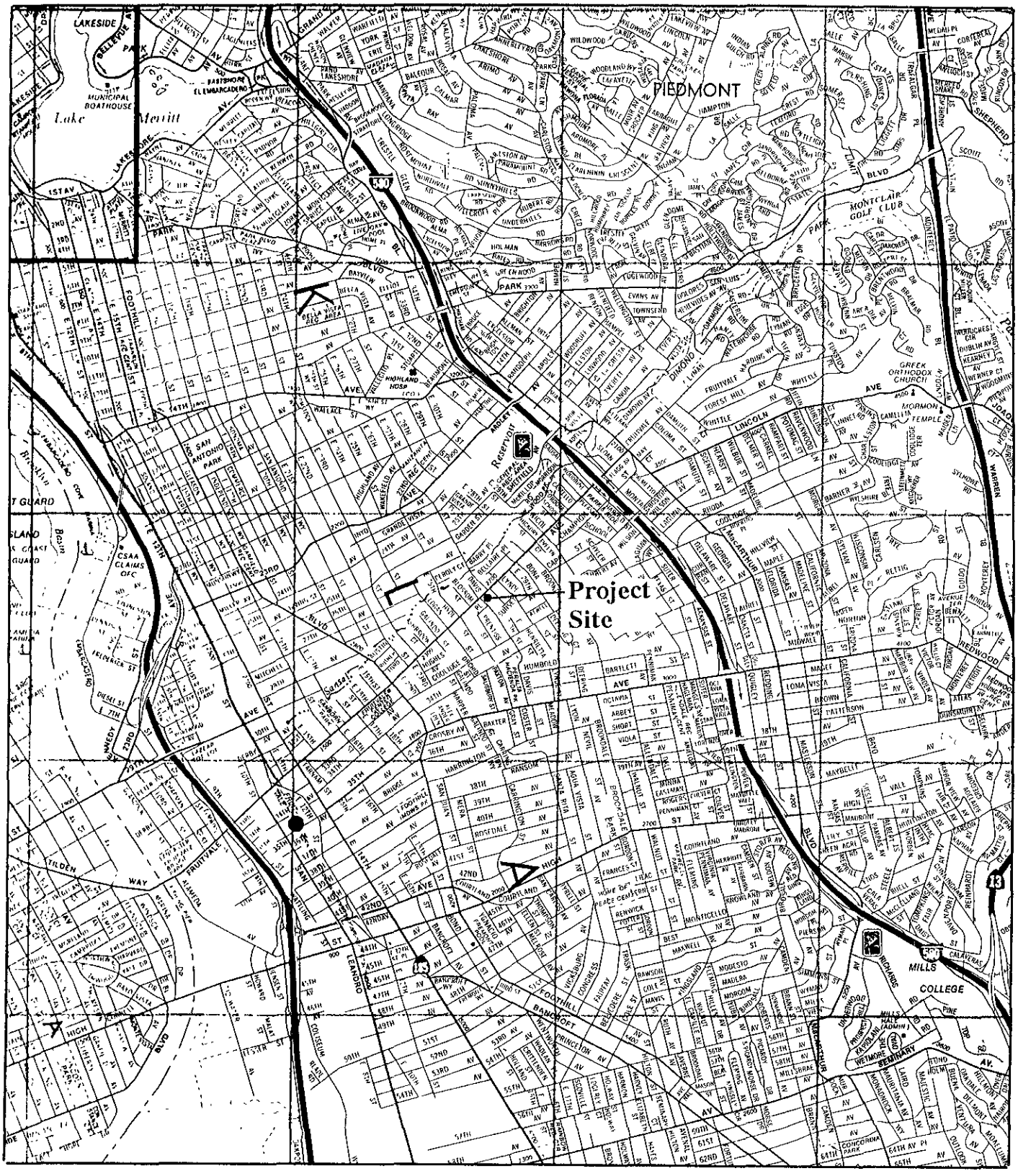
Bella Bakrania
Staff Engineer

KOD:BB:tt
Attachments

cc: Barney Chan, Alameda County, w/attachments
Richard Hiett, San Francisco Bay Regional Water Quality Control Board, w/attachments

REGIONAL LOCATION

Figure 1



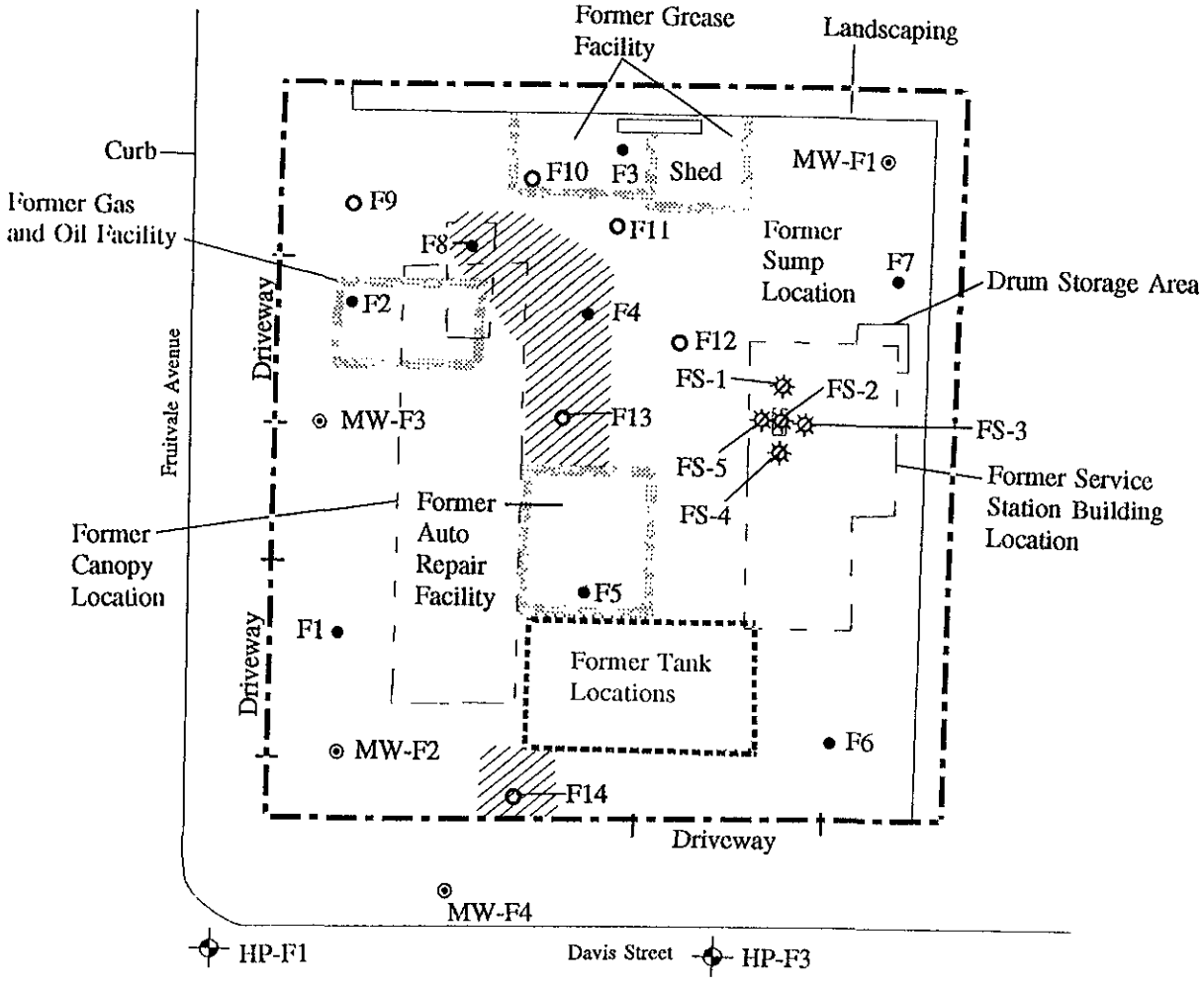
2662 Fruitvale Avenue
Oakland, California

BASELINE

92404-DO 8/2/95

SITE PLAN

Figure 2



Legend

		Areas with Elevated TPH Concentrations
F1 to F8	•	Soil Boring Location - Phase II
F9 to F14	o	Soil Boring Location - Phase III
FS-1	✲	Sump Area Boring Location
MW-F2	⊙	Monitoring Well Location
HP-F1	⊕	Temporary Well Location
	— · — · —	Project Site Boundary

0 30 Feet

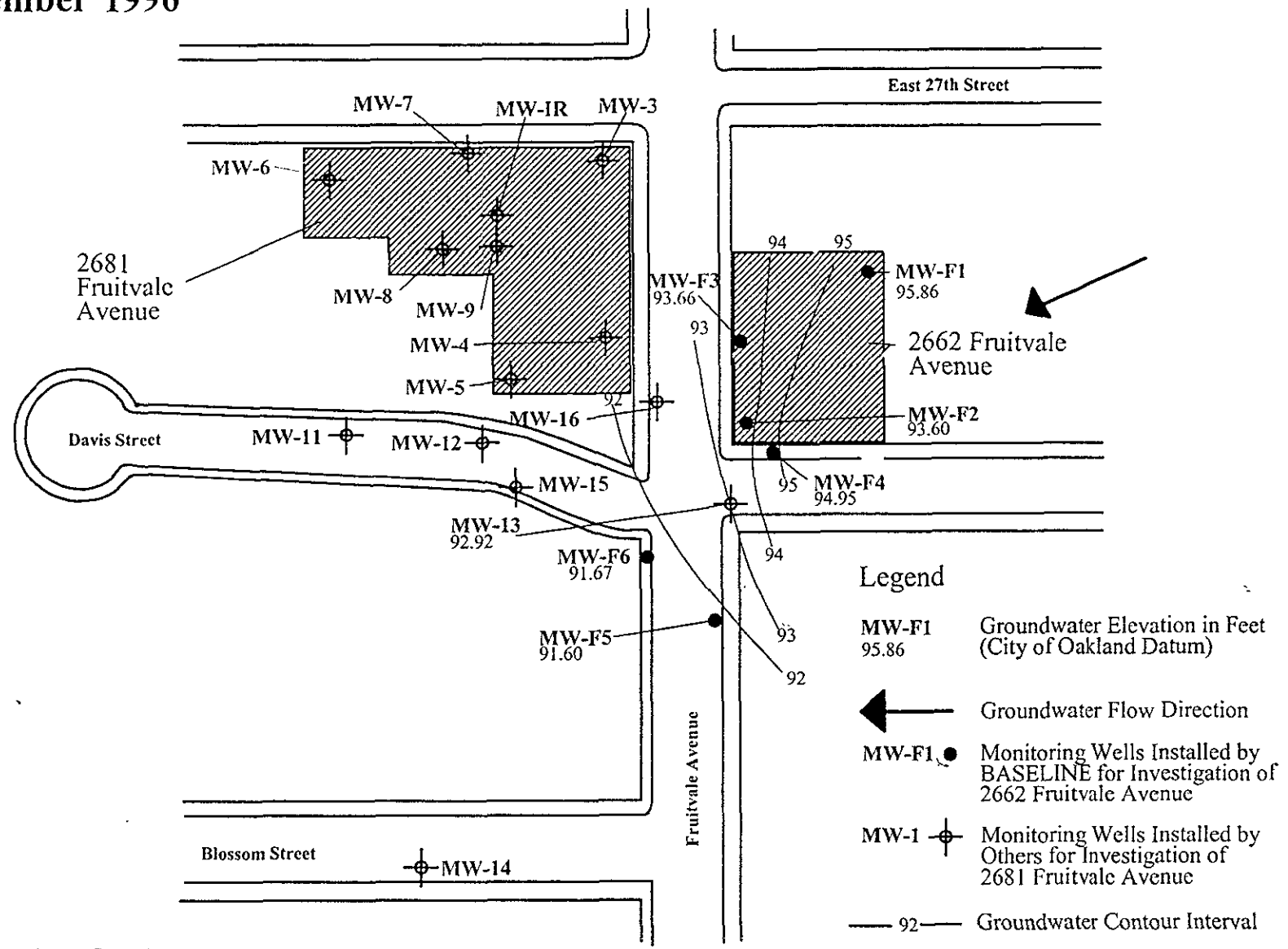
2662 Fruitvale Avenue
Oakland, California

BASELINE

92404-DO 8/2/95

GROUNDWATER ELEVATION CONTOUR MAP
13 December 1996

Figure 3



2662 Fruitvale Avenue
Oakland, California

Source: Base Map - Modified from Groundwater Technology, Inc., 1993, Site Plan Map.

BASELINE

92404-D1 1/14/96, Cadd File N 92404DO2

TABLE 1
SUMMARY OF ANALYTICAL RESULTS, GROUNDWATER
2662 Fruitvale Avenue, Oakland, California
(mg/L)

Sample Location	Sample Date	TPH as Gasoline[1]	TPH as Motor Oil[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Xylenes[3]
Monitoring Wells							
MW-F1	08-16-93	<0.05	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	06-30-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	12-29-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-F2	08-16-93	<0.05	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	**0.096**	--	<0.0005	<0.0005	<0.0005	<0.0005
	06-30-95	**0.34**	--	<0.0005	<0.0005	<0.0005	**0.0005**
	12-29-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	06-27-96	**0.064**	--	**0.0012**	<0.0005	<0.0005	<0.0005
	12-13-96	**0.06**	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-F3	08-16-93	<0.1	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	**0.13**	--	<0.0005	**0.0013**	<0.0005	<0.0005
	06-30-95	**0.11**	--	<0.0005	<0.0005	<0.0005	<0.0005
	12-29-95	**0.35**	--	**0.0008**	<0.0005	**0.0012**	**0.0007**
	06-27-96	**0.088**	--	**0.002**	<0.0005	<0.0005	<0.0005
	12-13-96	**0.18**	—	<0.0005	<0.0005	<0.0005	<0.0005
MW-F4	09-09-94	**3.4-3.5**	--	**0.029/0.028**	**0.0030/0.0028**	**0.038/0.033**	**0.094/0.099**
	12-21-94	**37**	--	**0.66**	<0.1	**2.3**	**5.9**
	06-30-95	**9.2**	--	**0.18**	**0.019**	**0.76**	**1.0**
	12-29-95	**38**	--	**0.61**	**0.14**	**4.3**	**5.8**
	06-27-96	**6.2**	—	**0.081**	**0.0095**	**0.52**	**0.29**
	12-13-96	**27**	—	**0.39**	**0.05**	**3.2**	**3.7**

(Continued)

Table 1 - Summary of Analytical Results, Groundwater - *continued*

Sample Location	Sample Date	TPH as Gasoline[1]	TPH as Motor Oil[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Xylenes[3]
MW-F5	06-30-95	**0.10**	--	<0.0005	<0.0005	<0.0005	<0.0005
	12-29-95	<0.05	--	<0.0005	<0.0005	<0.0005	**0.0007**
	06-27-96	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	12-13-96	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-F6	06-30-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	12-29-95	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	06-27-96	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	12-13-96	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-13	12-21-94	**3.3**	--	**0.33**	<0.013	**0.024**	**0.24**
	06-30-95	**22**	--	**0.85**	<0.0005	**1.2**	**1.6**
	12-29-95	**22**	--	**0.97**	**0.078**	**1.8**	**2.4**
	06-27-96	**18**	--	**0.63**	**0.026**	**1.1**	**1.0**
	12-13-96	**16**	--	**0.67**	**0.04**	**1.2**	**1.0**
Soil Borings[4]							
F1[5]	1-20-93	**13**	<0.5	**0.61**	<0.018	**0.83**	**0.046**
F2[5,6]	1-20-93	**6.8**	<0.5	**0.011**	<0.002	**0.016**	<0.002
F5	1-20-93	<0.05	--	--	--	--	--
F7	1-20-93	<0.05	<0.5	--	--	--	--
Hydropunch							
HP-F1	9-09-94	**26**	--	**0.46**	**0.16**	**1.5**	**4.4**
HP-F3	9-09-94	**0.21**	--	**0.0009**	**0.0007**	**0.0049**	**0.02**

Notes: <x.x = Compound not identified above reporting limits.
x.x = Bold values indicate compound identified above reporting limits.
x.x/x.x = Analytical testing results for duplicate samples.
-- = Compound not analyzed.
TPH = Total petroleum hydrocarbons.
Sample locations are shown on Figure 2.
Laboratory reports for July 1996 groundwater analyses are included in Attachment B.

[1] Test Method = EPA 5030/8015.
[2] Test Method = EPA 3510/8015.
[3] Test Method = EPA 602 or 624.
[4] Water collected from open boreholes in January 1993.
[5] Sample also analyzed for Title 26 metals; all metal concentrations less than STLC.
[6] Sample contained trans-1,3-dichloropropene.

TABLE 2

SUMMARY OF ANALYTICAL RESULTS, GROUNDWATER
BIOREMEDIATION INDICATION PARAMETERS
2662 Fruitvale Avenue, Oakland, California
(mg/L, unless otherwise noted)

Sample Location	Sample Date	Temp.[1] (°C)	pH[1] (pH units)	DO[1,2]	Nitrate[3,4]	Sulfate[3]	Dissolved[5] Iron (Fe^{2+})
MW-F1	12/13/96	19.3	6.56	4.0	8.5	38	<0.10
MW-F2	12/13/96	21.1	6.57	0.55	0.20	8	0.24
MW-F3	12/13/96	20.4	6.59	0.50	0.69	23	0.11
MW-F4	12/13/96	21.0	6.54	0.50	<0.05	<2	6.6
MW-F5	12/13/96	19.7	6.53	0.60	6.6	45	<0.10
MW-F6	12/13/96	20.3	6.80	1.00	0.44	39	<0.10
MW-13	12/13/96	21.1	6.50	0.35	<0.05	<2	6.8

Notes: Monitoring well locations are shown on Figure 2.
Laboratory report is included in Attachment B.

1 Value provided is from the purge water measured at the completion of well purging.
2 DO = dissolved oxygen. Measurements taken by direct-reading DO meter at the time of sampling.
3 Test Method = EPA 300.
4 Laboratory noted that sample was received past recommended holding time for this analysis (analyzed 12/19/96).
5 Sample filtered (0.45 micron membrane) and preserved at the time of sampling. Test Method = EPA 3005A/6010A.

TABLE 3
GROUNDWATER ELEVATION AND GRADIENT DETERMINATION DATA
2662 Fruitvale Avenue, Oakland, CA

Monitoring Well	Date	TOC Elevation (feet)[1]	Depth to Groundwater (feet)	Groundwater Elevation (feet)[1]	Groundwater Gradient	
					Direction	Magnitude
MW-F1	08/16/93	104.41	11.13	93.28	S88W	0.025
	06/29/94		10.38	93.53	N87W	0.026
	09/09/94		11.56	92.85	S82W	0.03
	12/21/94		8.96	95.45	S47W	0.028
	06/30/95		10.49	93.92	S86W	0.025
	12/29/95		9.38	95.03	N79W	0.027
	06/27/96		10.69	93.72	N85W	0.03
	12/13/96		8.55	95.86	N90W	0.033
MW-F2	08/16/93	102.22	12.15	90.07		
	06/29/94		11.74	90.48		
	09/09/94		12.21	90.01		
	12/21/94		10.34[4]	91.88		
	06/30/95		11.32	90.90		
	12/29/95		9.94	92.28		
	06/27/96		11.51	90.71		
	12/13/96		8.62	93.60		
MW-F3	08/16/93	102.42	11.99	90.43		
	06/29/94		11.40	91.02		
	09/09/94		12.39	90.03		
	12/21/94		9.32	93.10		
	06/30/95		11.14	91.28		
	12/29/95		10.08	92.34		
	06/27/96		11.31	91.11		
	12/13/96		8.76	93.66		
MW-F4	09/09/94	101.56	11.21	90.35		
	12/21/94		8.00	93.56		
	06/30/95		10.08	91.48		
	12/29/95		8.52	93.04		
	06/27/96		9.75	91.81		
	12/13/96		6.61	94.95		
MW-F5	06/30/95	100.32	11.09	89.23		
	12/29/95		9.37	90.95		
	06/27/96		11.33	88.99		
	12/13/96		8.72	91.60		
MW-F6	06/30/95	100.11	10.96	89.15		
	12/29/95		9.84	90.27		
	06/27/96		10.98	89.13		
	12/13/96		8.44	91.67		
MW-13[2]	09/09/94[3]	101.20	12.27	88.93		
	12/21/94[4,5]		9.32	91.88		
	06/30/95[6]		11.32	89.88		
	12/29/95[7]		9.00	92.20		
	06/27/96[8]		11.49	89.71		
	12/13/96		8.28	92.92		

Table 3 - *continued*

Note: See Figure 3 for groundwater flow direction and contours.

[1] Elevations are presented as feet above City of Oakland datum (which is three feet below mean sea level datum).
[2] Monitoring well installed by Resna for investigation of 2681 Fruitvale Avenue.
[3] Approximately 0.04 feet of hydrocarbon product detected by dual interface probe.
[4] Groundwater level had not completely stabilized prior to measurement.
[5] Approximately 0.25 inch free product measured in bailer prior to purging.
[6] Hydrocarbon sheen observed on dual interface probe when removed from the well; hydrocarbon not detected by probe.
[7] Groundwater level approximate – hydrocarbon/water level not detected by probe – measurement not used in groundwater flow calculations.
[8] Approximately 1/3-inch of free product measured in bailer prior to purging.

ATTACHMENT A

GROUNDWATER SAMPLING FORMS

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.:	MW-F1	Date:	12/13/96
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	25.11		
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	8.5-25.11		
Recorded by:	WKS	TOC elevation (feet):	104.41 (City of Oakland datum)		
Weather:	Early morning drizzle, becoming sunny	Water level from TOC (feet):	8.55	Time:	8:00
Precip in past		Product level from TOC (feet):	None	Time:	8:00
5 days (inch):	2.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(25.11 ft) - (8.55 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

2.6 gallons in one well volume

8 gallons in 3 well volumes

8 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	--	--	4.01/7.00	1,000
Before Purging:	7:40	21.2	4.01/7.00	1,000
After Purging:	14:55	21.6	4.08/6.98	1,000

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
8:09	18.8	6.56	440	1.0	Clear
8:21	19.2	6.56	450	2.0	Clear
8:34	19.2	6.62	460	3.5	Clear
8:48	19.3	6.58	460	6.0	Clear
9:05	19.3	6.56	460	8.0	Clear

DO meter calibration:	9.65 @ 17° C	Time:	--
DO result (after purging of well) (mg/L):	4.0	Time:	9:05
Appearance of sample:	Clear	Time:	9:10
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump and tubing	VOC attachment:	None required
Sample containers:	1 250-ml plastic, 1 500-ml plastic		
Sample analyses:	Sulfate, nitrate, and total iron (filtered in field)	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-F1 to F6 and MW-13)

92404D96.XLS (1/13/97)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.:	MW-F2	Date:	12/13/96
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	19.9		
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	8.5-19.88		
Recorded by:	WKS	TOC elevation (feet):	102.22 (City of Oakland datum)		
Weather:	Early morning drizzle, becoming sunny	Water level from TOC (feet):	8.62	Time:	8:15
Precip in past		Product level from TOC (feet):	None	Time:	8:15
5 days (inch):	2.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(19.88 ft) - (8.62 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

1.8 gallons in one well volume
5.4 gallons in 3 well volumes
5.5 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	--	--	4.01/7.00	1,000
Before Purging:	7:40	21.2	4.01/7.00	1,000
After Purging:	14:55	21.6	4.08/6.98	1,000

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
12:38	21.1	6.68	500	1	Clear
12:48	20.9	6.39	400	2.5	Clear
12:58	21.0	6.40	400	4.0	Clear
13:10	21.1	6.57	500	5.5	Clear

DO meter calibration:	9.65 @ 17° C		Time: --
DO result (after purging of well) (mg/L):	0.55		Time: 13:10
Appearance of sample:	Clear		Time: 13:15
Duplicate/blank number:	None		Time: --
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump and tubing	VOC attachment:	None required
Sample containers:	3 40-ml VOAs, 1 250-ml plastic, 1 500-ml plastic		
Sample analyses:	BTEX, TPHg, sulfate, nitrate, and total iron (filtered in field)	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-F1 to F6 and MW-13)

92404D96.XLS (1/13/97)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.:	MW-F3	Date:	12/13/96
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	24.45		
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	8.5-24.45		
Recorded by:	WKS	TOC elevation (feet):	102.42 (City of Oakland datum)		
Weather:	Early morning drizzle, becoming sunny	Water level from TOC (feet):	8.76	Time:	8:14
Precip in past		Product level from TOC (feet):	None	Time:	8:14
5 days (inch):	2.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(24.45 ft) - (8.76 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

2.5 gallons in one well volume

7.5 gallons in 3 well volumes

7.5 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	--	--	4.01/7.00	1,000
Before Purging:	7:40	21.2	4.01/7.00	1,000
After Purging:	14:55	21.6	4.08/6.98	1,000

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
11:44	20.6	6.58	700	0.8	Clear
11:55	20.6	6.59	700	2.5	Clear
12:12	20.4	6.59	600	6.0	Clear
12:21	20.4	6.59	600	7.5	Clear

DO meter calibration:	9.65 @ 17° C		Time: --
DO result (after purging of well) (mg/L):	0.50		Time: 12:21
Appearance of sample:	Clear		Time: 12:25
Duplicate/blank number:	None		Time: --
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump and tubing	VOC attachment:	None required
Sample containers:	3 40-ml VOAs, 1 250-ml plastic, 1 500-ml plastic		
Sample analyses:	BTEX, TPHg, sulfate, nitrate, and total iron (filtered in field)	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-F1 to F6 and MW-13)

92404D96.XLS (1/13/97)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.: MW-F4	Date: 12/13/96
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	16.84
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2
	Oakland, CA	Screened interval from TOC (feet):	8.5-16.84
Recorded by:	WKS	TOC elevation (feet):	101.56 (City of Oakland datum)
Weather:	Early morning drizzle, becoming sunny	Water level from TOC (feet):	6.61 Time: 9:58
Precip in past		Product level from TOC (feet):	None Time: 9:58
5 days (inch):	2.5	Water level measurement:	Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(16.84 ft) - (6.61 ft)] × (0.083 ft)² × 3.14 × 7.48 =
Well depth Water level Well radius

1.7 gallons in one well volume
5.1 gallons in 3 well volumes
5.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	--	--	4.01/7.00	1,000
Before Purging:	7:40	21.2	4.01/7.00	1,000
After Purging:	14:55	21.6	4.08/6.98	1,000

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
13:25	20.9	6.52	500	1.0	Clear, petroleum odor
13:38	21.0	6.53	500	2.75	Clear, petroleum odor
13:45	21.0	6.54	500	4.0	Clear, petroleum odor
13:52	21.0	6.54	500	5.0	Clear, petroleum odor

DO meter calibration:	9.65 @ 17° C		Time: --
DO result (after purging of well) (mg/L):	0.50		Time: 13:52
Appearance of sample:	Clear		Time: 13:55
Duplicate/blank number:	None		Time: --
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump and tubing	VOC attachment:	None required
Sample containers:	3 40-ml VOAs, 1 250-ml plastic, 1 500-ml plastic		
Sample analyses:	BTEX, TPHg, sulfate, nitrate, and total iron (filtered in field)	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-F1 to F6 and MW-13)

92404D96.XLS (1/13/97)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.: MW-F5	Date: 12/13/96
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	24.01
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2
	Oakland, CA	Screened interval from TOC (feet):	8.5-24.01
Recorded by:	WKS	TOC elevation (feet):	100.32 (City of Oakland datum)
Weather:	Early morning drizzle, becoming sunny	Water level from TOC (feet):	8.72 Time: 9:16
Precip in past		Product level from TOC (feet):	None Time: 9:16
5 days (inch):	2.5	Water level measurement:	Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(24.01 ft) - (8.72 ft)] × (0.083 ft)² × 3.14 × 7.48 =
Well depth Water level Well radius

2.5 gallons in one well volume
7.5 gallons in 3 well volumes
8.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	--	--	4.01/7.00	1,000
Before Purging:	7:40	21.2	4.01/7.00	1,000
After Purging:	14:55	21.6	4.08/6.98	1,000

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
9:33	19.6	6.56	390	1.5	Clear to very slightly turbid
9:42	19.7	6.54	390	2.5	Clear
10:07	19.7	6.54	370	7.0	Clear
10:16	19.7	6.53	370	8.0	Clear

DO meter calibration:	9.65 @ 17° C		Time: --
DO result (after purging of well) (mg/L):	0.60		Time: 10:16
Appearance of sample:	Clear		Time: 10:20
Duplicate/blank number:	None		Time: --
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump and tubing	VOC attachment:	None required
Sample containers:	3 40-ml VOAs, 1 250-ml plastic, 1 500-ml plastic		
Sample analyses:	BTEX, TPHg, sulfate, nitrate, and total iron (filtered in field)	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-F1 to F6 and MW-13)

92404D96.XLS (1/13/97)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.:	MW-F6	Date:	12/13/96
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	21		
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	9.0-21.0		
Recorded by:	WKS	TOC elevation (feet):	100.11 (City of Oakland datum)		
Weather:	Early morning drizzle, becoming sunny	Water level from TOC (feet):	8.44	Time:	9:55
Precip in past		Product level from TOC (feet):	None	Time:	9:55
5 days (inch):	2.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(21.00 ft) - (8.44 ft)] × (0.083 ft)² × 3.14 × 7.48 =
Well depth Water level Well radius

2.0 gallons in one well volume
6.0 gallons in 3 well volumes
6.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	--	--	4.01/7.00	1,000
Before Purging:	7:40	21.2	4.01/7.00	1,000
After Purging:	14:55	21.6	4.08/6.98	1,000

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
10:43	20.2	6.88	400	1	Clear
10:54	20.3	6.81	400	2.5	Clear
11:04	20.3	6.80	370	4.0	Clear
11:19	20.3	6.80	370	6.0	Clear

DO meter calibration:	9.65 @ 17° C		Time: --
DO result (after purging of well) (mg/L):	1.00		Time: 11:19
Appearance of sample:	Clear		Time: 11:25
Duplicate/blank number:	None		Time: --
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump and tubing	VOC attachment:	None required
Sample containers:	3 40-ml VOAs, 1 250-ml plastic, 1 500-ml plastic		
Sample analyses:	BTEX, TPHg, sulfate, nitrate, and total iron (filtered in field)	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-F1 to F6 and MW-13)

92404D96.XLS (1/13/97)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.:	MW-13 (Chevron) Date: 12/13/96
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	24.13 (Soft bottom detected)
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2
	Oakland, CA	Screened interval from TOC (feet):	8.5-24.5
Recorded by:	WKS	TOC elevation (feet):	101.24 (City of Oakland datum)
Weather:	Early morning drizzle, becoming sunny	Water level from TOC (feet):	8.28 Time: 10:10
Precip in past		Product level from TOC (feet):	Sheen Time: 10:10
5 days (inch):	2.5	Water level measurement:	Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(24.13 ft) - (8.28 ft)] × (0.083 ft)² × 3.14 × 7.48 =
Well depth Water level Well radius

2.6 gallons in one well volume
7.7 gallons in 3 well volumes
7.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	--	--	4.01/7.00	1,000
Before Purging:	7:40	21.2	4.01/7.00	1,000
After Purging:	14:55	21.6	4.08/6.98	1,000

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
14:10	21.0	6.56	700	1.0	Clear, strong petroleum odor, sheen
14:20	21.1	6.51	750	2.5	Clear, strong petroleum odor, sheen
14:28	21.0	6.51	750	4.0	Clear, strong petroleum odor, sheen
14:36	21.2	6.50	750	5.5	Clear, strong petroleum odor, sheen
14:44	21.1	6.50	750	7.0	Clear, strong petroleum odor, sheen

DO meter calibration:	9.65 @ 17° C		Time: --
DO result (after purging of well) (mg/L):	0.35		Time: 14:44
Appearance of sample:	Clear		Time: 14:45
Duplicate/blank number:	None		Time: --
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump and tubing	VOC attachment:	None required
Sample containers:	3 40-ml VOAs, 1 250-ml plastic, 1 500-ml plastic		
Sample analyses:	BTEX, TPHg, sulfate, nitrate, and total iron (filtered in field)	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-F1 to F6 and MW-13)

92404D96.XLS (1/13/97)

ATTACHMENT B

LABORATORY REPORTS

CHROMALAB, INC.

Environmental Services (SDB)

December 20, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL revised from report sent previously.

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: 5 samples for Gasoline and BTEX compounds analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Matrix: WATER
Sampled: December 13, 1996 *Run#:* 4523 *Analyzed:* December 16, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
110804	MW-F2	60	N.D.	N.D.	N.D.	N.D.
110805	MW-F3	180	N.D.	N.D.	N.D.	N.D.
110806	MW-F4	27000	390	50	3200	3700
110807	MW-F5	N.D.	N.D.	N.D.	N.D.	N.D.
110808	MW-F6	N.D.	N.D.	N.D.	N.D.	N.D.
Reporting Limits		50	0.50	0.50	0.50	0.50
Blank Result		N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)		108	97.0	96.1	98.5	98.3

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Chemist

Marianne Alexander
Gas/BTEX Supervisor

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CHROMALAB, INC.

Environmental Services (SDB)

December 20, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL revised from report sent previously.

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: 1 sample for Gasoline and BTEX compounds analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Matrix: WATER
Sampled: December 13, 1996 *Run#:* 4547 *Analyzed:* December 17, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
110809	MW-13	16000	670	40	1200	1000
	Note:	*Surrogate recovery was outside QA/QC limits due to matrix interference. See Surrogate Summary page.*				
	Reporting Limits	500	5.0	5.0	5.0	5.0
	Blank Result	N.D.	N.D.	N.D.	N.D.	N.D.
	Blank Spike Result (%)	120	99.4	98.4	101	99.8

Kayvan Kimyai
Chemist

Marianne Alexander
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V115 O:QC0405 KAYVAN 16 51

CHROMALAB, INC.

Environmental Services (SDB)

December 20, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: KEVIN O'DAY

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: **Surrogate** report for 1 sample for Gasoline and BTEX compounds
Method: EPA 8015M SW846 8020A Nov 1990
Lab Run#: 4547
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
110809-1	MW-13	TRIFLUOROTOLUENE	175	65-135
110809-1	MW-13	BROMOFLUOROBENZENE	267	65-135

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
111358-1	*Reagent blank (MDB)*	TRIFLUOROTOLUENE	87.3	65-135
111358-1	*Reagent blank (MDB)*	BROMOFLUOROBENZENE	91.5	65-135
111359-1	*Spiked blank (BSP)*	TRIFLUOROTOLUENE	102	65-135
111359-1	*Spiked blank (BSP)*	BROMOFLUOROBENZENE	102	65-135
111360-1	*Spiked blank duplicate (BSD)*	TRIFLUOROTOLUENE	105	65-135
111360-1	*Spiked blank duplicate (BSD)*	BROMOFLUOROBENZENE	105	65-135
111361-1	*Matrix spike (MS)*	TRIFLUOROTOLUENE	91.1	65-135
111361-1	*Matrix spike (MS)*	BROMOFLUOROBENZENE	94.0	65-135
111362-1	*Matrix spike duplicate (MSD)*	TRIFLUOROTOLUENE	91.0	65-135
111362-1	*Matrix spike duplicate (MSD)*	BROMOFLUOROBENZENE	94.0	65-135

V115
QCSURR1229 KAYVAN 20-Dec-96 16

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CHROMALAB, INC.

Environmental Services (SDB)

December 20, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: KEVIN O'DAY

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: **Surrogate** report for 5 samples for Gasoline and BTEX compounds
Method: EPA 8015M SW846 8020A Nov 1990
Lab Run#: 4523
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
110804-1	MW-F2	TRIFLUOROTOLUENE	91.8	65-135
110804-1	MW-F2	BROMOFLUOROBENZENE	73.1	65-135
110805-1	MW-F3	TRIFLUOROTOLUENE	81.1	65-135
110805-1	MW-F3	BROMOFLUOROBENZENE	102	65-135
110806-1	MW-F4	TRIFLUOROTOLUENE	99.4	65-135
110806-1	MW-F4	BROMOFLUOROBENZENE	60.0	65-135
110806-2	MW-F4	TRIFLUOROTOLUENE	112	65-135
110806-2	MW-F4	BROMOFLUOROBENZENE	89.7	65-135
110807-1	MW-F5	TRIFLUOROTOLUENE	48.2	65-135
110807-2	MW-F5	TRIFLUOROTOLUENE	80.2	65-135
110807-2	MW-F5	BROMOFLUOROBENZENE	82.1	65-135
110808-1	MW-F6	TRIFLUOROTOLUENE	33.0	65-135
110808-1	MW-F6	BROMOFLUOROBENZENE	43.0	65-135
110808-2	MW-F6	TRIFLUOROTOLUENE	74.1	65-135
110808-2	MW-F6	BROMOFLUOROBENZENE	76.8	65-135

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
111016-1	*Reagent blank (MDB)*	TRIFLUOROTOLUENE	94.8	65-135
111016-1	*Reagent blank (MDB)*	BROMOFLUOROBENZENE	92.2	65-135
111017-1	*Spiked blank (BSP)*	TRIFLUOROTOLUENE	100	65-135
111017-1	*Spiked blank (BSP)*	BROMOFLUOROBENZENE	96.4	65-135
111018-1	*Spiked blank duplicate (BSD)*	TRIFLUOROTOLUENE	101	65-135
111018-1	*Spiked blank duplicate (BSD)*	BROMOFLUOROBENZENE	95.6	65-135
111019-1	*Matrix spike (MS)*	TRIFLUOROTOLUENE	85.1	65-135
111019-1	*Matrix spike (MS)*	BROMOFLUOROBENZENE	89.6	65-135
111020-1	*Matrix spike duplicate (MSD)*	TRIFLUOROTOLUENE	81.4	65-135
111020-1	*Matrix spike duplicate (MSD)*	BROMOFLUOROBENZENE	86.8	65-135

V115
QCSURR1229 KAYVAN 20-Dec-96 16

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CHROMALAB, INC.

Environmental Services (SDB)

December 20, 1996

Submission #: 9612182
page 2

BASELINE ENVIRONMENTAL/EMRYVL

Atten: KEVIN O'DAY

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: **Surrogate** report for 5 samples for Gasoline and BTEX compounds
Method: EPA 8015M SW846 8020A Nov 1990
Lab Run#: 4523

V115
QCSURR1229 KAYVAN 20-Dec-96 16

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CHROMALAB, INC.

Environmental Services (SDB)

December 19, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: One sample for Soluble Miscellaneous Metals analysis.
Method: *EPA 3005A/6010A Nov 1990*

Client Sample ID: **MW-F1**
Spl#: 110802 *Matrix:* WATER *Extracted:* December 18, 1996
Sampled: December 13, 1996 *Run#:* 4537 *Analyzed:* December 19, 1996

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	N.D.	0.10	N.D.	108	1

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

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CHROMALAB, INC.

Environmental Services (SDB)

December 19, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: One sample for Soluble Miscellaneous Metals analysis.
Method: *EPA 3005A/6010A Nov 1990*

Client Sample ID: **MW-F2**
Spl#: 110804 *Matrix:* WATER *Extracted:* December 18, 1996
Sampled: December 13, 1996 *Run#:* 4537 *Analyzed:* December 19, 1996

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	0.24	0.10	N.D.	108	1

Charles Woolley
Chemist

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

December 19, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: One sample for Soluble Miscellaneous Metals analysis.
Method: *EPA 3005A/6010A Nov 1990*

Client Sample ID: **MW-F3**
Spl#: 110805 *Matrix:* WATER *Extracted:* December 18, 1996
Sampled: December 13, 1996 *Run#:* 4537 *Analyzed:* December 19, 1996

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	0.11	0.10	N.D.	108	1

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)

December 19, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: One sample for Soluble Miscellaneous Metals analysis.
Method: *EPA 3005A/6010A Nov 1990*

Client Sample ID: **MW-F4**
Spl#: 110806 *Matrix:* WATER *Extracted:* December 18, 1996
Sampled: December 13, 1996 *Run#:* 4537 *Analyzed:* December 19, 1996

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	6.6	0.10	N.D.	108	1

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

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(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

December 19, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: One sample for Soluble Miscellaneous Metals analysis.
Method: *EPA 3005A/6010A Nov 1990*

Client Sample ID: **MW-F5**
Spl#: 110807 *Matrix:* WATER *Extracted:* December 18, 1996
Sampled: December 13, 1996 *Run#:* 4537 *Analyzed:* December 19, 1996

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	N.D.	0.10	N.D.	108	1

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

510-420-1707 MV 12/20

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

CHROMALAB, INC.

Environmental Services (SDB)

December 19, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: One sample for Soluble Miscellaneous Metals analysis.
Method: *EPA 3005A/6010A Nov 1990*

Client Sample ID: **MW-F6**
Spl#: 110808 *Matrix:* WATER *Extracted:* December 18, 1996
Sampled: December 13, 1996 *Run#:* 4537 *Analyzed:* December 19, 1996

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	N.D.	0.10	N.D.	108	1

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

510-420-1707 MV 12/20

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

CHROMALAB, INC.

Environmental Services (SDB)

December 19, 1996 *Submission #:* 9612182

BASELINE ENVIRONMENTAL/EMRYVL

Atten: Not provided

Project: 2662 FRUITVALE AVE, OAK. *Project#:* 92404-DO
Received: December 13, 1996

re: One sample for Soluble Miscellaneous Metals analysis.
Method: *EPA 3005A/6010A Nov 1990*

Client Sample ID: **MW-13**
Spl#: 110809 *Matrix:* WATER *Extracted:* December 18, 1996
Sampled: December 13, 1996 *Run#:* 4537 *Analyzed:* December 19, 1996

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	6.8	0.10	N.D.	108	1

Charles Woolley
Chemist

John S. Labash
Inorganic Supervisor

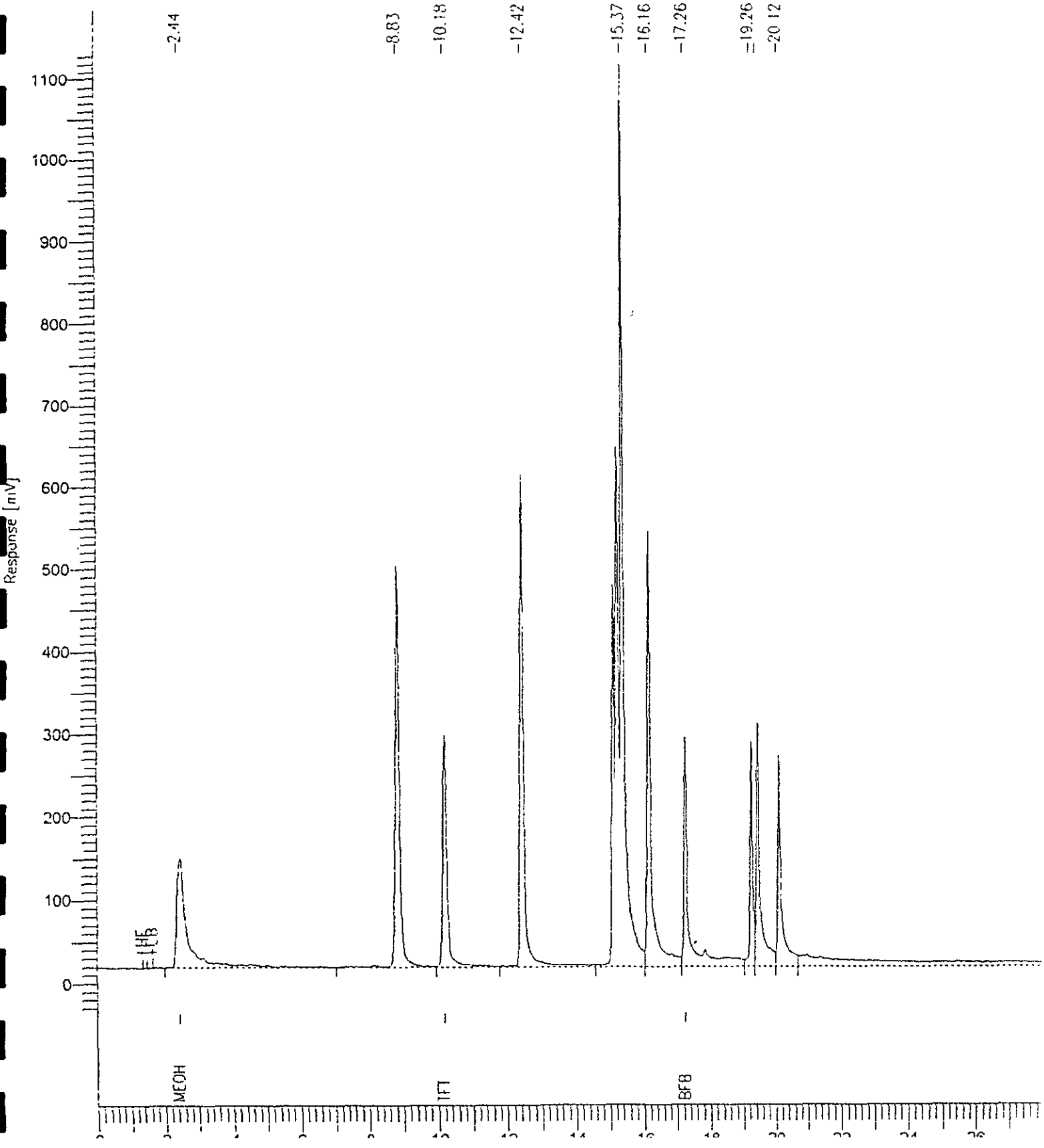
510-420-1707 MV 12/20

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

Gasoline Chromatogram

Sample Name : P. AROMATICS MS726 100NG/5ML BTXE STD
FileName : O:\3GD1601.raw
Method : 3PA13NE
Start Time : 0.00 min End Time : 28.00 min
Scale Factor: 1.0 Plot Offset: -37 mV

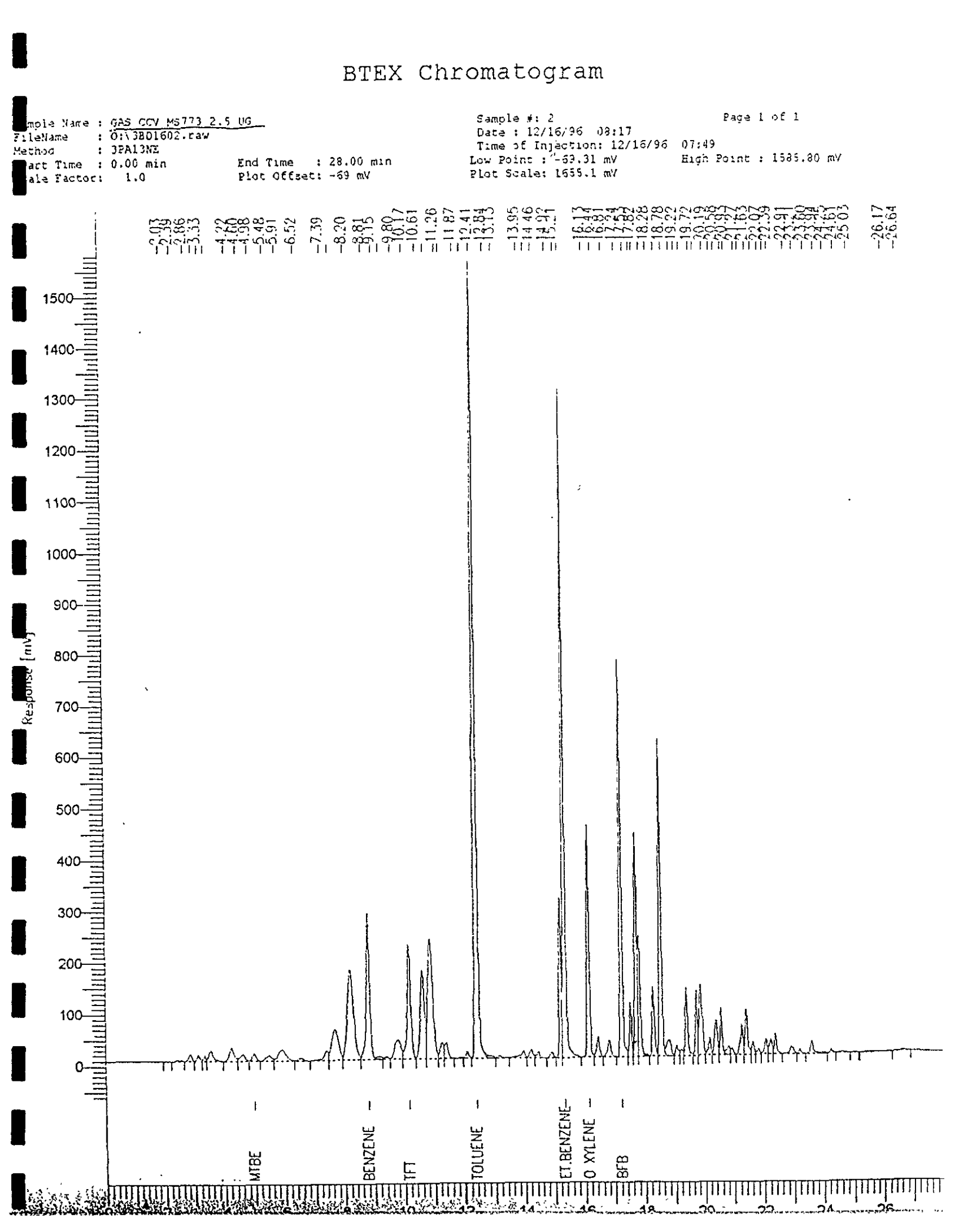
Sample #: 1
Date : 12/16/96 07:39
Time of Injection: 12/16/96 07:11
Low Point : -37.01 mV High Point : 1134.64 mV
Plot Scale: 1171.7 mV



BTEX Chromatogram

mple Name : GAS CCV MS773 2.5 UG
FileName : O:\3BD1602.raw
Method : BPA13NE
art Time : 0.00 min End Time : 28.00 min
ale Factor: 1.0 Plot Offset: -69 mV

Sample #: 2 Page 1 of 1
Date : 12/16/96 08:17
Time of Injection: 12/16/96 07:49
Low Point : -69.31 mV High Point : 1585.80 mV
Plot Scale: 1655.1 mV



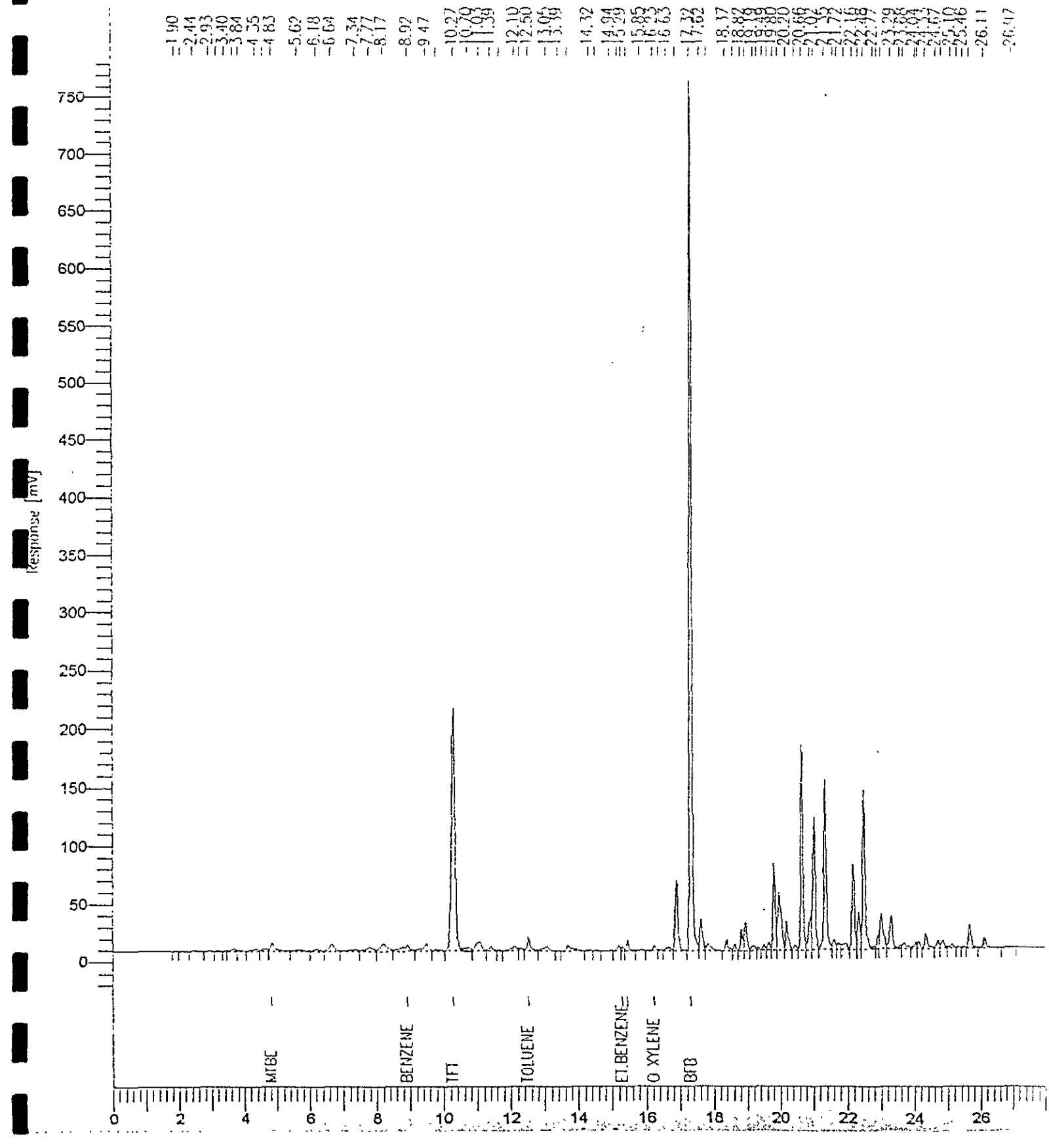
BTEX Chromatogram

Sample Name : 9612182/MW-F2
FileName : O:\3BD1615.raw
Method : 3PA13NE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: -29 mV

Sample #: 110804
Date : 12/16/96 18:56
Time of Injection: 12/16/96 18:28
Low Point : -29.44 mV
Plot Scale: 816.9 mV

High Point : 787.50 mV



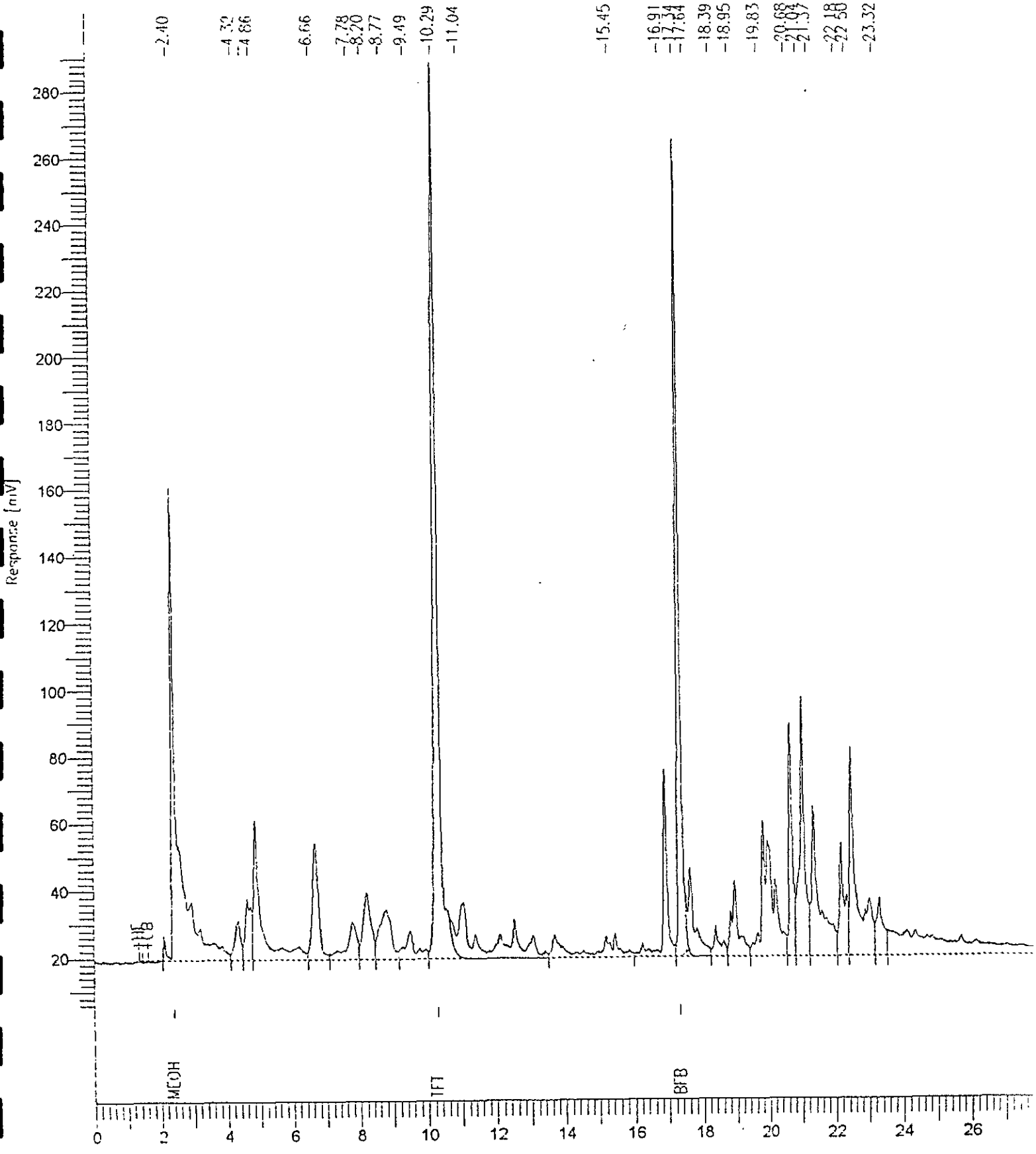
Gasoline Chromatogram

Sample Name : 9612182/MW-F2
FileName : 0:\3GD1615.raw
Method : 3PA13NE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: 5 mV

Sample #: 110804
Date : 12/16/96 18:56
Time of Injection: 12/16/96 18:28
Low Point : 4.99 mV
Plot Scale: 286.1 mV

Page 1 of 1
High Point : 291.10 mV

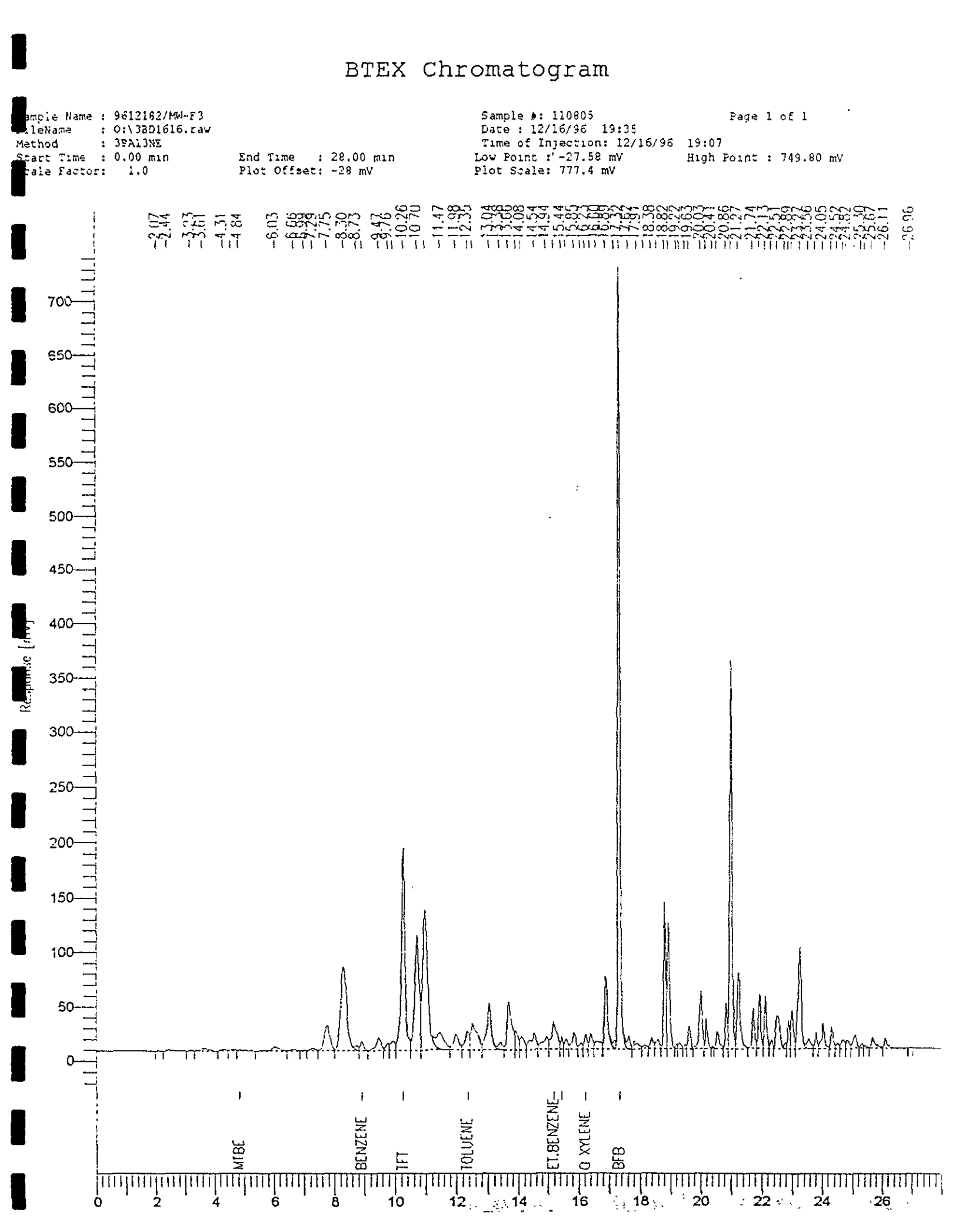


BTEX Chromatogram

Sample Name : 9612162/MW-F3
FileName : O:\3BD1616.raw
Method : 3PA13NE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: -28 mV

Sample #: 110805
Date : 12/16/96 19:35
Time of Injection: 12/16/96 19:07
Low Point : -27.58 mV
Plot Scale: 777.4 mV

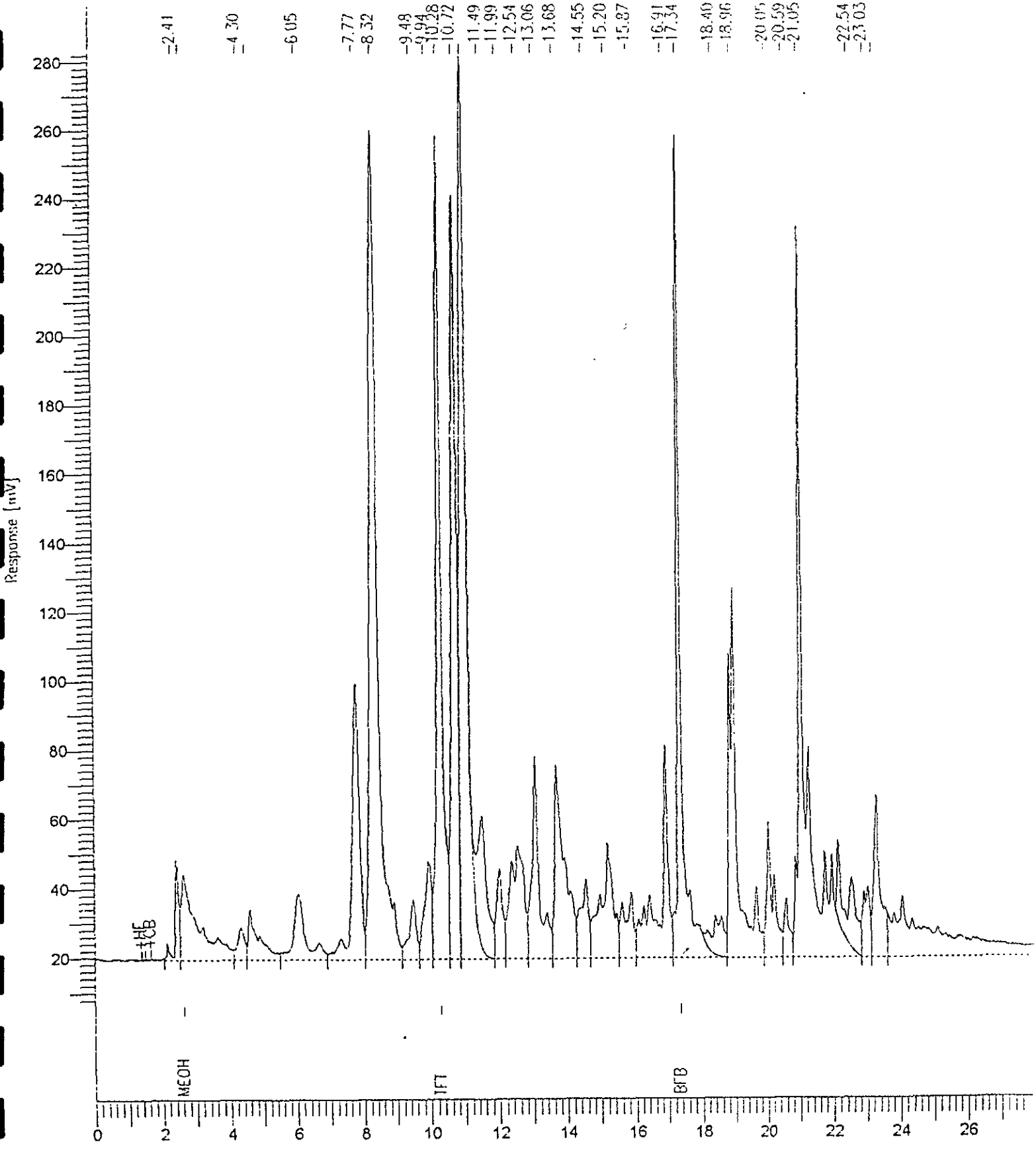


Gasoline Chromatogram

Sample Name : 9612182/MW-F3
FileName : O:\3GD1616.raw
Method : 3PA13NE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: 6 mV

Sample #: 110805
Date : 12/16/96 19:35
Time of Injection: 12/16/96 19:07
Low Point : 6.08 mV
Plot Scale: 276.4 mV



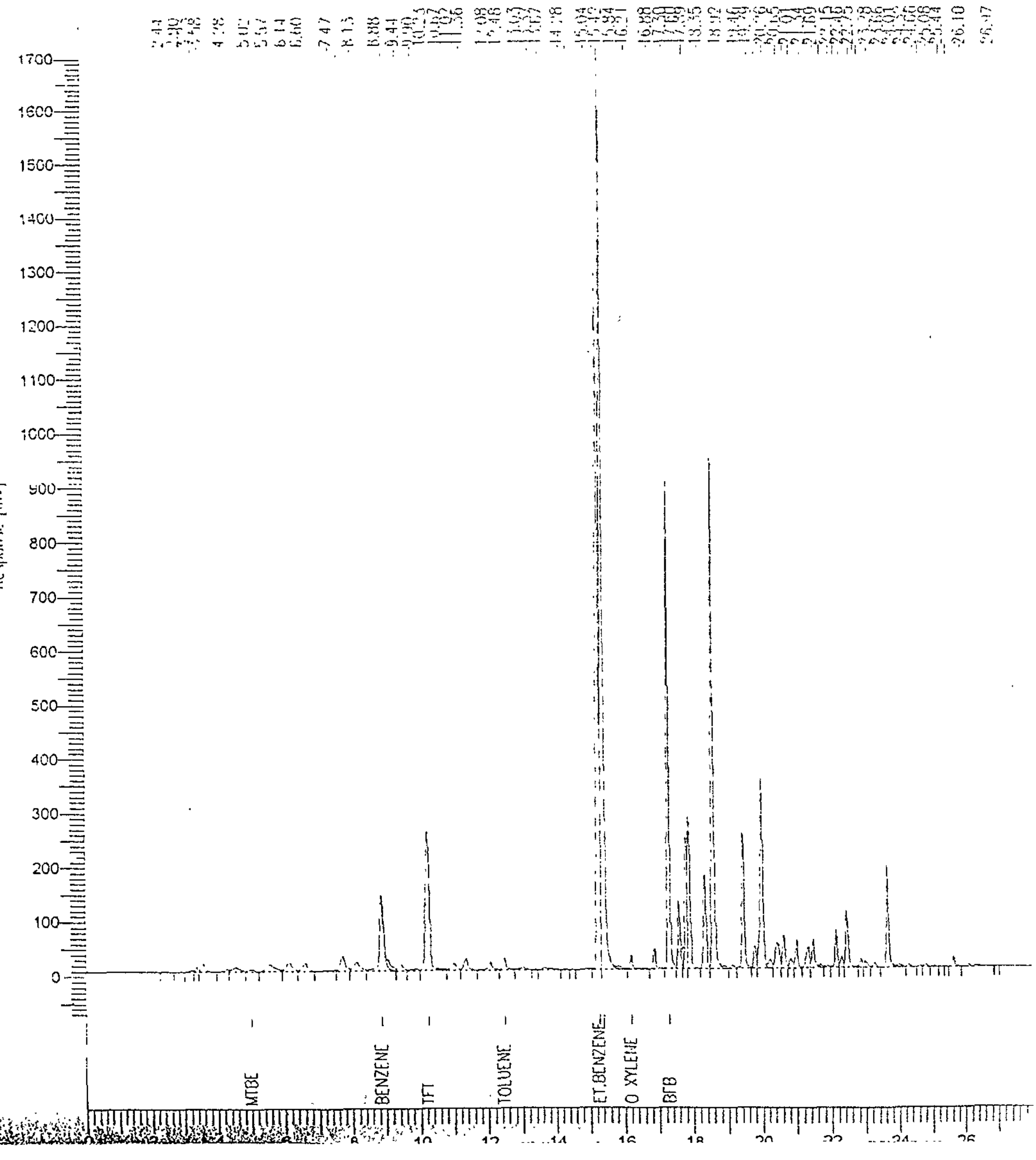
BTEX Chromatogram

Sample Name : 9612182 MW-F4
FileName : G: CB02006.raw
Method : CBALINE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: -75 mV

Sample #: 110606
Date : 12/20/96 10:55
Time of Injection: 12/20/96 10:27
Low Point : -75.30 mV
Plot Scale: 1780.2 mV

High Point : 1704.94 mV



Gasoline Chromatogram

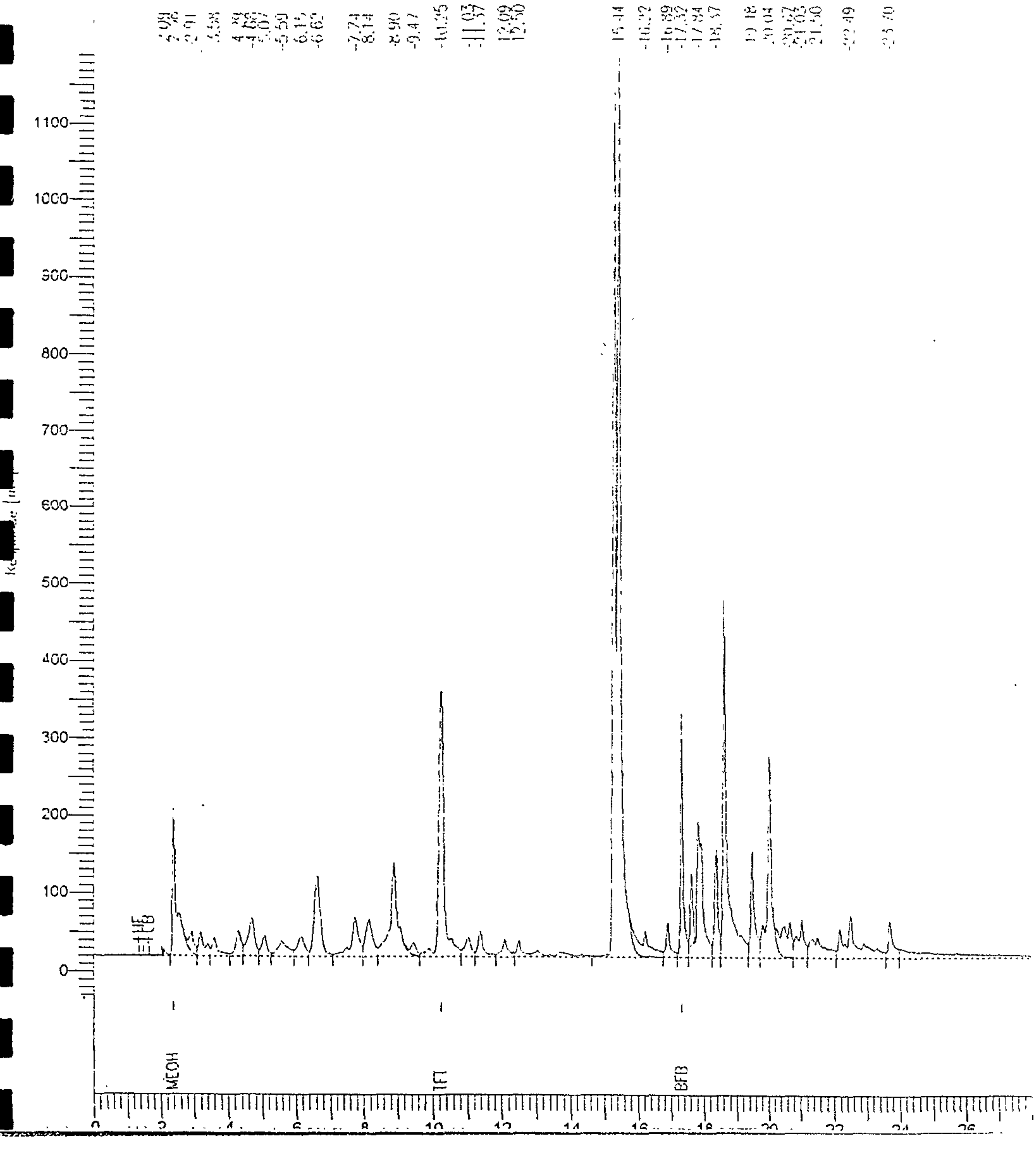
Sample Name : 9612182/MW-F4
FileName : G:\GBD1006.raw
Method : GRALINE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: -19 mV

Sample #: 119806
Date : 12/20/96 11:33
Time of Injection: 12/20/96 11:07
Low Point : -18.78 mV
Plot Scale: 1202.5 mV

Page 1 of 1

High Point : 1130.79 mV



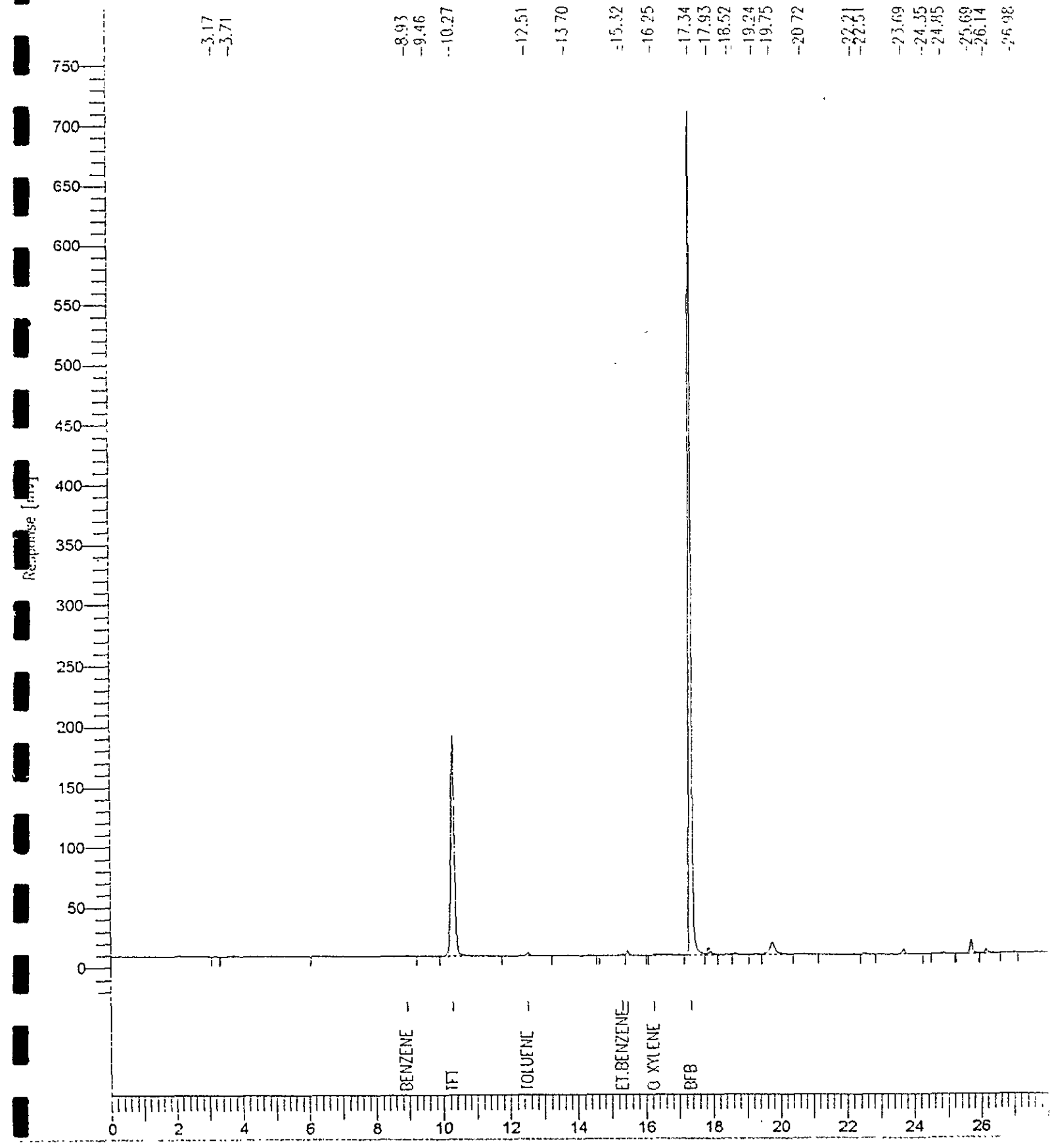
BTEX Chromatogram

mple Name : 9612182/MW-F5
leName : O:\3ED1717.raw
Method : 3PA13NE
Start Time : 0.00 min
ale Factor: 1.0

End Time : 28.00 min
Plot Offset: -28 mV

Sample #: 110807
Date : 12/17/96 20:17
Time of Injection: 12/17/96 19:49
Low Point : -28.07 mV
Plot Scale: 786.4 mV

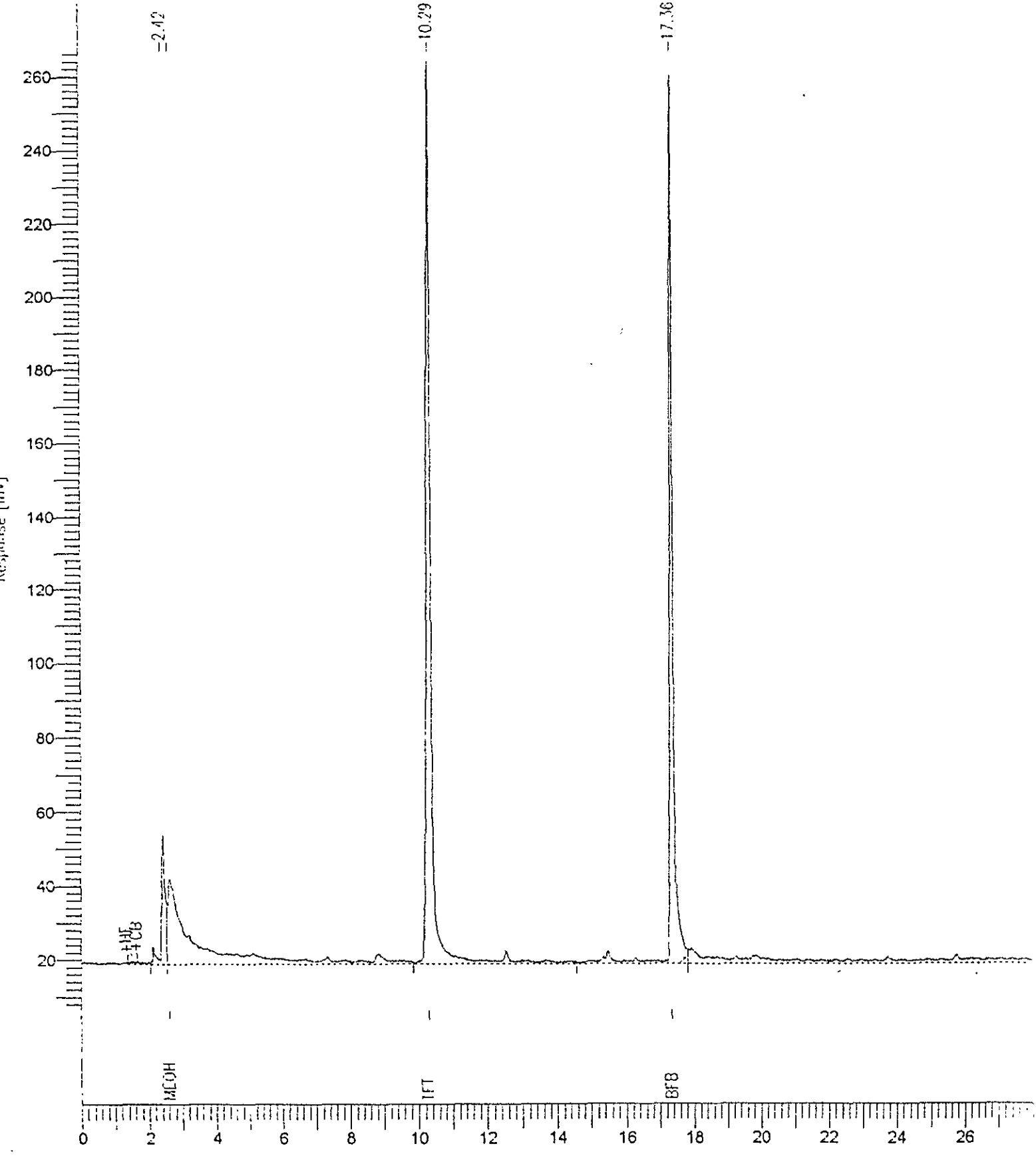
High Point : 758.34 mV



Gasoline Chromatogram

Sample Name : 9612182/MW-F5
Filename : O:\3GD1717.raw
Method : 3PA13NE
Start Time : 0.00 min End Time : 28.00 min
Scale Factor: 1.0 Plot Offset: 6 mV

Sample #: 110807 Page 1 of 1
Date : 12/17/96 20:17
Time of Injection: 12/17/96 19:49
Low Point : 6.44 mV High Point : 267.04 mV
Plot Scale: 260.6 mV

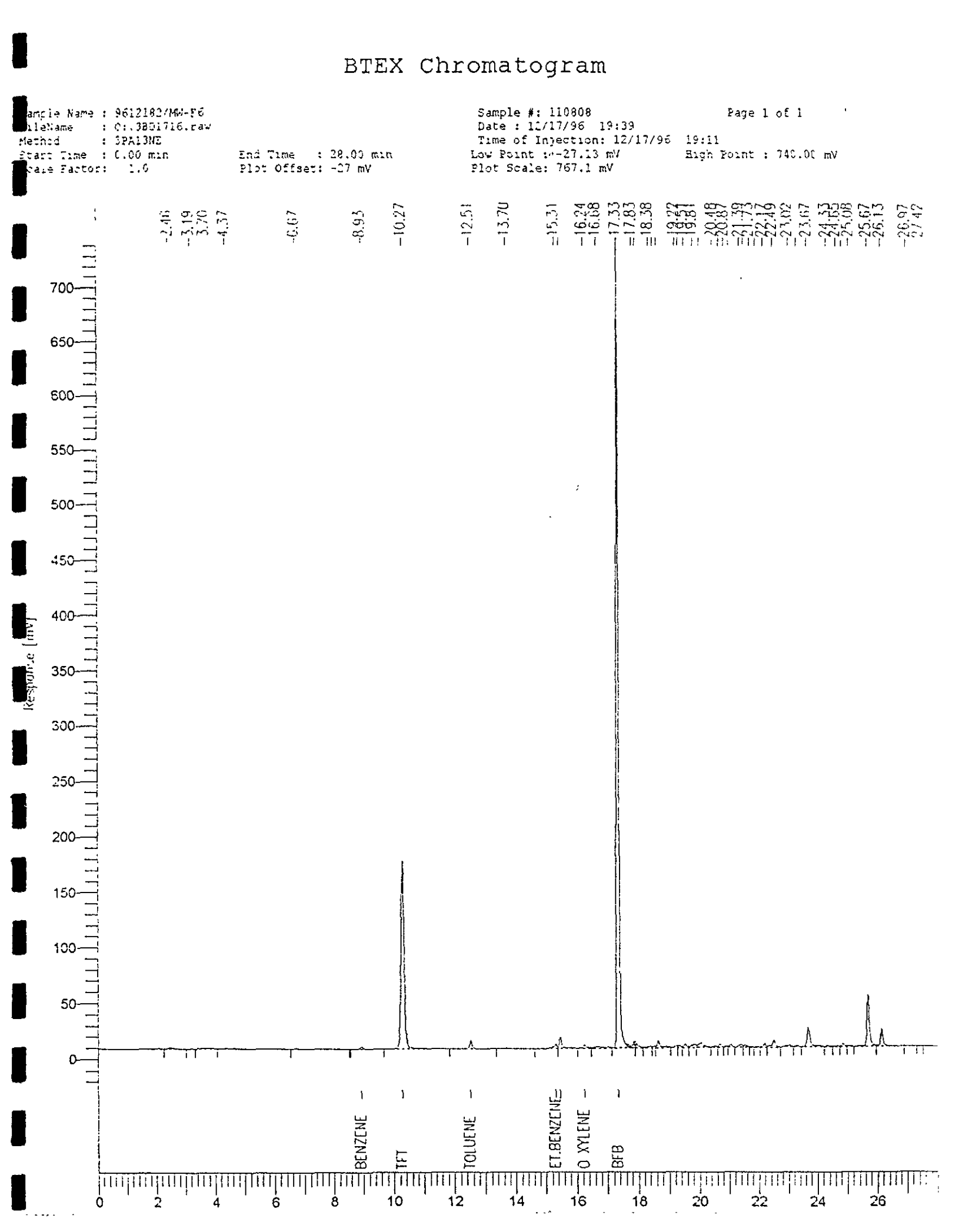


BTEX Chromatogram

Sample Name : 9612182/MW-F6
FileName : C:.3801716.raw
Method : BPA13NE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: -27 mV

Sample #: 110808
Date : 12/17/96 19:39
Time of Injection: 12/17/96 19:11
Low Point : -27.13 mV
Plot Scale: 767.1 mV



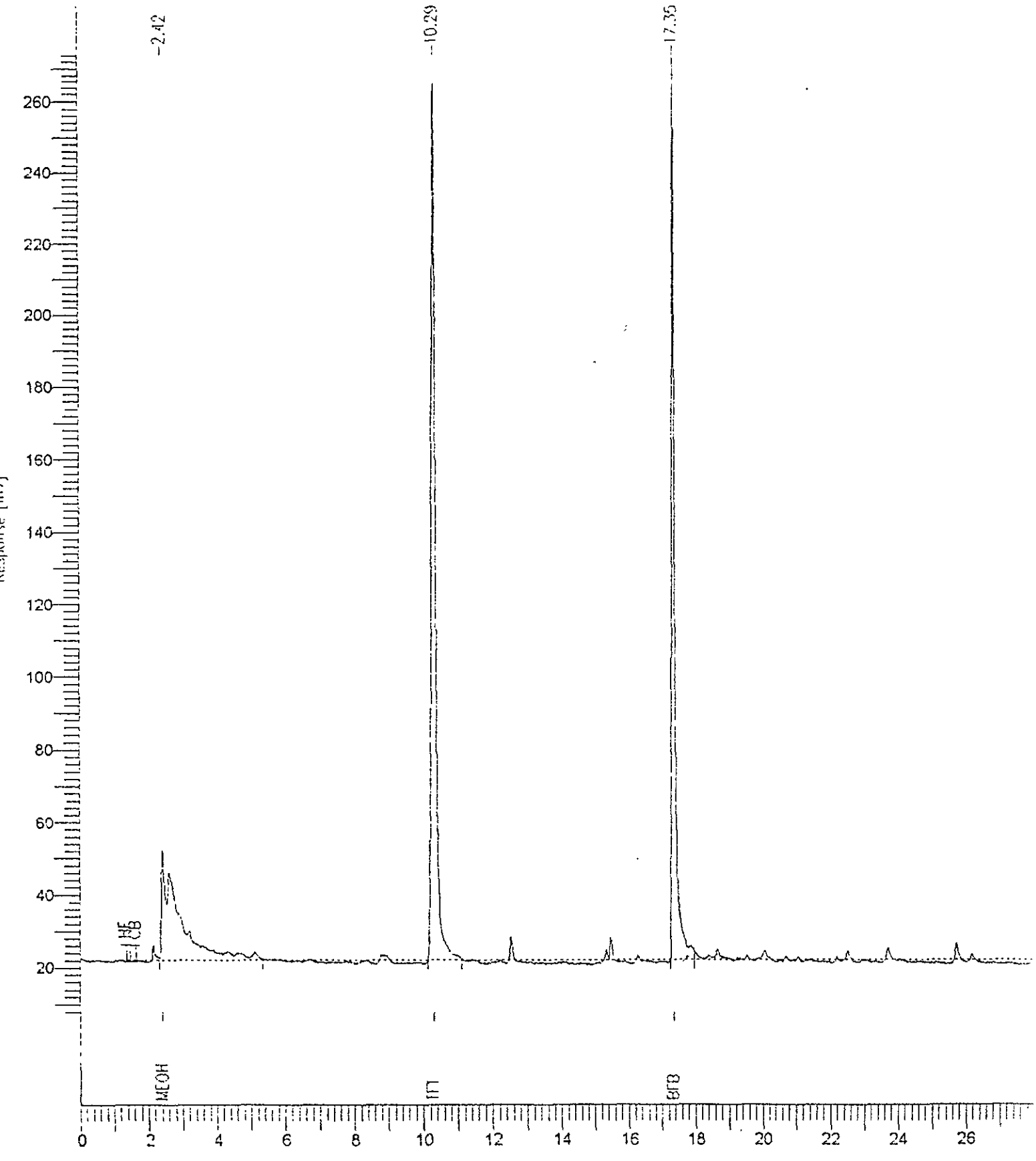
Gasoline Chromatogram

ample Name : 9612182/MW-FE
leName : G:\3GD1716.raw
Method : 3PA13NE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: 8 mV

Sample #: 110808
Date : 12/17/96 19:39
Time of Injection: 12/17/96 19:11
Low Point : 7.87 mV
Plot Scale: 266.2 mV

High Point : 274.12 mV

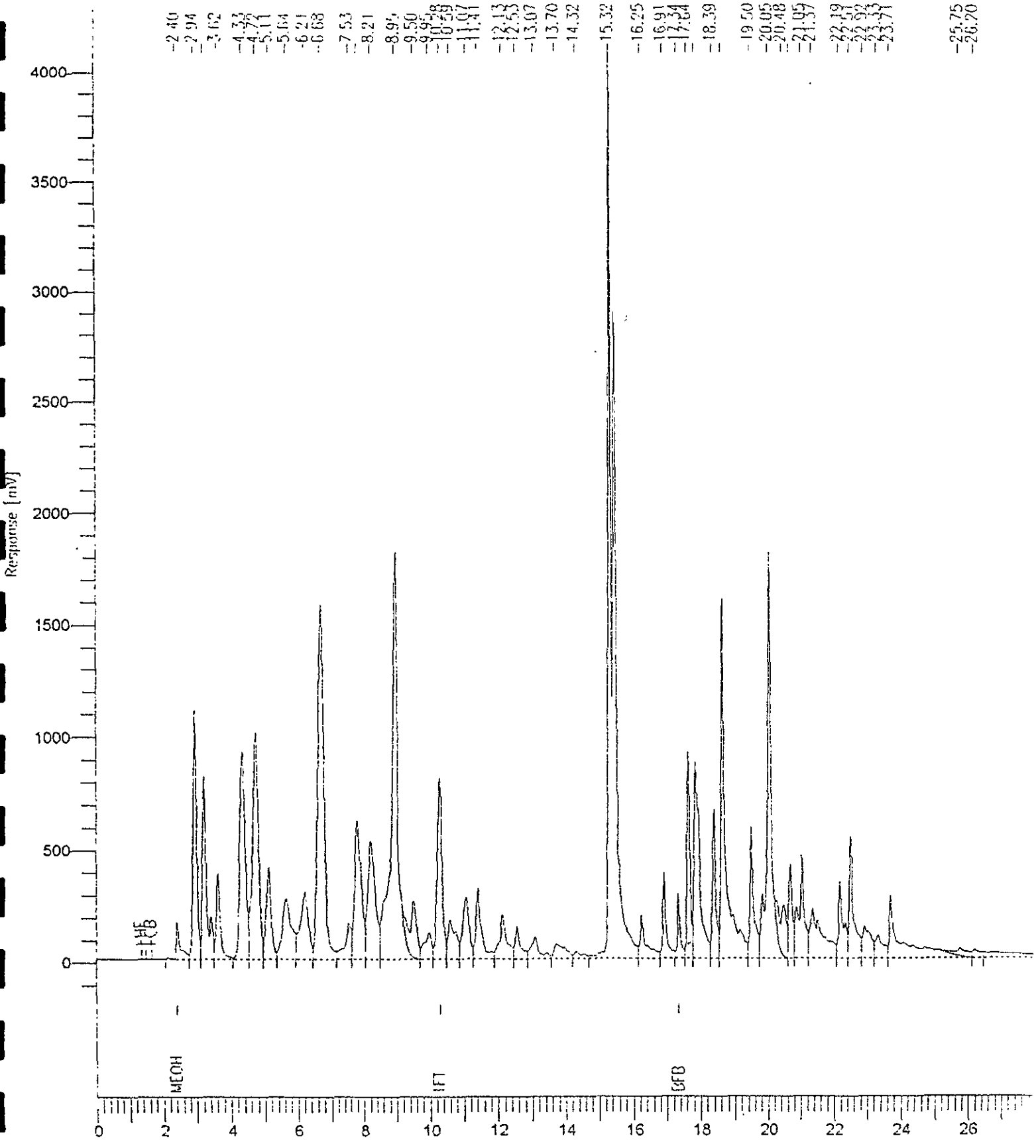


Gasoline Chromatogram

Sample Name : 9612182/MW-13
FileName : O:\3GD1718.raw
Method : 3FA13NE
Start Time : 0.00 min
Scale Factor: 1.0

End Time : 28.00 min
Plot Offset: -186 mV

Sample #: 110809
Date : 12/17/96 19:00
Time of Injection: 12/17/96 18:32
Low Point : -185.56 mV
Plot Scale: 4275.7 mV



San Francisco Regional Office

1252 Quarry Lane
P.O. Box 9019
Pleasanton, CA 94566
(510) 426-2600
Fax (510) 426-0106

Clayton
ENVIRONMENTAL
CONSULTANTS

December 23, 1996

Mr. Chris Rowley
CHROMALAB, INC.
1220 Quarry Lane
Pleasanton, CA 94566-4756

Client Ref.: 9612182
Clayton Project No.: 96122.17

Dear Mr. Rowley:

Attached is our analytical laboratory report for the samples received on December 16, 1996. Also enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples.

Please note that any unused portion of the samples will be discarded after January 22, 1997, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact Suzanne Haus, Client Services Supervisor, at (510) 426-2657.

Sincerely,

Andrew Bradley for

Harriotte A. Hurley, CIH
Director, Laboratory Services
San Francisco Regional Office

HAH/tjb

Attachments

Analytical Results
for
Chromalab, Inc.
Client Reference: 9612182
Clayton Project No. 96122.17

Sample Identification: See Below
Lab Number: 9612217
Sample Matrix/Media: WATER
Method Reference: EPA 300.0

Date Received: 12/16/96
Date Analyzed: 12/19/96

Lab Number	Sample Identification	Date Sampled	Nitrate-N (mg/L)		Method Detection Limit (mg/L)
-01	MW-F1	12/13/96	8.5	a	0.05
-02	MW-F2	12/13/96	0.20	a	0.05
-03	MW-F3	12/13/96	0.69	a	0.05
-04	MW-F4	12/13/96	<0.05	a	0.05
-05	MW-F5	12/13/96	6.6	a	0.05
-06	MW-F6	12/13/96	0.44	a	0.05
-07	MW-13	12/13/96	<0.05	a	0.05
-08	METHOD BLANK	--	<0.05		0.05

ND: Not detected at or above limit of detection
--: Information not available or not applicable

a Sample received past recommended holding times for this analysis.

Clayton
ENVIRONMENTAL
CONSULTANTS

Analytical Results
for
Chromalab, Inc.
Client Reference: 9612182
Clayton Project No. 96122.17

Sample Identification: See Below
Lab Number: 9612217
Sample Matrix/Media: WATER
Method Reference: EPA 300.0

Date Received: 12/16/96
Date Analyzed: 12/19/96

Lab Number	Sample Identification	Date Sampled	Sulfate (mg/L)	Method Detection Limit (mg/L)
-01	MW-F1	12/13/96	38	2
-02	MW-F2	12/13/96	8	2
-03	MW-F3	12/13/96	23	2
-04	MW-F4	12/13/96	<2	2
-05	MW-F5	12/13/96	45	2
-06	MW-F6	12/13/96	39	2
-07	MW-13	12/13/96	<2	2
-08	METHOD BLANK	--	<2	2

ND: Not detected at or above limit of detection
--: Information not available or not applicable

[redacted] 18[redacted]110802 - [redacted]09[redacted] 3[redacted]

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

CHAIN OF CUSTODY RECORD

Turn-around Time: [illegible]
Lab: Chromalab
BASELINE Contact Person: [illegible]

Project No.	Project Name and Location
42404-DO	2662 Fruitvale Ave, Oakland

Samplers: (Signature) William K Scott

Sample ID No. Station	Date	Time	Media	Depth	No. of Containers	TEH	(TPH with BTX&E)	Oil & Grease	Motor Oil	PNAs	Title 22 Metals	Total Lead	[illegible]	Total Fe ([illegible])					Remarks/ Composite	Detection Limits
MW-F1	12-13-96	9:10	Water		2								X	X						
MW-F2	↓	13:15	↓		5		X						X	X						
MW-F3	↓	13:25	↓		5		X						X	X						
MW-F4	↓	13:55	↓		5		X						X	X						
MW-F5	↓	10:20	↓		5		X						X	X						
MW-F6	↓	11:25	↓		5		X						X	X						
MW-13	↓	14:45	↓		5		X						X	X						

SUBM #: 9612182 REP: MV
CLIENT: BASE
DUE: 12/20/96
REF #:31190

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Conditions of Samples Upon Arrival at Laboratory:
William K Scott	12-13-96 / 16:00	[illegible signature]	12-13-96 1600	
[illegible signature]	12-13-96 1805	Jimmie Park	12/13/96 1805	Remarks:

1252 Quarry Lane
P.O. Box 9019
Pleasanton, CA 94566
(510) 426-2600
Fax (510) 426-0106

Clayton
ENVIRONMENTAL
CONSULTANTS

FACSIMILE COVER SHEET

TO: Bella FAX NO: 420-1707

COMPANY: Baseline

FROM: Suzanne Haus PHONE NO: (510) 426-2657

DATE: 1/7/97

Number of Pages (including cover sheet): 2

If you do not receive the number of pages specified, please call (510) 426-2600 for assistance.

COMMENTS

Quality Assurance Results Summary - Matrix Spike/Matrix Spike Duplicate
for
Clayton Project No. 96122.17

Clayton Lab Number: 9612217-01A
Ext./Prep. Method: —
Date: / /
Analyst: —
Std. Source: IC961210A
Sample Matrix/Media: WATER

Analytical Method: EPA 300.0
Instrument ID: 02739
Date: 12/19/96
Time: 11:45
Analyst: HYW
Units: mg/L
QC Batch No: 9612197H

Analyte	Sample Result	Spike Level	Matrix Spike Result	MS Recovery (%)	Matrix Spike Duplicate Result	MSD Recovery (%)	Average Recovery (% R)	LCL (% R)	UCL (% R)	RPD (%)	UCL (%RPD)
CHLORIDE	36.1	200	222	93	222	93	93	83	106	0.0	20
NITRATE AS NITROGEN	8.52	100	101	92	100	92	92	83	98	0.3	20
NITRITE	ND	50.0	50.3	101	50.6	101	101	83	112	0.6	20
SULFATE	38.0	400	400	91	398	90	90	81	102	0.7	20

ND = Not detected at or above limit of detection
SOR = Spike out of range due to high sample concentration.
LCL = Lower Control Limit
UCL = Upper Control Limit