



**SOIL INVESTIGATION AND SHALLOW
GROUNDWATER SURVEY**

**Northwestern Portion of the Park Street Landing Site
Park Street Landing
2307-2337 Blanding Avenue
Alameda, California**

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**September 1995
Project No. 2436.02**

Geomatrix Consultants



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SOIL INVESTIGATION AND SHALLOW GROUNDWATER SURVEY

Northwestern Portion of the Parking Landing Site

Park Street Landing

2307-2337 Blanding Avenue

Alameda, California

1.0 INTRODUCTION

This report describes the methods and results of the soil investigation and shallow groundwater survey performed on the northwestern portion of the Park Street Landing Site located at 2307-2337 Blanding Avenue in Alameda, California (the Site; Figure 1). The objective of this work was to assess the possible affect of previous site usage on soil and groundwater quality at the Site. This work was conducted in accordance with the 6 February 1995 "Work Plan And Cost Estimate to Conduct a Phase II Investigation at the Park Street Landing Site" (6 February Work Plan) and the 19 April 1995 "Work Plan and Cost Estimate to Perform a Shallow Groundwater Investigation at the Northwestern Portion of the Park Street Landing Site" (19 April Work Plan) both prepared by Geomatrix Consultants, Inc. (Geomatrix).

2.0 BACKGROUND AND SITE SETTING

The Site consists of approximately 3.5 acres bounded by Park Street to the east, the Alameda Canal to the north, Blanding Avenue to the south and an industrial property to the west (Figure 1). The Site is currently occupied by commercial businesses, and a restaurant; a line of boat berths is located on the Alameda Canal on the north side of the property.

To evaluate previous site usage, Geomatrix reviewed aerial photographs dated 1953, 1973, 1979, and 1985; Sanborn maps dated 1932 and 1941; and a Preliminary Site Assessment (PSA) report prepared by CET Environmental Services dated 13 January 1995 (the "CET PSA Report"). The Site was occupied by Chevron Oil, operating under the name of Signal

Oil & Gas Company (Chevron), from at least 1930 until about 1961 and contained numerous aboveground petroleum storage tanks during that time. Sanborn Fire Insurance Maps from 1932 and 1941 indicate the presence of aboveground oil and gasoline fuel storage tanks in the northwestern half of the Site¹. The locations of these storage tanks are shown on Figures 2 through 4. Stained soil was noted adjacent to a large aboveground gasoline storage tank on the 1953 aerial photograph. A paint storage area was located in the north-central portion of the Site on both the 1932 and 1941 Sanborn maps; according to lease documents, it appears that the paint storage was associated with Chevron's use of the property (2/11/30 lease between Edward and Mary Beck and U.S. Refining Co., Inc.). The southeastern portion of the Site appeared vacant and used for parking. Stained soil was not observed in this area on the aerial photographs reviewed or noted in this area in the CET PSA report.

Between 1957 and 1963, the buildings at the Site were reportedly removed. From 1973 to 1983, the northwestern part of the Site was reportedly used as a construction yard and for boat repair activities. A restaurant and paved parking area, and a possible automobile sales lot reportedly occupied the southeastern portion of the Site during this time. Staining of this area was not noted in the CET PSA report. Plans for site development were initiated in 1985 and the Site was developed to its current use in 1987.

3.0 PHASE II SOIL INVESTIGATION

3.1 FIELD PROCEDURES

The following describes drilling activities associated with the Phase II soil investigation conducted at the Site on 17 and 20 February 1995.

¹ The Sanborn maps also indicated that a ladder manufacturer occupied a building in the central portion of the Site in 1932; chemical storage was not noted on the 1932 Sanborn map associated with the ladder company.

3.1.1 Pre-Field Activities

A health and safety plan was prepared by Geomatrix to address health and safety issues during field activities. Geomatrix and subcontractor personnel read and signed the health and safety plan prior to working on site.

A drilling permit was obtained from Alameda County's Water Resources Management Zone 7 Water Agency prior to drilling. Underground Service Alert (USA), a regional utility notification center, was notified; USA in turn notified member utility companies to delineate utilities near the proposed soil boring locations. Underground utilities were marked in colored paint by the utility companies on the ground surface. In addition, a private utility locator was retained to investigate subsurface obstructions, including on-site utilities not marked by the utility companies. Several of the eight soil boring locations were moved up to four feet from their original position due to the location of underground high voltage lines or water lines, or because refusal was encountered during drilling.

3.1.2 Soil Sampling Activities

The drilling activities were conducted in accordance with the 6 February Work Plan (Geomatrix, 6 February 1995). The drilling locations and the chemical analyses of the soil samples collected at each location were selected in potential areas of the Site that may have experienced a release of chemicals, based on the site usage information contained in CET's PSA report. Specifically, the soil borings evaluated the possible affect on site soils from the former presence of the Chevron facility, and usage of the Site for boat repair activities. The rationale for each of the boring locations is described in the 6 February Work Plan; a copy of the Work Plan is located in Appendix A.

Soil samples were collected from eight borings (SB-1 through SB-8) by Geomatrix on 17 and 20 February 1995. Borings were advanced to approximately 10 feet below ground surface (bgs) by Precision Sampling Inc. (Precision) of San Rafael, California, using a direct-push technology. Each boring was continuously cored, when possible, and soil

samples were collected for visual inspection, field screening, and possible chemical analysis. A hydraulic hammer was used to advance 2.5-inch-diameter drive casing containing a three-foot-long core barrel lined with six-inch-long, 1.75-inch-diameter stainless steel liners. The stainless-steel liners were removed from the core barrel, and selected liners containing soil were retained for possible chemical analysis. Soil from the remaining liners was visually inspected to prepare lithologic logs. Soil was classified using the Unified Soil Classification System (USCS). Field screening for the possible presence of volatile organic compounds (VOCs) with a photoionization detector (PID) was performed on the soil samples. Results of the field screening were noted on the boring logs. Copies of the boring logs are presented in Appendix B.

Two to three soil samples were retained from each boring for chemical analysis. Following lithologic inspection and field screening, the liners containing the soil samples retained for chemical analysis were capped with Teflon sheeting and plastic end caps, sealed with tape, labeled and placed in a chilled cooler for transport to American Environmental Network (AEN) of Pleasant Hill, California, or Friedman & Bruya, Inc. (F&B) of Seattle, Washington, California state-certified analytical laboratories, under chain-of-custody protocol.

Drilling and soil sampling equipment that had come in contact with site soil were steam-cleaned between each boring location prior to initiating soil sampling activities, and at the conclusion of the field program. Soil cuttings generated during the drilling operations were placed in D.O.T.-approved five-gallon steel buckets with lids and stored temporarily on site. Rinse water generated from steam-cleaning of equipment was stored in D.O.T.-approved 55-gallon steel drums with lids and stored temporarily on site.

After soil samples were collected, the boreholes were backfilled to the surface with a neat cement grout that was placed through a tremie pipe. The surface of each location was

restored to its previous condition. Depending on the sample location, the surface was covered with vegetation, asphalt coldpatched, or concrete patched.

3.1.3 Chemical Analysis

The soil samples sent to F&B were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by EPA Method 5030/8015, benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020, and total petroleum hydrocarbons as diesel (TPHd) by modified EPA Method 3550/8015. In addition, samples were fingerprint characterized by gas chromatography using a flame ionization detector to better identify the type of petroleum hydrocarbon, if detected.

Eight soil samples (one from each boring) were sent to AEN and analyzed for the California Code of Regulations (CCR) 17 metals using EPA Method 6010/7000 series. These metals include: silver, arsenic, barium, beryllium, cadmium, cobalt, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium, thallium, vanadium, and zinc. Three soil samples (SB-4-7', SB-5-6', and SB-8-7') were analyzed for VOCs using EPA Method 8240. After review of the initial chemical analysis results, two additional samples that had previously been collected and placed on hold at AEN were analyzed for the possible presence of arsenic using EPA Method 6010 (SB-3-6.5' and SB-6-8).

3.2 RESULTS

The following sections present the results of the soil investigation.

3.2.1 Sediments Encountered

Sediment encountered in the upper 4 to 4.5 feet of each soil boring consisted of dark gray to dark yellowish brown clayey sand with a minor amount of fine gravel. The clayey sand was underlain by a black to dark greenish gray sandy lean clay to the bottom of the borings (10 feet bgs). Groundwater was not encountered during the February 1995 soil investigation.

3.2.2 Chemical Analysis Results

The following presents the results of the metals, petroleum hydrocarbons, and VOC analyses; Tables 1 and 2 summarize the analytical results and Figures 2 and 3 present the metals and petroleum hydrocarbon results, respectively. A copy of the laboratory data sheets are included in Appendix C.

Petroleum Hydrocarbons

The analytical results indicated elevated concentrations of petroleum hydrocarbons in the soil samples (Table 2 and Figure 3). The highest concentrations of petroleum hydrocarbons and associated compounds were detected in the vicinity of the former location of several Chevron aboveground gasoline storage tanks (SB-2) and in the vicinity of the Chevron gasoline pump location (SB-4). TPHg was detected up to 2,000 mg/kg (SB-2), TPHd up to 250 mg/kg (SB-7), benzene up to 3.7 mg/kg (SB-2), toluene up to 3.5 mg/kg (SB-4), ethylbenzene up to 14 mg/kg (SB-2), and xylenes up to 46 mg/kg (SB-2). The highest concentrations were detected between four and seven feet below ground surface. The analytical results for the petroleum hydrocarbons are present on Figure 3.

Metals

The concentrations for the metals analyzed appear to be within ranges of background concentrations for these metals (USGS, 1980), except for arsenic. The 1-foot depth soil samples from borings SB-3 and SB-6 contained arsenic concentrations of 68 mg/kg, and 130 mg/kg. Therefore, the 6.5-foot-depth and 8-foot-depth soil samples from borings SB-3 and SB-8, respectively, were analyzed for arsenic to assess the vertical extent of the arsenic. The arsenic concentrations were low to non-detect in the deeper samples (less than the laboratory detection limit of 0.5 mg/kg in sample SB-3-6.5' and at 2.5 mg/kg in sample SB-6-8'); these concentrations in the deeper samples are well within background concentrations for arsenic in the Bay area and indicate that the arsenic is of limited vertical extent.

VOCs

With the exception of BTEX as described above, VOCs were not detected in the soil samples analyzed by EPA Method 8240.

3.3 SUMMARY AND DISCUSSION OF SOIL INVESTIGATION RESULTS

Results of the soil investigation indicated the following:

- Eight soil borings were drilled to 10 feet bgs around the northwestern portion of the Site.
- Sediments encountered consisted of clayey sand to a depth of approximately four feet bgs. The clayey sand was underlain by a lean sandy clay to approximately 10 feet bgs. Groundwater was not encountered in the borings to a depth of 10 feet.
- In general, metals were not detected above background levels in soil above the apparent groundwater table. One constituent, arsenic, was detected at slightly elevated concentrations in two shallow (one-foot depth) soil samples. Deeper soil samples at the same locations had trace to non-detect concentrations of arsenic, indicating the arsenic is of limited vertical extent. Because the Site is predominantly covered by buildings or asphalt pavement, surface water infiltration and access to the surface soil by on-site occupants are limited. Therefore, the potential for the arsenic in the shallow soil near borings SB-3 and SB-8 to migrate vertically and affect shallow groundwater or to be encountered by on-site tenants appears to be low. Additional investigation for arsenic does not appear warranted.
- VOCs, with exception of petroleum-related constituents (e.g., BTEX), were not detected in soil samples.

- Solvents and materials containing metals are often used during boat repair activities; therefore, the lack of presence of these compounds in Site soils supports that boat repair activities have not affected environmental conditions at the Site.
- Petroleum hydrocarbons and associated compounds were detected in soil above the apparent groundwater table at the northwestern portion of the property.

Based on these results, a shallow groundwater survey was proposed to determine if the petroleum hydrocarbons and associated compounds detected in soil have affected groundwater beneath the Site.

4.0 SHALLOW GROUNDWATER SURVEY

The purpose of the shallow groundwater survey was to assess whether petroleum hydrocarbons and associated compounds detected in on-site soil have affected groundwater beneath the Site and, if so, the potential for chemically-affected groundwater to reach the Alameda Canal. In addition, three borings were installed at the assumed hydraulically upgradient property boundaries to assess the quality of groundwater flowing onto the Site; the direction of shallow groundwater flow was assumed to be north to northeast, toward the Alameda Canal. The location of the shallow groundwater survey points and the selected chemical analyses for the groundwater samples collected at each location were based on the results from the soil investigation at the northwestern portion of the Site. One groundwater survey point was drilled approximately 6 feet deeper than the other survey points to assess deeper groundwater quality in the area of the petroleum-affected soil.

4.1 FIELD PROCEDURES

The following describes the shallow groundwater survey that was conducted at the Site on 24 and 25 April 1995.

4.1.1 Pre-Field Activities

The health and safety plan that was prepared for the February 1995 soil investigation was modified for this field effort by Geomatrix to address health and safety issues during field activities for the shallow groundwater survey. Geomatrix and subcontractor personnel read and signed the health and safety plan prior to working on site.

A drilling permit was obtained from Alameda County's Water Resources Management Zone 7 Water Agency prior to drilling. USA was notified before this field effort began; USA in turn notified member utility companies to delineate utilities near the proposed shallow groundwater survey locations. Underground utilities were marked in colored paint by the utility companies on the ground surface. In addition, a private utility locator was retained to investigate subsurface obstructions, including on-site utilities not marked by the utility companies. Several of the shallow groundwater locations were moved up to 15 feet from their proposed position due to the location of underground high voltage lines or water lines, or because refusal was encountered during drilling.

4.1.2 Field Procedures

The shallow groundwater survey activities were conducted in accordance with the 19 April Work Plan (Geomatrix, April 1995). A copy of the Work Plan is located in Appendix D.

Groundwater samples were collected from ten shallow groundwater survey points (GWS-7 through GWS-16) on 24 and 25 April 1995 (Figure 4). To collect the groundwater samples, borings were drilled to a depth of 15 to 21.5 feet bgs and temporary wells were installed. The soil borings were drilled by Precision using the same technology as described in Section 3.1.2. Soil samples were collected continuously with a core barrel lined with stainless steel liners. The soil was extruded from the liners and visually inspected for lithology. The soil was field screened with a PID at selected intervals; PID results were noted on the lithologic boring logs. Copies of the boring logs are presented in Appendix A.

After the drive casing was advanced to the required depth, a one-inch diameter temporary well point was placed inside the drive casing to the bottom of each temporary well. The temporary wells consisted of 5 feet of 0.01-inch-slot PVC well screen below 10 feet of blank PVC casing for GWS-7, 10 feet of well screen below 6 feet of blank casing for GWS-8 through GWS-15, and 5 feet of well screen below 16.5 feet of blank casing for GWS-16. After a temporary well was installed in a cased borehole, the drive casing was withdrawn, thereby exposing the screen to the water bearing zone.

Screen depths varied drastically

The first six shallow groundwater survey points (GWS-7 through GWS-12) were drilled on 24 April 1995. Groundwater entered the temporary well points very slowly and of the six sample locations installed the first day, only two contained sufficient groundwater for sample collection on that day. Therefore, prior to leaving the Site on the first day, the shallow groundwater survey points were secured by sealing them with plastic and placing a PVC end cap on the top. The annulus around each temporary well was filled with plastic at the ground surface. Then the top of each temporary well was capped with neat cement. The following day, the security measures were removed prior to collecting groundwater samples.

G.W. sample locations were not purged.

Grab groundwater samples were collected from the temporary well points using a one-inch stainless steel bailer and gently pouring the groundwater into laboratory supplied and preserved sample containers. Sample containers were labeled, stored in an ice-cooled chest and delivered to the analytical laboratory (F&B) following appropriate chain-of-custody procedures.

Drilling and water sampling equipment that had come into contact with site soils and water were steam-cleaned prior to initiating groundwater sampling activities, between each shallow groundwater survey location and at the conclusion of the field program. Soil cuttings generated during the drilling operations were placed in five-gallon buckets with lids

and stored temporarily on Site. Rinse water generated from steam-cleaning of equipment was stored in 55-gallon drums with lids and stored temporarily on Site.

After the groundwater samples were collected, the boreholes were backfilled to the surface with neat cement grout that was placed through the temporary PVC well casing. As the grout was placed, the PVC well casing was withdrawn in its entirety.

4.1.3 Chemical Analysis

Approximately 3.5 feet of black granular material was encountered in boring GWS-7; a sample of this granular material was collected and was submitted to AEN for chemical analysis of VOCs using EPA Method 8240, semi-volatile organic compounds (SVOCs) using EPA Method 8270, TPH-d using modified EPA Method 3550/8015, and CCR 17 metals using EPA Method 6010/7000 series.

All groundwater samples were analyzed by F&B. The samples sent to F&B were analyzed for TPHg by EPA Method 5030/8015, BTEX by EPA Method 8020, and TPHd by modified EPA Method 3550/8015. The grab groundwater samples collected from the temporary well points appeared turbid, therefore, the laboratory filtered the samples being analyzed for TPH-d prior to analysis. Additionally, a silica-gel clean-up was performed on these samples to remove the non-petroleum hydrocarbon matter from the sample prior to being analyzed.

4.2 RESULTS

The following presents the results of the shallow groundwater survey. Analytical results are summarized on Table 3 and Figure 4; copies of the laboratory data sheets are contained in Appendix E.

4.2.1 Sediments Encountered

Sediments encountered in the upgradient borings (GWS-13 through GWS-15) and borings GWS-7, GWS-12 and GWS-16 were consistent with sediments encountered during the soil investigation (see Section 3.2.1) and consisted of clayey sand to sandy clay with gravel to approximately 4 to 6 feet bgs underlain by sandy clay to clayey sand to the bottom of the borings (21.5 feet bgs for GWS-16 and approximately 16 feet bgs for the remaining borings). Sediments encountered in borings GWS-8 through GWS-11, located along the canal, contained more clay. Sediments encountered in these borings consisted of a clayey sand/sandy clay to 4 to 6 feet bgs underlain by clay or clay with sand to about 15 feet bgs; clayey sand was encountered from 15 to 16 feet bgs.

Refusal was encountered at a depth of 6 feet below grade in two initial attempts (GWS-7A and GWS-7B) for boring GWS-7. Sediments encountered in the upper 2.5 feet of these two initial borings consisted of a clayey sand; however, a black granular material was encountered between about 2.5 feet and 6 feet bgs. This material appeared similar to a small pile of black granular material located on the northern site boundary that appeared to have originated from the adjacent site to the north (a metal fabrication company). As described above, a sample of this material was collected from boring GWS-7B for chemical analyses.

After the temporary wells were installed, depth to groundwater was measured periodically to evaluate when sufficient water was present for sampling; the depth to groundwater was measured and recorded directly prior to sampling. The depth to groundwater ranged from 3.7 feet bgs to 9.6 feet bgs except for GWS-10 where the depth to groundwater was measured to be over 11 feet bgs.

4.2.2 Chemical Analysis Results

Analytical results for the grab groundwater samples are presented on Figure 4. Results for the analysis of the black granular material are presented on laboratory data sheets presented in Appendix C.

The analytical results for the granular material from GWS-7 indicated that the copper concentrations were elevated compared with background ranges for the Bay area (USGS, 1984). The copper concentrations then were compared to the California Department of Health Services Total Threshold Limit Concentrations (TTLC) and 10 times the Soluble Threshold Limit Concentrations (STLC). The copper concentration was below the TTLC for copper (2500 mg/kg); however, exceeded 10 times the STLC, which is 250 mg/l. The sample was then evaluated for the leaching potential for copper using the Waste Extraction Test (WET) method; results of this test reported a copper concentration of 0.04 mg/l, below the STLC of 25 mg/l for copper. There were no detections above the laboratory reporting limits for TPHd, semi-volatile organics compounds (SVOCs), or VOCs in this sample; the reporting limits are presented on the laboratory data sheets contained in Appendix C.

What was this sample analyzed for?

Groundwater

Six shallow groundwater survey points (GWS-7 through GWS-12) were located along the northeastern portion of the Site adjacent to the Alameda Canal to aid in assessing whether chemically-affected groundwater beneath the Site is flowing toward the Alameda Canal. GWS-9, located in the apparent hydraulic downgradient direction from Chevron's former operations, had the highest concentrations of benzene, toluene, ethylbenzene, xylenes, TPHg and TPHd at 6.2 mg/l, 0.14 mg/l, 1.1 mg/l, 1.2 mg/l, 22 mg/l, and 1.2 mg/l, respectively (Figure 4). Three other locations, GWS-8, GWS-10 and GWS-11, also in the apparent downgradient direction of Chevron's operation, had detectable concentrations of TPHg (up to 11 mg/l), TPHd (up to 0.24 mg/l), benzene (up to 0.88 mg/l), toluene (up to 0.04 mg/l), ethylbenzene (up to 0.10 mg/l) and xylenes (up to 0.05 mg/l) (Figure 4). Two

other sampling locations along the canal, GWS-7 (northeast of the former Chevron facility) and GWS-12 (southeast of the former Chevron facility), had non-detectable concentrations of TPH and BTEX with the exception of toluene in GWS-12 at 0.0006 mg/l. Groundwater samples from the apparent upgradient locations (GWS-13 through GWS-15) had non-detectable concentrations of petroleum hydrocarbons and associated compounds (Figure 4). The groundwater sample collected deeper than the other shallow groundwater survey points (GWS-16) to assess deeper groundwater quality in the area of petroleum-affected soil indicated non-detected concentrations of benzene, toluene, and TPHd and very low concentrations of ethylbenzene (0.002 mg/l), xylenes (0.0011 mg/l), and TPHg (0.07 mg/l).

4.3 SUMMARY AND DISCUSSION OF GROUNDWATER INVESTIGATIONS RESULTS

Results of the shallow groundwater investigation indicate the following:

- Ten shallow groundwater survey points were temporarily installed and groundwater samples were collected at each location.
- Sediments encountered were generally consistent with soil encountered during the soil investigation and consisted primarily of clay, clayey sands and sandy clays. The low recharge rate from the temporary wells suggest a low hydraulic conductivity of the shallow saturated soils at the Site. The clay content appeared to be higher in sediments encountered in borings located along the canal, indicating that the hydraulic conductivity may be lower in this area.
- A black granular material was encountered in one of the borings (GWS-7) between approximately 2.5 feet bgs and 6 feet bgs. TPH-d, VOCs, and SVOCs were not detected in a sample of this material; metal concentrations were within background ranges for the Bay area, with the exception of copper. The copper concentration was well below the TTLC for copper (500 mg/kg) and the result of

a WET procedure indicated concentrations below the STLC for copper (25 mg/l).

- The shallow groundwater samples collected at the assumed upgradient and crossgradient perimeter of the Site did not contain petroleum hydrocarbons or associated compounds at concentrations above the laboratory detection limit.
- The groundwater sample (GWS-16) collected approximately 6 feet deeper than the other grab groundwater samples contained trace to non-detect concentrations of BTEX, gasoline, and diesel.
- The shallow groundwater samples collected along the canal indicate that the groundwater has been affected by petroleum hydrocarbons downgradient of the former Chevron operations at the Site.

5.0 CONCLUSIONS

Soil and shallow groundwater investigations indicated the presence of petroleum hydrocarbons and associated compounds in the shallow soil and groundwater beneath the Site. Tables 1 through 3, and Figures 2 through 4 present the results of these investigations. Petroleum-affected soil was detected in the general area of Chevron's former operations at the Site; groundwater samples collected from borings located in the apparent downgradient direction from Chevron's operations contained petroleum hydrocarbons and associated compounds.

6.0 REFERENCES

- California Regional Water Quality Control Board (CRWQCB) Central Valley Region, 1989, The Designated Level Methodology for Waste Classification and Cleanup Level Determination, Staff Report, June.
- CET Environmental Services (CET), 1995, Preliminary (Phase I) Environmental Site Assessment Report, 13 January.
- Geomatrix Consultants, Inc., 1995, Work Plan and Cost Estimate to Conduct a Phase II Investigation at the Park Street Landing Site in Alameda, California, 6 February.
- Geomatrix Consultants, Inc., 1995, Work Plan and Cost Estimate to Perform a Shallow Groundwater Investigation Northwestern Portion of the Park Street Landing Site in Alameda, California, 19 April.
- U.S. Geological Survey (USGS), 1984, Element Concentrations in Soils and Other Surficial Materials of the conterminous United States, Professional Paper 1270.

TABLE 1

METALS¹ ANALYTICAL RESULTS OF SOIL INVESTIGATION

Park Street Landing Site
Alameda, California

(concentrations in mg/kg)²

Sample Name	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Sb	Se	Tl	V	Zn
SB-1-3.0'	0.1	6.1	110	0.2	0.7	9.6	39	51	0.43	ND	30	110	2	ND	7	37	210
SB-2-2.0'	0.1	9.7	120	0.1	ND	11	89	170	0.70	0.7	49	77	2	ND	ND	35	280
SB-3-1.0'	0.2	6.1	56	0.2	ND	7.4	12	19	0.71	0.3	16	22	2	ND	6	32	90
SB-4-1.0'	0.3	46	59	0.2	ND	9.3	17	36	0.63	0.7	22	30	2	ND	4	34	110
SB-5-1.0'	0.2	12	46	0.2	ND	7.7	19	21	0.37	ND	22	12	1	ND	3	32	74
SB-6-1.0'	0.7	130	67	0.2	ND	8.7	16	31	0.94	1.1	23	32	4	ND	8	34	100
SB-7-1.5'	0.1	ND	150	0.1	0.3	7.1	36	44	0.16	ND	24	89	2	ND	ND	47	200
SB-8-0.5'	ND	4.5	88	0.2	ND	7.8	23	30	0.09	ND	15	30	2	ND	ND	29	110
TTL ³ (mg/kg)	500	500	10,000	75	100	8,000	2,500	2,500	20	3,500	2,000	1,000	500	100	700	2,400	5,000
STLC ⁴ (mg/l)	5	5	100	0.75	1.0	80	560	25	0.2	350	20	5	15	1	7	24	250

6?

Notes:

- ¹ CCR 17 metals include Ag-Silver, As-Arsenic, Ba-Barium, Be-Beryllium, Cd-Cadmium, Co-Cobalt, Cr-Chromium, Cu-Copper, Hg-Mercury, Mo-Molybdenum, Ni-Nickel, Pb-Lead, Sb-Antimony, Se-Selenium, Tl-Thallium, V-Vanadium, Zn-Zinc.
- ² mg/kg - milligrams per kilogram.
- ³ TTL³ - Total Threshold Limit Concentration.
- ⁴ STLC⁴ - Soluble Threshold Limit Concentration.

TABLE 2

**PETROLEUM HYDROCARBONS AND VOLATILE ORGANIC COMPOUNDS
ANALYTICAL RESULTS OF SOIL INVESTIGATION**

Park Street Landing Site
Alameda, California

*Labels
corrected
to RBC*
(concentrations in mg/kg)¹

Sample Name	TPHg ²	TPHd ³	Benzene ⁴	Toluene ⁵	Ethylbenzene ⁶	Xylenes ⁷	8240 Compound ⁸
SB-1-3.5'	ND ⁹	110	ND	ND	ND	ND	NA ¹⁰
SB-1-5.5'	390	10	0.08	0.20	0.58	0.86	NA
SB-1-9.5'	ND	ND	ND	ND	ND	ND	NA
SB-2-3.5'	ND	40	ND	ND	ND	ND	NA
SB-2-7.0'	2000	35	3.7	34	14	46	NA
SB-3-1.5'	ND	ND	ND	ND	ND	ND	NA
SB-3-7.0'	150	230	ND	0.46	0.58	0.51	NA
SB-3-10.0'	ND	ND	ND	ND	ND	ND	NA
SB-4-1.5'	ND	20	ND	ND	ND	ND	NA
SB-4-6.5'	860	240	2.0	0.81	3.6	13	NA
SB-4-7.0'	NA	NA	NA	NA	NA	NA	Benzene @ 2.3, ethylbenzene @ 8.7, toluene @ 3.5, xylenes @ 35
SB-4-10.0'	4	ND	0.34	ND	ND	ND	NA
SB-5-1.5'	ND	10	ND	ND	ND	ND	NA
SB-5-5.5'	ND	15	ND	ND	ND	ND	NA
SB-5-6.0'	NA	NA	NA	NA	NA	NA	ND

TABLE 2

**PETROLEUM HYDROCARBONS AND VOLATILE ORGANIC COMPOUNDS
ANALYTICAL RESULTS OF SOIL INVESTIGATION**

(concentrations in mg/kg)¹

Sample Name	TPHg ²	TPHd ³	Benzene ⁴	Toluene ⁵	Ethylbenzene ⁶	Xylenes ⁷	8240 Compound ⁸
SB-6-1.5'	ND	40	ND	ND	ND	ND	NA
SB-6-7.0'	400	170	ND	0.12	0.56	ND	NA
SB-7-1.0'	ND	110	ND	ND	ND	ND	NA
SB-7-4.0'	ND	250	ND	ND	ND	ND	NA
SB-8-1.0'	ND	75	ND	ND	ND	ND	NA
SB-8-6.5'	ND	ND	ND	ND	ND	ND	NA
SB-8-7.0'	NA	NA	NA	NA	NA	NA	ND

Notes:

- ¹ mg/kg - milligrams per kilogram.
- ² TPHg - Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8015.
- ³ TPHd - Total petroleum hydrocarbons as diesel analyzed by EPA Method Modified 8015.
- ⁴ Analyzed by EPA Method 8020
- ⁵ Analyzed by EPA Method 8020
- ⁶ Analyzed by EPA Method 8020
- ⁷ Analyzed by EPA Method 8020
- ⁸ Analyzed by EPA Method 8240
- ⁹ ND - Concentration of constituent was not detected above the reporting limit.
- ¹⁰ NA - Sample not analyzed for this constituent.

TABLE 3

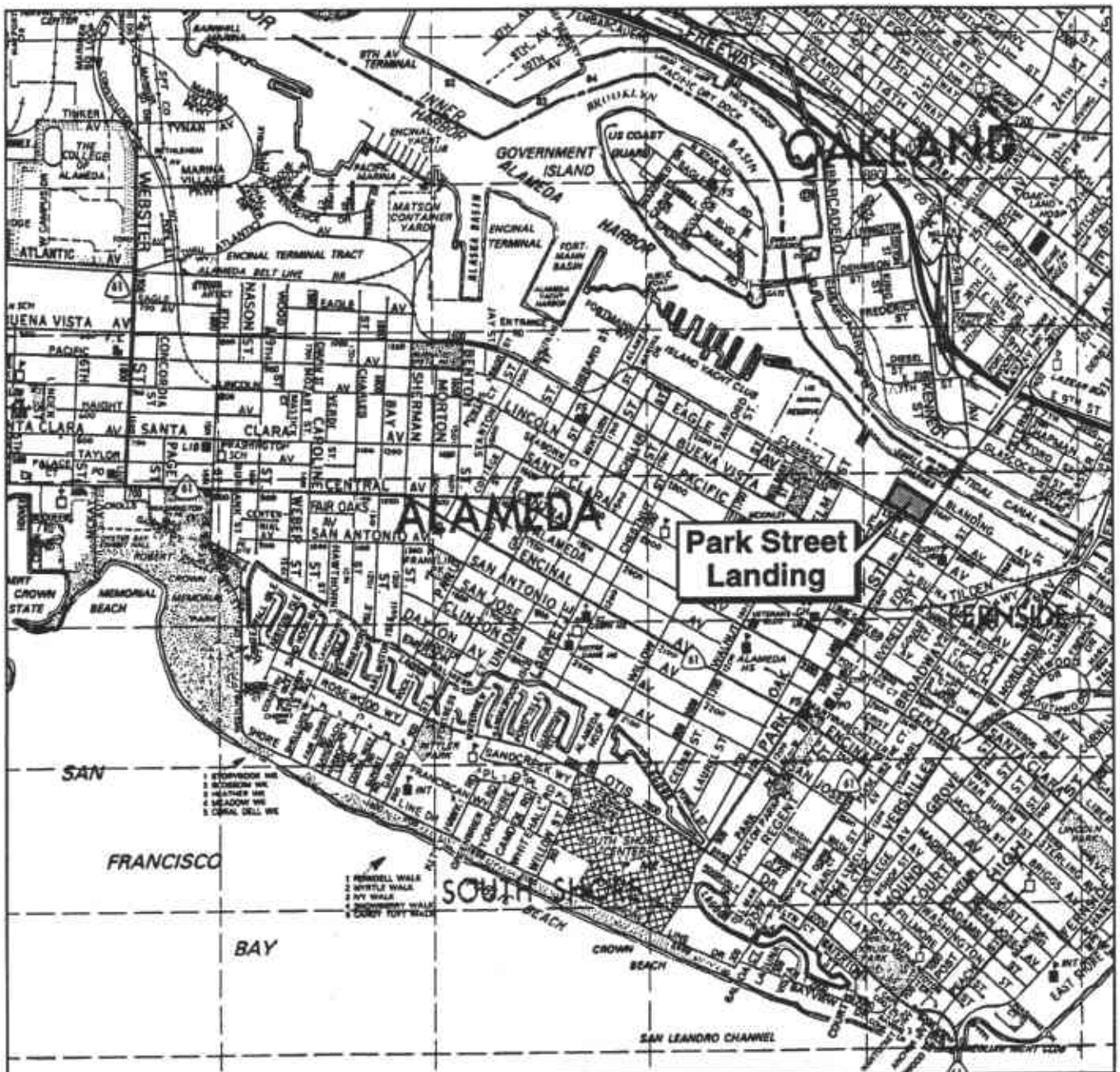
**PETROLEUM HYDROCARBONS ANALYTICAL RESULTS OF
SHALLOW GROUNDWATER SURVEY
Park Street Landing Site
Alameda, California**

(concentrations in mg/l)¹

Sample Name	TPHg ²	TPHd ³	Benzene ⁴	Toluene ⁵	Ethylbenzene ⁶	Xylenes ⁷
GWS-7	ND ⁸	ND	ND	ND	ND	ND
GWS-8	3.7	0.06	0.036	0.0069	0.027	0.011
GWS-9	22	1.2	6.2	0.14	1.1	1.2
GWS-10	11	0.24	0.88	0.04	0.10	0.05
GWS-11	1.4	0.07	ND	0.001	0.0014	0.0084
GWS-12	ND	ND	ND	0.0006	ND	ND
GWS-13	ND	ND	ND	ND	ND	ND
GWS-14	ND	ND	ND	ND	ND	ND
GWS-15	ND	ND	ND	ND	ND	ND
GWS-16	0.07	ND	ND	ND	0.002	0.0011

Notes:

- ¹ mg/l - milligrams per liter.
- ² TPHg - Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8015.
- ³ TPHd - Total petroleum hydrocarbons as diesel analyzed by EPA Method Modified 8015.
- ⁴ Analyzed by EPA Method 8020
- ⁵ Analyzed by EPA Method 8020
- ⁶ Analyzed by EPA Method 8020
- ⁷ Analyzed by EPA Method 8020
- ⁸ ND - Concentration of constituent was not detected above the reporting limit.



Map taken from "The Thomas Guide: San Francisco, Alameda, and Contra Costa Counties." 1990 edition.

2436.02.036



SITE LOCATION MAP
Park Street Landing Site
Alameda, California

Figure


1

Project No.

2436.02

EXPLANATION

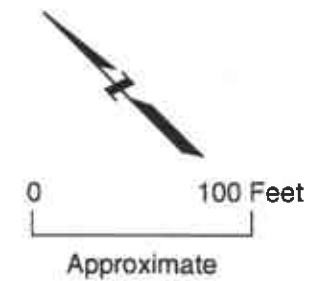
SB1 Soil boring location

 Site features noted on a 1932 Sanborn Fire Insurance Map


Metal Analytes:

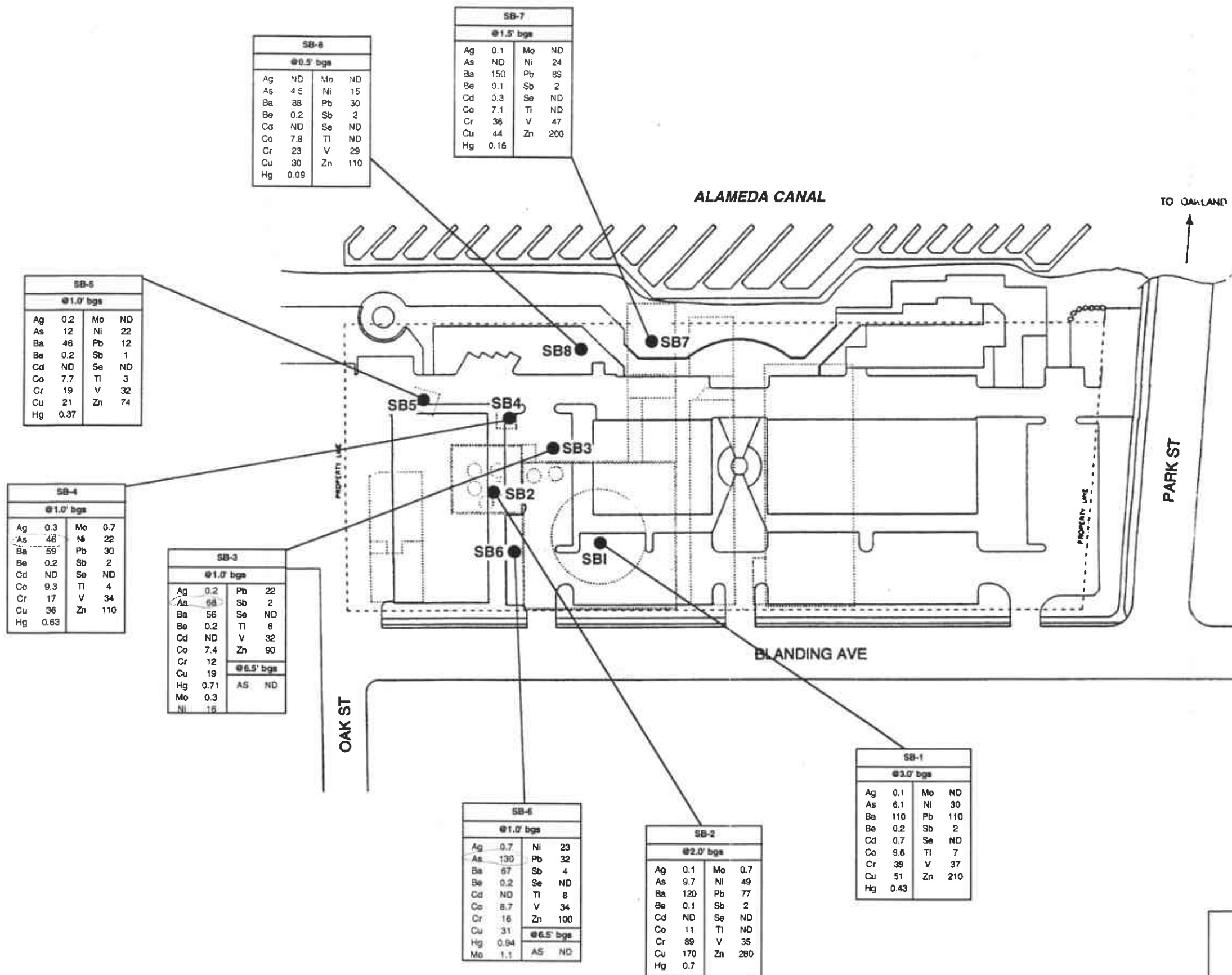
- Ag Silver
- As Arsenic
- Ba Barium
- Be Beryllium
- Cd Cadmium
- Co Cobalt
- Cr Chromium
- Cu Copper
- Hg Mercury
- Mo Molybdenum
- Ni Nickel
- Pb Lead
- Sb Antimony
- Se Selenium
- Tl Thallium
- V Vanadium
- Zn Zinc
- ND Not detected

All results in milligrams/kilograms



**CONCENTRATION OF METALS DETECTED
IN SOIL SAMPLES
Park Street Landing Site
Alameda, California**

	Project No.	Figure
	2436.02	2



SB-7			
@1.5' bgs			
Ag	0.1	Mo	ND
As	ND	Ni	24
Ba	150	Pb	89
Be	0.1	Sb	2
Cd	0.3	Se	ND
Co	7.1	Tl	ND
Cr	36	V	47
Cu	44	Zn	200
Hg	0.16		

SB-8			
@0.5' bgs			
Ag	ND	Mo	ND
As	4.5	Ni	15
Ba	88	Pb	30
Be	0.2	Sb	2
Cd	ND	Se	ND
Co	7.8	Tl	ND
Cr	23	V	29
Cu	30	Zn	110
Hg	0.09		

SB-5			
@1.0' bgs			
Ag	0.2	Mo	ND
As	12	Ni	22
Ba	46	Pb	12
Be	0.2	Sb	1
Cd	ND	Se	ND
Co	7.7	Tl	3
Cr	19	V	32
Cu	21	Zn	74
Hg	0.37		

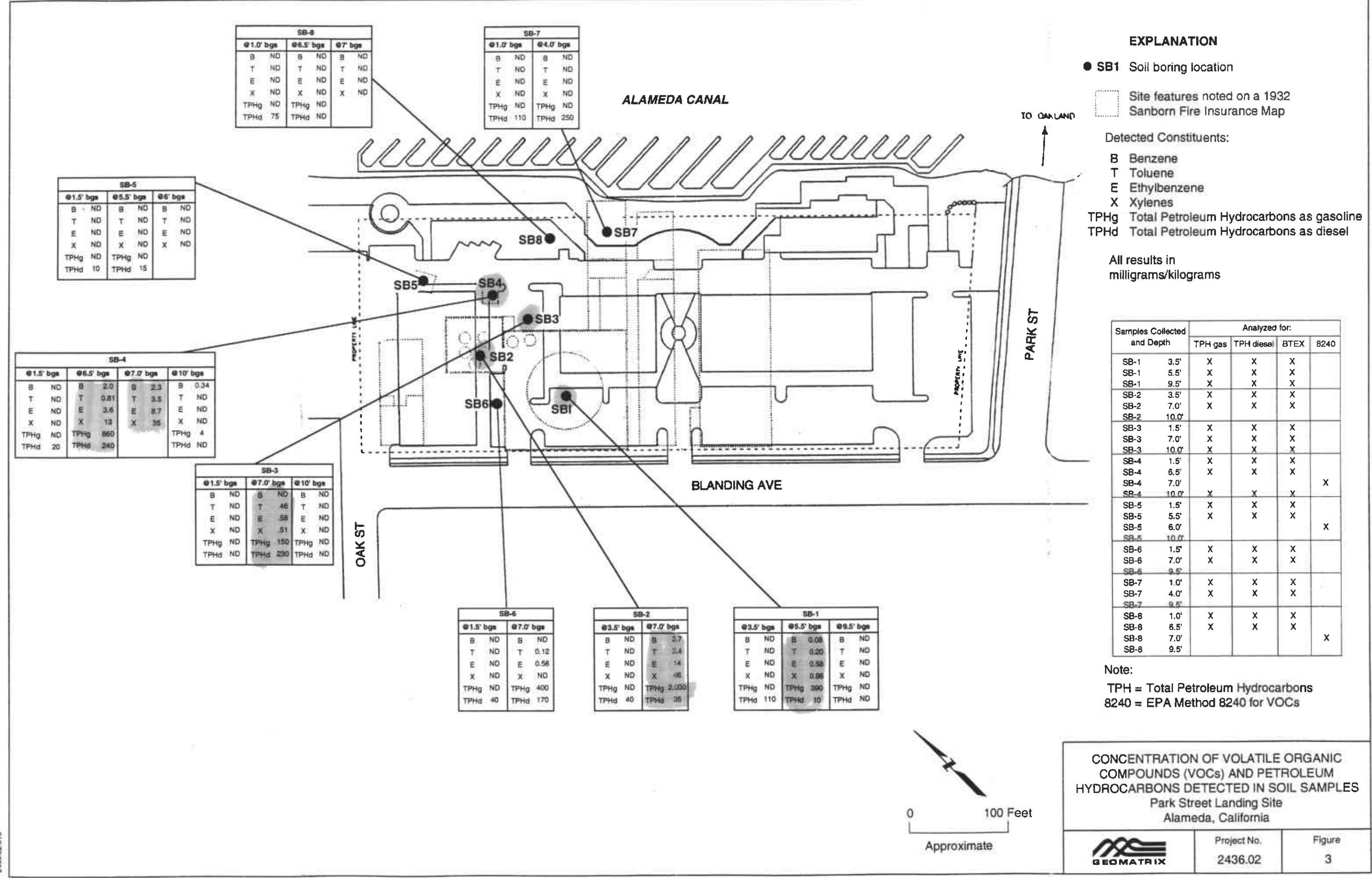
SB-4			
@1.0' bgs			
Ag	0.3	Mo	0.7
As	48	Ni	22
Ba	59	Pb	30
Be	0.2	Sb	2
Cd	ND	Se	ND
Co	9.3	Tl	4
Cr	17	V	34
Cu	36	Zn	110
Hg	0.63		

SB-3			
@1.0' bgs			
Ag	0.2	Pb	22
As	64	Sb	2
Ba	56	Se	ND
Cd	ND	Tl	6
Co	7.4	V	32
Cr	12	Zn	80
Cu	19		
Hg	0.71		
Mo	0.3		
Ni	15		
		AS	ND

SB-6			
@1.0' bgs			
Ag	0.7	Ni	23
As	130	Pb	32
Ba	57	Sb	4
Be	0.2	Se	ND
Cd	ND	Tl	8
Co	5.7	V	34
Cr	16	Zn	100
Cu	31		
Hg	0.64		
Mo	1.1		
		AS	ND

SB-2			
@2.0' bgs			
Ag	0.1	Mo	0.7
As	9.7	Ni	49
Ba	120	Pb	77
Be	0.1	Sb	2
Cd	ND	Se	ND
Co	11	Tl	ND
Cr	89	V	35
Cu	170	Zn	280
Hg	0.7		

SB-1			
@3.0' bgs			
Ag	0.1	Mo	ND
As	6.1	Ni	30
Ba	110	Pb	110
Be	0.2	Sb	2
Cd	0.7	Se	ND
Co	9.6	Tl	7
Cr	39	V	37
Cu	51	Zn	210
Hg	0.43		



EXPLANATION

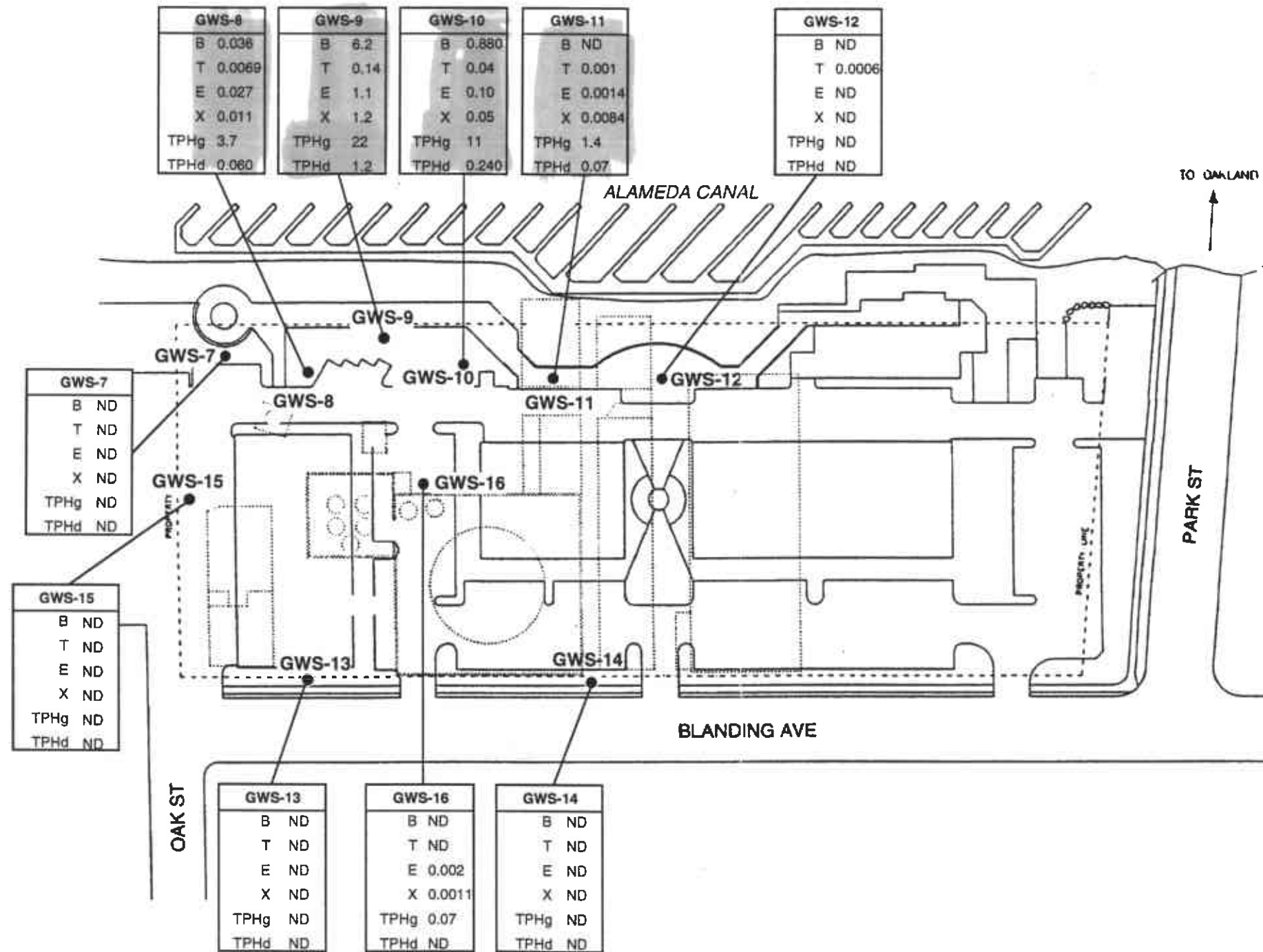
- SB1 Soil boring location
 - Site features noted on a 1932 Sanborn Fire Insurance Map
- Detected Constituents:
- B Benzene
 - T Toluene
 - E Ethylbenzene
 - X Xylenes
 - TPHg Total Petroleum Hydrocarbons as gasoline
 - TPHd Total Petroleum Hydrocarbons as diesel
- All results in milligrams/kilograms

Samples Collected and Depth	Analyzed for:			
	TPH gas	TPH diesel	BTEX	8240
SB-1 3.5'	X	X	X	
SB-1 5.5'	X	X	X	
SB-1 9.5'	X	X	X	
SB-2 3.5'	X	X	X	
SB-2 7.0'	X	X	X	
SB-2 10.0'				
SB-3 1.5'	X	X	X	
SB-3 7.0'	X	X	X	
SB-3 10.0'	X	X	X	
SB-4 1.5'	X	X	X	
SB-4 6.5'	X	X	X	
SB-4 7.0'				X
SB-4 10.0'	X	X	X	
SB-5 1.5'	X	X	X	
SB-5 5.5'	X	X	X	
SB-5 6.0'				X
SB-5 10.0'				
SB-6 1.5'	X	X	X	
SB-6 7.0'	X	X	X	
SB-6 9.5'				
SB-7 1.0'	X	X	X	
SB-7 4.0'	X	X	X	
SB-7 9.5'				
SB-8 1.0'	X	X	X	
SB-8 6.5'	X	X	X	
SB-8 7.0'				X
SB-8 9.5'				

Note:
 TPH = Total Petroleum Hydrocarbons
 8240 = EPA Method 8240 for VOCs

CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS (VOCs) AND PETROLEUM HYDROCARBONS DETECTED IN SOIL SAMPLES
 Park Street Landing Site
 Alameda, California

	Project No. 2436.02	Figure 3
--	------------------------	-------------



GWS-8	
B	0.036
T	0.0069
E	0.027
X	0.011
TPHg	3.7
TPHd	0.060

GWS-9	
B	6.2
T	0.14
E	1.1
X	1.2
TPHg	22
TPHd	1.2

GWS-10	
B	0.880
T	0.04
E	0.10
X	0.05
TPHg	11
TPHd	0.240

GWS-11	
B	ND
T	0.001
E	0.0014
X	0.0084
TPHg	1.4
TPHd	0.07

GWS-12	
B	ND
T	0.0006
E	ND
X	ND
TPHg	ND
TPHd	ND

GWS-7	
B	ND
T	ND
E	ND
X	ND
TPHg	ND
TPHd	ND

GWS-15	
B	ND
T	ND
E	ND
X	ND
TPHg	ND
TPHd	ND

GWS-13	
B	ND
T	ND
E	ND
X	ND
TPHg	ND
TPHd	ND

GWS-16	
B	ND
T	ND
E	0.002
X	0.0011
TPHg	0.07
TPHd	ND

GWS-14	
B	ND
T	ND
E	ND
X	ND
TPHg	ND
TPHd	ND

EXPLANATION

GWS-7 ● Shallow groundwater survey point location

□ Site features noted on a 1932 Sanborn Fire Insurance Map

Detected Constituents:

- B Benzene
- T Toluene
- E Ethylbenzene
- X Xylenes

TPHg Total Petroleum Hydrocarbons as gasoline
 TPHd Total Petroleum Hydrocarbons as diesel

All results in milligrams/liter

CONCENTRATION OF PETROLEUM HYDROCARBONS DETECTED IN SHALLOW GROUNDWATER SURVEY SAMPLES
 Park Street Landing Site
 Alameda, California



Project No.
2436.02

Figure
4

APPENDIX A
6 FEBRUARY 1995 WORK PLAN

6 February 1995
95P004

Mr. Monroe Wingate
Wingate Company
5980 Stoneridge Drive, Suite 119
Pleasanton, California 94588

Subject: Work Plan to Conduct a Phase II Investigation at the Park Street Landing
Site in Alameda, California

Dear Mr. Wingate:

At your request, Geomatrix Consultants Inc. (Geomatrix) has prepared a Work Plan for a Phase II Investigation of the Park Street Landing site located at 2301 Blanding Avenue in Alameda, California (the site). It is our understanding that you will be seeking re-financing for the property in 1997 and would like a Phase II Investigation of the property to assess potential areas of environmental concern noted in a Preliminary Environmental Site Assessment conducted by CET Environmental Services (CET). The scope of work for this Work Plan is based on CET's 13 January 1995 Preliminary (Phase I) Environmental Site Assessment Report ("CET PSA report").

The following Work Plan includes a brief background description of the site, a description of the proposed scope of work, and a proposed schedule.

SITE BACKGROUND

The site consists of approximately 3.5 acres bounded by Park Street to the east, the Alameda Estuary to the north, Blanding Avenue to the south and an industrial property to the west (Figure 1). The site is currently occupied by commercial businesses, and a restaurant; a line of boat berths is located on the Alameda Estuary on the north side of the property.

According to the CET PSA report, the site was occupied by Signal Oil & Gas Company (Signal) from at least 1932 until about 1957 and contained numerous aboveground petroleum storage tanks during that time. Sanborn Fire Insurance Maps from 1932 and 1941 reportedly indicated the presence of aboveground oil and gasoline fuel storage tanks in the northwestern half of the site at the locations presented on Figure 2. Stained soil was reportedly noted on a 1953 aerial photograph adjacent to a large aboveground gasoline storage tank (CET, 13 January 1995). The Sanborn maps also indicated that a ladder manufacturer occupied a building in the central portion of the site in 1932; chemical storage was not noted on the 1992 Sanborn map associated with the ladder company. A paint storage area was located in the north-central portion of the site on both the 1932 and 1941

Mr. Monroe Wingate
Wingate Company
6 February 1995
Page 2

Sanborn maps. The southeast portion of the site was reportedly vacant and used for parking. Stained soil was not noted in this area in the CET PSA report.

Between 1957 and 1963, the buildings at the site were reportedly removed. From at least 1973 to 1985, the northwestern part of the site was reportedly used as a construction yard and for boat repair activities. A restaurant and paved parking area, and a possible automobile sales lot reportedly occupied the southeastern portion of the site during this time. Staining of this area was not noted in the CET PSA report.

Plans for site development were reportedly initiated in 1985 and the site was developed to its current use in 1987.

OBJECTIVE AND APPROACH

The objective of the Phase II Investigation is to assess the possible affect of previous site usage on soil quality at the site. To meet this objective, the Phase II Investigation will include soil sampling and chemical analysis of potential areas of the site that may have experienced a release of chemicals, based on the site usage information contained in CET's PSA report. Eight soil borings will be installed to evaluate the possible impact on site soil from the former presence of the Signal Gasoline and Oil Distribution facility, usage of the site for boat repair activities. Proposed soil boring locations are illustrated on Figure 3. The rationale for each of the boring locations is as follows:

- Boring SB-1 is located at the reported former location of Signal Oil's large (30,000 barrel) gasoline storage tank.
- Boring SB-2 is located adjacent to the reported former location of several smaller Signal Oil aboveground gasoline storage tanks.
- Borings SB-3 and SB-6 are located in reported areas of stained soil noted on a 1953 aerial photograph.
- Boring SB-4 is located at Signal Oil's reported former gasoline pump location.
- Boring SB-5 is located at Signal Oil's reported former filling rack location.
- Boring SB-7 is located in the former paint storage area.

Mr. Monroe Wingate
Wingate Company
6 February 1995
Page 3

Boring SB-8 is located in an area of possible former boat repair activities.

Heavy metals and solvents are often associated with boat repair activities, and light and heavy fraction petroleum hydrocarbons could be associated with the former oil and gasoline distribution facility. Therefore, selected soil samples will be analyzed by an analytical laboratory for the possible presence of petroleum hydrocarbons, metals and volatile organic compounds. Soil samples will be collected from each boring at approximately 1 foot, 5 feet and 10 feet below ground surface (bgs). The one-foot samples from each boring will be submitted for chemical analysis; Geomatrix will request the analytical laboratory hold the deeper samples, pending the results of the one-foot samples. If chemical analysis results of the one-foot samples indicate the possible presence of chemicals in the soil, one or more of the deeper samples may be analyzed by the analytical laboratory to further assess the vertical extent of chemically-affected soil. It should be noted that, due to holding times for organic analyses, analysis results of deeper samples may be qualitative only.

In addition, each soil sample collected from a boring will be field screened with a portable organic vapor analyzer (OVA) for the possible presence of volatile organic compounds (e.g. solvents or gasoline compounds). If OVA measurements indicate the possible presence of volatile organic compounds in a deeper soil sample (e.g. 5-foot or 10-foot depth) this sample will also be submitted for chemical analysis for the possible presence of volatile organic compounds. The following section presents the field procedures and analytical methods to be used for this investigation.

SCOPE OF WORK

The following presents the tasks for the soil sampling and chemical analysis program.

- Task 1: Health and Safety Plan and Prefield Activities
- Task 2: Soil Sampling
- Task 3: Chemical Analysis of Soil Samples
- Task 4: Data Evaluation and Report Preparation
- Task 5: Project Management and Meetings

The following describes each of these tasks.

Task 1: Health and Safety Plan and Prefield Activities

A health and safety plan (HSP) will be prepared for Geomatrix personnel to address health and safety issues during field activities. In addition, Geomatrix will conduct prefield

Mr. Monroe Wingate
Wingate Company
6 February 1995
Page 4

activities, including marking the soil sampling locations and retaining a private utility location company to check for the presence of subsurface utilities in the vicinity of each boring location.

Task 2: Soil Sampling

Soil borings will be advanced using portable equipment to drive or push a small diameter (approximately 2 inches) steel tube into the subsurface, or by using a hollow stem auger drill rig. The borings will be advanced to 10 feet bgs, the reported approximate depth to shallow groundwater. Soil samples will be collected for lithologic inspection, field screening with a portable organic vapor analyzer (OVA) and possible chemical analysis from each boring at approximately 1 foot, 5 feet and 10 feet bgs. The soil samples will be collected in clean brass or teflon liners. Following lithologic inspection and field screening, the liners will be capped with teflon sheeting and plastic end caps, sealed with tape, labeled and placed in a chilled cooler for transport to an analytical laboratory under chain-of-custody protocol.

Drilling and soil sampling equipment that may come into contact with site soils will be steam-cleaned prior to initiating soil sampling activities, between each boring location and at the conclusion of the field program. Soil cuttings, if any, generated during drilling operations will be placed in 55-gallon drums or other suitable containers and stored temporarily onsite. Disposal of the waste soil will be the responsibility of the Wingate Company; however, if requested, Geomatrix can aid in assessing appropriate disposal options and in coordinating the soil disposal.

Task 3: Chemical Analysis of Soil Samples

Soil samples collected during Task 2, above, will be submitted to a California certified laboratory for possible chemical analysis. The one-foot depth soil samples will be analyzed for the presence of total petroleum hydrocarbons (TPH) in the gasoline hydrocarbon range (TPHg), and in the diesel hydrocarbon range (TPHd) using EPA Methods 5030/8015 and 3550/8015, respectively, for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8020, and for 17 California Code of Regulations (CCR) metals using EPA Method 6010/7000 series. The 5-foot and 10-foot depth samples will be held pending results of the one-foot depth samples, except for samples that OVA readings indicated the possible presence of volatile organic compounds during field screening. These deeper samples will be analyzed for the possible presence of volatile organic compounds using EPA Method 8240.

Task 4: Data Evaluation and Report Preparation



Mr. Monroe Wingate
Wingate Company
6 February 1995
Page 5

Results from Tasks 2 and 3 will be evaluated and a report prepared. The report will include a description of the lithology encountered during drilling, results of field screening, a discussion of the chemical results, recommendations for additional work, if warranted, and appendices with copies of the laboratory data sheets. A draft copy of the report will be prepared for your review. After we have received your comments, the report will be finalized and transmitted to you.

Task 5: Project Management and Meetings

Geomatrix will conduct periodic telephone calls to update you on the status of the project (an estimated 2 or 3 telephone conversations). We have assumed we will conduct one meeting with you to present and discuss the results of the soil sampling program and recommendations, if any, for additional work. This task also includes administrative activities associated with the project, such as cost tracking and project coordination.

ESTIMATED SCHEDULE

It is anticipated that pre-field and field activities can be completed within 4 to 6 weeks of our receipt of written authorization to proceed, barring delays out of the control of Geomatrix (e.g. subcontractor unavailability, inclement weather, etc.). The soil samples will be analyzed on a normal two week turn-around-time. Once laboratory analysis results are received by Geomatrix, a draft report can be prepared within 3 to 4 weeks.

We look forward to working with you on this project. If you have any questions, please do not hesitate to call either of the undersigned.

Sincerely yours,

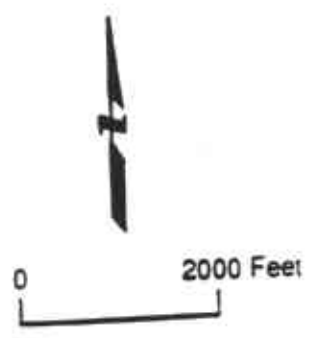
GEOMATRIX CONSULTANTS, INC.

Amanda Spencer, R.G., P.E.
Senior Hydrogeologist

John Gallinatti, C.E.G.
Principal Hydrogeologist and
Vice-President

ALS/JDG/lam
PROP\95P004.LT1

cc: Rob McCoy, Folger & Levin



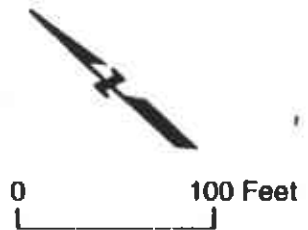
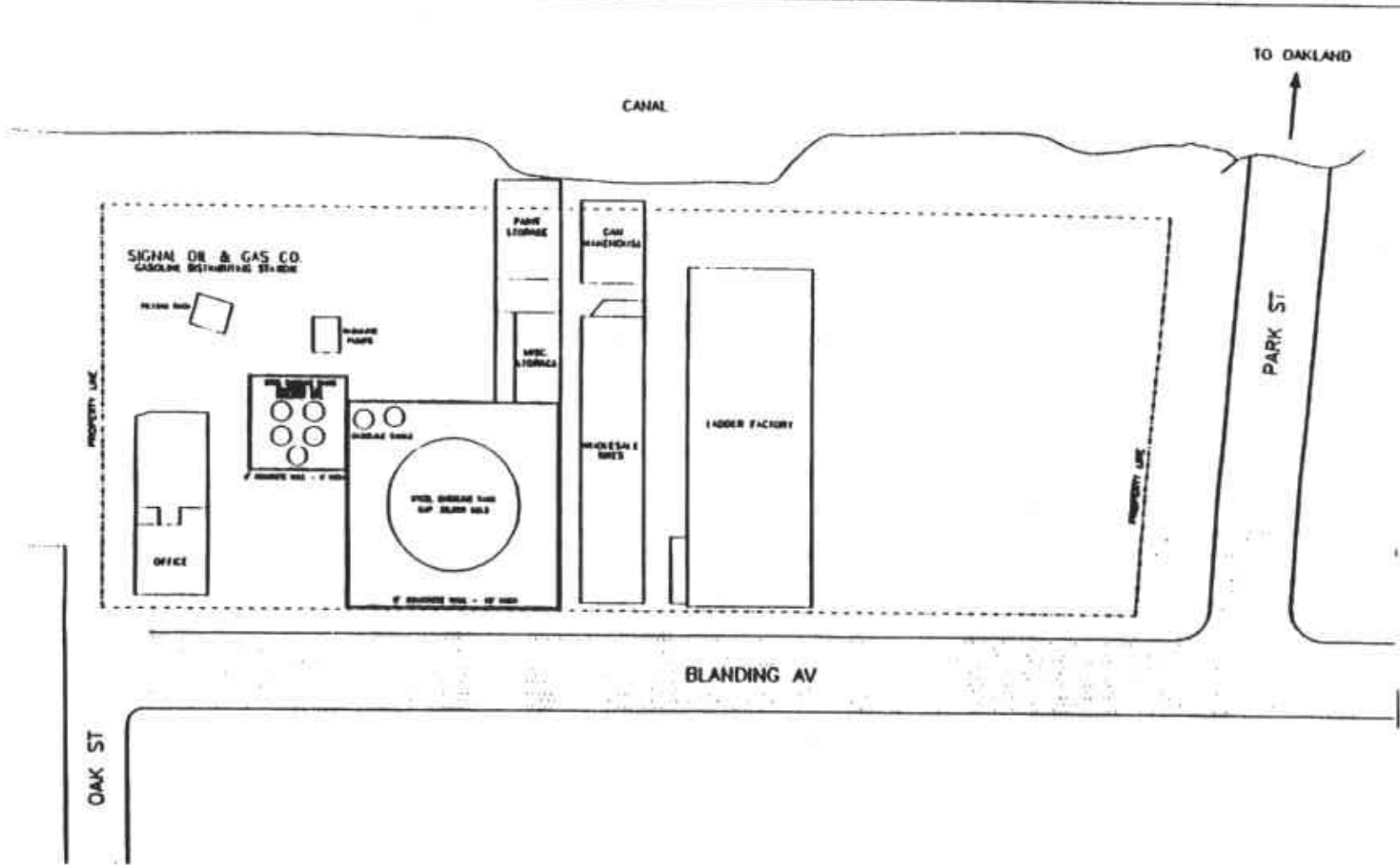
SITE LOCATION MAP
 Park Street Landing
 201 Alameda Avenue

Figure
 1
 Project No





SITE FEATURES SHOWN ON 1932 SANBORN MAP
Park Street Landing Site
Alameda, California



Map Source: 13 January 1995, Preliminary Environmental Site Assessment, CET Environmental Services, Inc.

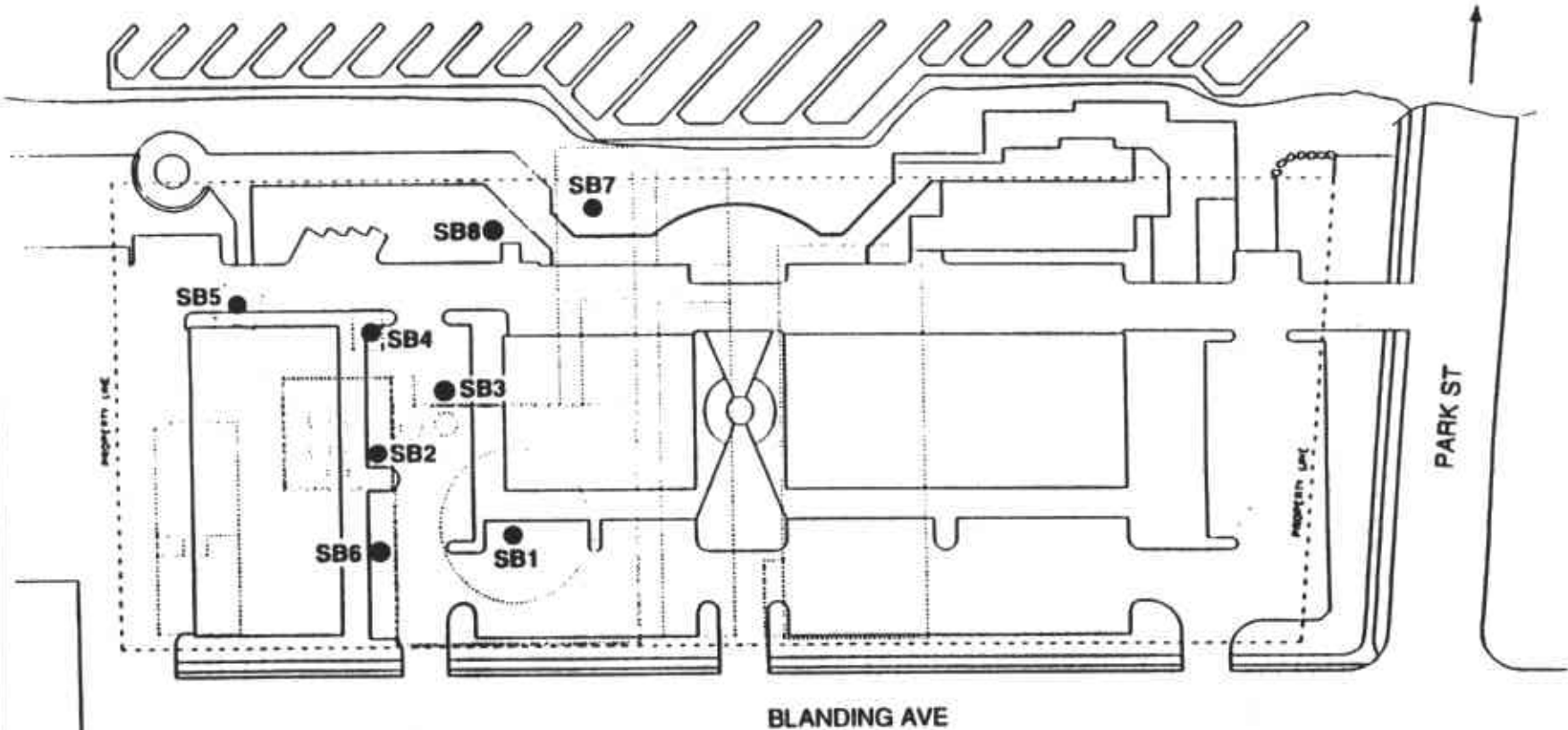
Figure 2
Project No. 2436




PROPOSED SOIL BORING LOCATIONS
Park Street Landing Site
Alameda, California

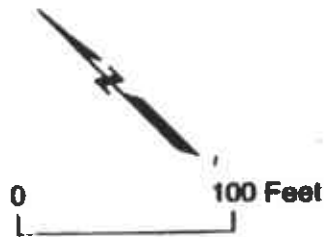
ALAMEDA ESTUARY

TO OAKLAND



EXPLANATION

- SB1 ●** Proposed soil boring location
-  Site features noted on a 1932 Sanborn Fire Insurance map



Map Source: 13 January 1995, Preliminary Site Assessment Report by CET Environmental Services, Inc.

Figure 3
Project No. 2436

APPENDIX B

**SOIL BORING LOGS FROM SOIL INVESTIGATION
AND SHALLOW GROUNDWATER SURVEY**

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. SB1

BORING LOCATION:

ELEVATION AND DATUM:
Ground surface

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
2/17/95

DATE FINISHED:
2/17/95

DRILLING METHOD: Direct push

TOTAL DEPTH:
10 feet bgs.

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD 1

DEPTH TO
WATER

FIRST

COMPL.

24 HRS.
--

SAMPLING METHOD: Enviro Core System

LOGGED BY:
T. F. Wood

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION <small>NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.</small>	REMARKS
	Sample No.	Sample Blows/ Foot					
						Asphalt	
1						CLAYEY SAND with GRAVEL (SC) Very dark gray (10YR 3/1); moist; 40% fine to medium sand; 40% fine to coarse subangular gravel; 20% medium plasticity fines; firm	
2							
3	SB1-3.0 SB1-3.5		7	7			
4						CLAYEY SAND (SC) Dark greenish gray (5BG 4/1); moist; 60-70% fine to medium sand; 30-40% medium plasticity fines; firm	
5	SB1-5.0 SB1-5.5		357	491			
6							
7							
8							
9	SB1-9.5 SB1-10.0			9	15	Color change to dark gray (5Y 4/1); mottled with dark greenish gray (5BG 4/1)	
10						Bottom of boring at 10 feet bgs	
11							
12							
13							
14							

B-1 (11/92)

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. SB2

BORING LOCATION:

ELEVATION AND DATUM:
Ground surface

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
2/20/95

DATE FINISHED:
2/20/95

DRILLING METHOD: Direct push

TOTAL DEPTH:
10 feet bgs

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD 2

DEPTH TO
WATER

FIRST

COMPL.

24 HRS.
--

SAMPLING METHOD: Enviro Core System

LOGGED BY:
T. F. Wood

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES			PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
		core cut			Surface Elevation:	
1					Concrete - sidewalk	
2	SB2-2.0			0	POORLY GRADED SAND with CLAY AND GRAVEL (SP-SC) Dark brown (10YR 3/3); moist; 70% fine to medium sand (trace coarse sand); 20% fine to coarse angular gravel; 10% low to medium plasticity fines; loose	
3	SB2-3.5			0		
4	SB2-4.0			0		
5					----- ? ----- ? ----- ? -----	
6					SANDY LEAN CLAY (CL) Dark greenish gray (5BG 4/1); moist; 60-65% fines; 35-40% fine to medium sand; medium plasticity; firm	
7	SB2-7.0			848		
8						
9	SB2-9.5			158		
10	SB2-10.0			178	Bottom of boring at 10 feet bgs	
11						
12						
13						
14						

2436.02.003

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. SB3

BORING LOCATION:

ELEVATION AND DATUM:
Ground surface

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
2/17/95

DATE FINISHED:
2/17/95

DRILLING METHOD: Direct push

TOTAL DEPTH:
10 feet bgs

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD 1

DEPTH TO
WATER

FIRST

COMPL

24 HRS.
--

SAMPLING METHOD: Enviro Core System

LOGGED BY:
T. F. Wood

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES			PID Reading (ppm)	DESCRIPTION <small>NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.</small>	REMARKS
	Sample No.	Sample	Blows/ Foot			
					Surface Elevation:	
					Asphalt	
1	SB3-1.0			7	CLAYEY SAND with GRAVEL (SC) Very dark gray (10YR 3/1); dry; 40% fine to medium sand; 40% fine to coarse angular gravel; 20% medium plasticity fines; loose	
	SB3-1.5			36		
2						
3						
4					SANDY LEAN CLAY (CL) Dark greenish gray (5BG 4/1); moist; 60 -65% fines; 35-40% fine sand; medium plasticity; firm	
5						
6						
6	SB3-6.5			244		
7	SB3-7.0			338		
8						
9	SB3-9.5			11	Mottled with dark gray (5Y 4/1)	
10	SB3-10.0			19	Bottom of boring at 10 feet bgs	
11						
12						
13						
14						

2436.02.004

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. SB4

BORING LOCATION:

ELEVATION AND DATUM:
Ground surface

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
2/17/95

DATE FINISHED:
2/17/95

DRILLING METHOD: Direct push

TOTAL DEPTH:
10 feet bgs

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD 1

DEPTH TO
WATER

FIRST

COMPL.

24 HRS.
--

SAMPLING METHOD: Enviro Core System

LOGGED BY:
T. F. Wood

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES			PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast, density, structure, cementation, react w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
					Surface Elevation:	
		Asphalt				
1	SB4-1.0			59	CLAYEY SAND with GRAVEL (SC) Very dark gray (10YR 3/1) to dark yellowish brown (10YR 4/4); dry; 40% fine to coarse sand; 40% fine to coarse angular gravel; 20% medium plasticity fines; loose	
	SB4-1.5			19		
2						
3						
4					SANDY LEAN CLAY (CL) Dark greenish gray (5BG 4/1); moist; 60-65% fines; 35-40% fine sand; medium plasticity fines; firm	
5						
6						
6	SB4-6.5			726		
7	SB4-7.0			1247		
8					Black mottling	
9	SB4-9.5			270		
10	SB4-10.0			111		
					Bottom of boring at 10 feet bgs	
11						
12						
13						
14						

2436.02.005

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. SB5

BORING LOCATION:

ELEVATION AND DATUM:
Ground surface

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
2/17/95

DATE FINISHED:
2/17/95

DRILLING METHOD: Direct push

TOTAL DEPTH:
10 feet bgs

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD 1

DEPTH TO
WATER

FIRST

COMPL.

24 HRS.
--

SAMPLING METHOD: Enviro Core System

LOGGED BY:
T. F. Wood

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES			PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
					Surface Elevation:	
					Asphalt	
1	SB5-1.0			532	POORLY GRADED SAND with CLAY AND GRAVEL (SP-SC) Dark yellowish brown (10YR4/4); dry, 60% fine to coarse sand; 30% fine to coarse angular gravel; 10% medium plasticity fines; loose	Brick and plastic pieces present
	SB5-1.5			1643		
2					Color change to dark brown (7.5YR 3/2)	
3						
4					CLAYEY SAND (SC) Black (2.5YR 2.5/0); moist; 60-65% fine sand; 35-40% medium plasticity fines; soft	
5	SB5-5.5			2350		
6	SB5-6.0			1763		
7					Color change to dark greenish gray (5BG 4/1)	
8						
9	SB5-9.5			86		
10	SB5-10.0			240	Bottom of boring at 10 feet bgs	
11						
12						
13						
14						

2436.02.006

B-1 (11/92)

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. SB6

BORING LOCATION:

ELEVATION AND DATUM:
Ground surface

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
2/17/95

DATE FINISHED:
2/17/95

DRILLING METHOD: Direct push

TOTAL DEPTH:
10 feet bgs

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD 1

DEPTH TO
WATER

FIRST

COMPL.

24 HRS.
--

SAMPLING METHOD: Enviro Core System

LOGGED BY:
T. F. Wood

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol); color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.	REMARKS
	Sample No.	Sample	Blows/ Foot	Foot			
						Surface Elevation:	
						Asphalt	
1	SB6-1.0				26	CLAYEY SAND with GRAVEL (SC) Very dark gray (10YR 3/1); dry; 40% fine to medium sand; 40% fine to coarse angular gravel; 20% medium plasticity fines; loose	
	SB6-1.5				36		
2							
3							
4						SANDY LEAN CLAY (CL) Dark greenish gray (5BG 4/1); moist; 60-65% fines; 35-40% fine sand; medium plasticity; firm	
5							
6							
7	SB6-7.0				248		
8	SB6-8.0				26		
9	SB6-9.5				86	Black mottling	
10	SB6-10.0				32	Bottom of boring at 10 feet bgs	
11							
12							
13							
14							

2436.02.007

B-1 (11/92)

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. SB7

BORING LOCATION:

ELEVATION AND DATUM:
Ground surface

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
2/17/95

DATE FINISHED:
2/17/95

DRILLING METHOD: Direct push

TOTAL DEPTH:
10 feet bgs

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD 1

DEPTH TO
WATER

FIRST

COMPL.

24 HRS.

SAMPLING METHOD: Enviro Core System

LOGGED BY:
T. F. Wood

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot	Foot			
						Surface Elevation:	
						Asphalt	
1	SB7-1.0				13		Poor recovery-- Unable to log
	SB7-1.5				3		
2							
3						?	
4	SB7-4.0				15		Concrete in shoe
5							
6						?	
7	SB7-7.0				17		
8							
9	SB7-9.5				94		
10	SB7-10.0				19		
						Bottom of boring at 10 feet bgs	
11							
12							
13							
14							

2436.02.008

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. SB8

BORING LOCATION: Approx. 15 feet N of North corner of trash house

ELEVATION AND DATUM:
Ground surface

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
2/20/95

DATE FINISHED:
2/20/95

DRILLING METHOD: Direct push

TOTAL DEPTH:
10 feet bgs

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD 2

DEPTH TO
WATER

FIRST

COMPL.

24 HRS.
--

SAMPLING METHOD: Enviro Core System

LOGGED BY:
T. F. Wood

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES			PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
1	SB8-0.5			37	POORLY GRADED SAND with CLAY AND GRAVEL (SP-SC) Dark brown (10YR 3/3); moist; 70% fine to medium sand (trace coarse sand); 15-20% fine to coarse angular gravel; 10-15% low to medium plasticity fines; loose	Samples SB8-0.5 and SB8-1.0 collected from new hole approximately 1 foot north of SB8 due to poor recovery. New hole only 18 inches deep -- samples collected with split spoon
	SB8-1.0		10			
2						
3						
4					?	
5					Increase in fine gravel to 40%; decrease in sand to 55% fine to coarse sand; decrease in fines to 5%	
6	SB8-6.5			+9999		
7	SB8-7.0			974	CLAYEY SAND (SC) Black (5Y 2.5/1); moist; 80-90% fine to medium sand; 10-20% medium plasticity fines; firm	Rock in shoe
8						
9	SB8-9.5			451	SANDY LEAN CLAY (CL) Dark greenish gray (5BG 4/1); moist; 60-70% fines; 30-40% fine sand; medium plasticity; firm	One 1 inch subrounded gravel at gradational contact
10	SB8-10.0			463	Bottom of boring at 10 feet bgs at 10:40	
11						
12						
13						
14						

2436.02.009

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-7A

BORING LOCATION: Northwest corner by canal

ELEVATION AND DATUM:
Gravel sidewalk

DRILLING CONTRACTOR: Precision Sampling

DATE STARTED:
4/24/95

DATE FINISHED:

DRILLING METHOD: Direct push

TOTAL DEPTH:
6 feet

MEASURING POINT:
Ground surface

DRILLING EQUIPMENT: XD-3

DEPTH TO
WATER

FIRST

COMPL.

24 HRS.
--

SAMPLING METHOD: Enviro Core System

LOGGED BY:
S. L. Anich

HAMMER WEIGHT: ---

DROP: ---

RESPONSIBLE PROFESSIONAL:
A. L. Spencer

REG. NO.
RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION <small>NAME (USCS Symbol); color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.</small>	REMARKS
	Sample No.	Sample	Blows/ Foot				
						Surface Elevation:	
1						Gravel sidewalk	
2						CLAYEY SAND (SC) Very dark grayish brown (10Y 3/2), dry, 60% medium sand, 30% low plasticity fines, 10% small gravel, loose	
3						Gray concrete and brick fragments	
4						GRANULAR MATERIAL Black (7.5YR 2.5/1), moist, 60% fine to medium grains, 35% low plasticity fines, 5% small gravel, loose	
5							
6						Refusal at 6 feet bgs	
7							
8							
9							
10							
11							
12							
13							
14							

B-1 (11/92)

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-7B			
BORING LOCATION: Northwest corner by canal		ELEVATION AND DATUM: Gravel sidewalk			
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/24/95	DATE FINISHED: ---		
DRILLING METHOD: Direct push		TOTAL DEPTH: 6 feet	MEASURING POINT: Ground surface		
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST ---	COMPL ---	24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich			
HAMMER WEIGHT: ---		DROP: ---		RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES					DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter. Surface Elevation:	REMARKS
	Sample No.	Sample	Blows/ Foot	Foot	PID Reading (ppm)		
1						Gravel sidewalk	
2						CLAYEY SAND (SC) Very dark grayish brown (10Y 3/2), dry, 60% medium sand, 30% low plasticity fines, 10% small gravel, loose	
3						Gray concrete / brick	
4						GRANULAR MATERIAL Black (7.5YR 2.5/1), moist, 60% fine to medium grains, 35% low plasticity fines, 5% small gravel, loose	
5							
6						Refusal at 6 feet bgs	
7							
8							
9							
10							
11							
12							
13							
14							

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-7			
BORING LOCATION: Northwest corner of property		ELEVATION AND DATUM: Gravel sidewalk			
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/24/95		DATE FINISHED: 4/24/95 1000 hrs.	
DRILLING METHOD: Direct push		TOTAL DEPTH: 15 feet		MEASURING POINT: Ground surface	
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST bgs	COMPL. 9.6 feet	24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich			
HAMMER WEIGHT: ---		DROP: ---		RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt, plast. density, structure, cementation, react w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot				
1						CLAYEY SAND (SC) Very dark grayish brown (10YR 3/2), dry, 60% medium sand, 30% low plasticity fines, 10% small gravel, loose	
2							
3						GRANULAR MATERIAL Black (7.5YR 2.5/1), loose, dry	
4						CLAYEY SAND (SC) Light olive brown (2.5Y 5/3), dry, 60% fine to medium sand, 35% low plasticity fines, 5% small gravel, loose	
5							
6						CLAYEY SAND (SC) Light olive brown (2.5Y 5/3) with brick fragments, moist, 60% fine sand, 35% low plasticity fines, 5% small gravel, loose	
7							
8						LEAN CLAY with SAND (CL) Black (10YR 2/1), moist, 80% fines, 20% sand, low plasticity, soft	
9							
10							
11						1-inch lense of coarse gravel	
12						LEAN CLAY (CL) Black (10YR 4/1), wet, 95% fines, 5% sand, high plasticity, hard	
13						LEAN CLAY (CL) Greenish gray gley (5G 5/1), moist, 95% fines, 5% sand, medium plasticity	
14							

B-1 (11/92)

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-7 (cont.)

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION <small>NAME (USCS Symbol): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. Inter.</small>	REMARKS
	Sample No.	Sample	Blows/ Foot				
15						LEAN CLAY (CL) (continued) Orange mottling	
16						Bottom of boring at 15 feet bgs	
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

B-2 (11/82)

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-8			
BORING LOCATION: Sidewalk, northwest corner		ELEVATION AND DATUM: Grassy area			
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/24/95		DATE FINISHED: 4/24/95 - 1130 hrs	
DRILLING METHOD: Direct push		TOTAL DEPTH: 16 feet		MEASURING POINT: Ground surface	
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST ---	COMPL. 9' 0"	24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich			
HAMMER WEIGHT: ---		DROP: ---		RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot	Foot			
1							No recovery in upper 2 feet
2							
3						CLAYEY SAND (SC) Very dark gray (10YR 3/1) with abundant organics (roots, grass), moist, 65% medium sand, 25% low plasticity fines, 10% fine to coarse gravel, loose	
4							
5							
6						Increased sand content to 80%, 20% low plasticity fines	
7							
8						LEAN CLAY with SAND (CL) Black (10YR 2/1), moist, 75% fines, 25% fine sand, low plasticity	
9							
10						LEAN CLAY (CL) Greenish gray (10GY 5/1), moist, 95% fines, 5% fine sand, low plasticity	
11							
12							
13							
14							

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-8 (cont.)

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION <small>NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.</small>	REMARKS
	Sample No.	Sample	Blows/ Foot				
15		X				LEAN CLAY (CL) (continued) Increase sand content to 20%	
16						CLAYEY SAND (SC) Light olive brown (2.5Y 5/4) with green and brown mottling, moist, 60% fine sand, 40% low plasticity fines	
17						Bottom of boring at 16 feet bgs	
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

B-2 (11/92)

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-9	
BORING LOCATION: Along canal - middle		ELEVATION AND DATUM: Sidewalk (gravel)	
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/24/95	DATE FINISHED: 4/24/95 - 1330 hrs
DRILLING METHOD: Direct push		TOTAL DEPTH: 16 feet	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST ---
SAMPLING METHOD: Enviro Core System		COMPL.	24 HRS. --
HAMMER WEIGHT: ---		LOGGED BY: S. L. Anich	
DROP: ---		RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES				PD Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	REMARKS
	Sample No.	Sample	Blows/ Foot	Foot			
1							No recovery in upper 3 feet
2							
3						SANDY LEAN CLAY with GRAVEL (CL) Very dark gray (10YR 3/1), dry, 60% fines, 25% fine to medium sand, 15% medium gravel, low plasticity	
4							
5						CLAYEY SAND with GRAVEL (SC) Very dark gray (10YR 3/1), calcium deposits, dry, 60% fine to medium sand, 25% low plasticity fines, 15% fine gravel, loose	
6						Increase sand content to 80%	
7							
8						LEAN CLAY with SAND (CL) Black (10YR 2/1), moist, 85% fines, 15% fine sand, low plasticity	
9						Increase sand content to 30%	
10						LEAN CLAY (CL) Greenish gray (10GY 5/1), moist, 95% fines, 5% fine sand, low plasticity	
11						Orange mottling	
12							
13						Increase sand content to 30%	
14							

B-1 (11/92)

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-9 (cont.)

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.	REMARKS
	Sample No.	Sample	Blows/ Foot				
						LEAN CLAY (CL) (continued)	
15						CLAYEY SAND (SC) Greenish gray (10Y 5/1) with orange mottling, moist, 60% fine sand, 40% low plasticity fines	
16							Bottom of boring at 16 feet bgs
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

B-2 (11/92)

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-10	
BORING LOCATION: Along canal - middle		ELEVATION AND DATUM: Gravel sidewalk	
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/24/95	DATE FINISHED: 4/24/95 - 1430 hrs
DRILLING METHOD: Direct push		TOTAL DEPTH: 16 feet	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST ---
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich	COMPL. 24 HRS. ---
HAMMER WEIGHT: ---	DROP: ---	RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol), color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot				
1							No recovery in upper 2 feet
2							
3						CLAYEY SAND (SC) Very dark gray (10YR 3/1), moist, 70% fine sand, 25% low plasticity fines, 5% fine to coarse subangular gravel	
4							
5						Increase gravel content to 15%	
6					>1200		
7						SANDY LEAN CLAY (CL) Black (5Y 2.5/1), moist, 60-70% fines, 30-40% fine to coarse sand, low plasticity, soft	
8						Increase moisture	
9						LEAN CLAY (CL) Dark greenish gray (5G 4/1), moderate amount yellow to brown organics, moist, 80-90% fines, 10-20% fine to coarse sand, trace fine gravel, low plasticity, firm	
10							
11						Organics and orange mottling	
12							
13							
14							

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.	REMARKS
	Sample No.	Sample	Blows/ Foot				
15					>1200	LEAN CLAY (CL) (continued)	
16						POORLY GRADED SAND WITH CLAY (SP - SC) Gray (N5/), moist, 90% fine to medium sand, 10% low plasticity fines, loose	
						Bottom of boring at 16 feet bgs	
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-11	
BORING LOCATION: Along canal - southeast side		ELEVATION AND DATUM: Gravel sidewalk	
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/24/95	DATE FINISHED: 4/24/95 - 1530 hrs
DRILLING METHOD: Direct push		TOTAL DEPTH: 16 feet	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST --- COMPL --- 24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich	
HAMMER WEIGHT: ---	DROP: ---	RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES			PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
Surface Elevation:						
GRAVEL SIDEWALK						
1						No recovery in upper 1 1/2 feet
2					SANDY LEAN CLAY (CL) Very dark grayish brown (10YR 3/2), moist, 60% fines, 30% fine to coarse sand, 10% subangular gravel, low plasticity, soft	
3					Increase organic content, wood fragments	
4						
5				1300		
6						
7				50	LEAN CLAY with SAND (CL) Black (10YR 2/1) with tan mottling, moist, 85% fines, 15% fine to coarse sand, trace fine to coarse gravel, low plasticity, medium hard	
8						
9					LEAN CLAY (CL) Bluish gray (10B 6/1), moist, 90% fines, 10% medium to coarse sand, low plasticity, firm	
10				50	Color change to pale olive with green and orange mottling	
11						
12					Increase sand content to 25%	
13						
14						

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION <small>NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.</small>	REMARKS
	Sample No.	Sample	Blows/ Foot				
15					100	SANDY LEAN CLAY (CL) Greenish gray (10Y 5/1), moist, 60% fines, 40% fine to coarse sand, low plasticity, firm	
16						CLAYEY SAND (SC) Dark bluish gray (10B 4/1), moist, 70% fine to coarse sand, 30% low plasticity fines, dense	
17						Bottom of boring at 16 feet bgs	
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-12			
BORING LOCATION: Along canal - southeast side		ELEVATION AND DATUM: Gravel sidewalk			
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/24/95		DATE FINISHED: 4/24/95 - 1630 hrs	
DRILLING METHOD: Direct push		TOTAL DEPTH: 16 feet		MEASURING POINT: Ground surface	
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST ---	COMPL. ---	24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich			
HAMMER WEIGHT: ---		DROP: ---		RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.	REMARKS
	Sample No.	Sample	Blows/ Foot				
1							No recovery in upper 2 1/2 feet
2							
3						CLAYEY SAND (SC) Dark gray (7.5YR 4/1), moist, 70% fine to coarse sand, 25% low plasticity fines, 5% rounded and subangular gravel, medium density, glass fragments	
4						 Increase in low plasticity fines to 30%	
5						White "chalky" mottling or inclusions	
6							
7					700	WELL-GRADED SAND (SW) Light olive brown (2.5Y 5/3), moist, 95% fine to coarse sand, 5% low plasticity fines, loose	
8							
9						Color change to very dark gray (2.5Y 3/1), increase low plasticity fines to 20%	
10					50		
11						LEAN CLAY with SAND (CL) Olive (5Y 5/4) with green mottling, moist, 85% fines, 15% fine to medium sand, low plasticity, soft	
12						Increase sand content to 30% with orange mottling	
13						CLAYEY SAND (SC) Olive (5Y 5/4) with green and orange mottling, very moist, 65% fine to coarse sand, 35% low plasticity fines	
14							

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-12 (cont.)

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.	REMARKS
	Sample No.	Sample	Blows/ Foot				
15						CLAYEY SAND (SC) (continued) Increase sand content to 80% and color change to greenish gray (10GY 5/1)	
16						Bottom of boring at 16 feet bgs	
17							
18							
19							
20							
21							
22							
23							
24							
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28							
29							
30							
31							

B-2 (11/92)

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-13			
BORING LOCATION: Along Blanding Ave., N side of driveway, next to bldg		ELEVATION AND DATUM: Vegetated area			
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/25/95		DATE FINISHED: 4/25/95 - 1045 hrs	
DRILLING METHOD: Direct push		TOTAL DEPTH: 16 feet		MEASURING POINT: Ground surface	
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST ---	COMPL. ---	24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich			
HAMMER WEIGHT: ---		DROP: ---		RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by wt., plast, density, structure, cementation, react. w/HCl, geo. Inter.	REMARKS
	Sample No.	Sample	Blows/ Foot	Foot			
						Surface Elevation:	
1							Did not encounter petroleum-like odors; however, PID readings were measured. No recovery in upper 2 1/2 feet.
2						CLAYEY SAND (SC) Black (2.5Y 2.5/1), orange organic nodules, very moist, 60-70% fine to coarse sand, 30-40% low plasticity fines, loose	
3						Color change to olive brown (2.5Y 4/3)	
4						LEAN CLAY (CL) Dark grayish brown (2.5Y 4/2), organic nodules (roots, black nodules), moist, 80-90% fines, 10-20% fine to medium sand, low plasticity, firm	
5						Gravel content to 5% (medium, angular)	
6					162	CLAYEY SAND (SC) Dark greenish gray (10GY 4/1), moist, 70% fine to coarse sand, 30% low plasticity fines, dense	
7							
8						ATD ▽	
9					120	CLAYEY SILT (ML) Greenish gray (5GY 5/1), moist, 90-95% fines, 5-10% fine to medium sand, low plasticity, firm	
10					170	Orange mottling and organic nodules, increasing clay content	
11					190		
12					380	CLAYEY SAND (SC) Dark greenish gray (10Y 4/1), moist, 60 % fine to coarse sand, 40% low plasticity fines, including 10% silt, medium dense	
13						LEAN CLAY (CL) Olive gray (5Y 4/2), moist, 80% fines, 20% fine to coarse sand, low plasticity	
14					650		

B-1 (11/92)

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-13 (cont.)

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION <small>NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.</small>	REMARKS
	Sample No.	Sample	Blows/ Foot				
15						<p>WELL-GRADED SAND with CLAY (SW-SC) Dark greenish gray (10GY 4/1), moist, 90% fine to coarse sand, 40% low plasticity fines, loose Color change to olive brown (2.5Y 4/4)</p>	
16						<p>Bottom of boring at 16 feet bgs</p>	
17							
18							
19							
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B-2 (11/92)

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-14			
BORING LOCATION: Along Blanding Ave., south side of driveway		ELEVATION AND DATUM: Vegetated area			
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/25/95		DATE FINISHED: 4/25/95 - 930 hrs	
DRILLING METHOD: Direct push		TOTAL DEPTH: 16 feet		MEASURING POINT: Ground surface	
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST ---	COMPL. ---	24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich			
HAMMER WEIGHT: ---		DROP: ---		RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES			PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
1						Did not encounter petroleum-like odors; however, PID readings were measured. No recovery in upper 2 1/2 feet.
2					Surface Elevation:	
3					CLAYEY SAND (SC) Reddish black (10R 2.5/1), moist, 60-70% fine to coarse sand, 30-40% low plasticity fines, loose	
4					Increased sand content to 80-85%, color change to brown (10YR 5/3)	
5				80		
6					SANDY LEAN CLAY (CL) Light yellowish brown (2.5Y 6/4), moist, 60% fines, 30% fine to coarse sand, 10% fine gravel, low plasticity, firm	
7					Color change to pale olive (5Y 6/4), increase fines to 75%	
8					CLAYEY SAND (SC) Greenish gray (5G 5/1) with orange mottling and black organic pockets, moist, 60-70% fine to coarse sand, 30-40% low plasticity fines, medium dense to dense	
9				160		
10					LEAN CLAY with SAND (CL) Olive (5Y 5/3) with orange mottling and black organic pockets (some roots), moist, 80% fines (including silt), 20% fine to medium sand, low plasticity, firm	
11						
12				600		
13					CLAYEY SAND (SC) Olive (5Y 5/6) with orange and black mottling, very moist, 60-70% fine to coarse sand, 30-40% low plasticity fines, medium dense	
14				25		

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-14 (cont.)

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION <small>NAME (USCS Symbol); color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. Inter.</small>	REMARKS
	Sample No.	Sample	Blows/ Foot				
15						SANDY LEAN CLAY (CL) Dark greenish gray (5G 3/1), moist, 70% fines, 30% fine to coarse sand. low plasticity, dense	
16						WELL-GRADED SAND with CLAY (SW-SC) Olive (5Y 4/3), moist, 90% fine to coarse sand, 10% low plasticity fines, loose	
16						Bottom of boring at 16 feet bgs	
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B-2 (11/92)

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-15	
BORING LOCATION: North side of property--driveway		ELEVATION AND DATUM: Asphalt driveway	
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/25/95	DATE FINISHED: 4/25/95 - 1200 hrs
DRILLING METHOD: Direct push		TOTAL DEPTH: 16 feet	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST --- COMPL. --- 24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich	
HAMMER WEIGHT: ---	DROP: ---	RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot				
1							No recovery in upper 2 1/2 feet
2							
3					300	GRAVEL	
4						CLAYEY SAND (SC) Very dark grayish brown (10YR 3/2), moist, 70-80% fine to coarse sand, 20-30% low plasticity fines, loose	
5					8700	LEAN CLAY with SAND (CL) Black (10YR 2/1), some orange organic nodules, moist, 60-70% fines (5-10% silt), 30-40% fine to coarse sand, low plasticity, soft	
6					250		
7						CLAYEY SAND (SC) Dark yellowish brown (10YR 4/4), moist to very moist, 75-85% fine to coarse sand, 15-25% low plasticity fines, loose to medium dense	
8					50	SANDY LEAN CLAY (CL) Olive (5Y 5/3), moist, 70% fines, 30% fine to coarse sand, low plasticity, firm	
9					122		
10						Decreasing sand content to 20%	
11					200	Black organic nodules, greenish gray (5G 5/1) pockets, orange mottling	
12					+9000		
13						Increasing sand content to 30-40%, color change to yellowish brown (10YR 5/6)	
14					1200		

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-15 (cont.)

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION <small>NAME (USCS Symbol): color, moist. % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.</small>	REMARKS
	Sample No.	Sample	Blows/ Foot				
15			470			<p>SANDY LEAN CLAY (CL) (Continued)</p> <p>CLAYEY SAND (SC) Light olive brown (2.5Y 5/4) black organic nodules, green mottling, moist, 60% fine to coarse sand, 40% low plasticity fines, soft to firm, Increase sand content to 70-80%</p> <p>Bottom of boring at 16 feet bgs</p>	
16							
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31							

B-2 (11/92)

PROJECT: PARK STREET LANDING Alameda, California		Log of Boring No. GWS-16			
BORING LOCATION: Main driveway		ELEVATION AND DATUM: Asphalt driveway			
DRILLING CONTRACTOR: Precision Sampling		DATE STARTED: 4/25/95		DATE FINISHED: 4/25/95 - 1415 hrs	
DRILLING METHOD: Direct push		TOTAL DEPTH: 21.5 feet		MEASURING POINT: Ground surface	
DRILLING EQUIPMENT: XD-3		DEPTH TO WATER	FIRST ---	COMPL. ---	24 HRS. --
SAMPLING METHOD: Enviro Core System		LOGGED BY: S. L. Anich			
HAMMER WEIGHT: ---		DROP: ---		RESPONSIBLE PROFESSIONAL: A. L. Spencer	REG. NO. RG 5713

DEPTH (feet)	SAMPLES				PID Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot	Foot			
1							No recovery in upper 2 1/2 feet
2							
3					1000	GRAVEL CLAYEY SAND (SC) Black (7.5YR 2.5/1), moist, 70% fine to coarse sand, 30% low plasticity fines, loose to medium dense	
4						Increased sand content to 80%	
5							
6					200	SANDY LEAN CLAY (CL) Dark greenish gray (5GY 4/1), moist, 60-70 % fines, 30-40% fine to coarse sand, low plasticity, medium hard	
7							
8							
9						Orange organic nodules	
10							
11					14	LEAN CLAY with SAND (CL) Olive (5Y 5/4), with green and orange mottling, moist, 70-80% fines, 20-30% fine to coarse sand, low plasticity, hard	
12							
13					8	WELL-GRADED SAND with CLAY (SW-SC) Greenish gray (5G 5/1), moist, 85-90% fine to coarse sand, 10-15% low plasticity fines, loose to medium dense	
14							

B-1 (11/92)

PROJECT: PARK STREET LANDING
Alameda, California

Log of Boring No. GWS-16 (cont.)

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION NAME (USCS Symbol): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot				
15						WELL-GRADED SAND with CLAY (SW-SC) (Continued) Increase sand content to 90-95%	
16							
17						Color change to olive (5Y 4/3)	
18							
19						Orange mottling	
20							
21							
22						Bottom of boring at 21.5 feet bgs	
23							
24							
25							
26							
27							
28							
29							
30							
31							

B-2 (11/92)

APPENDIX C

**CHAIN-OF-CUSTODY RECORDS AND LABORATORY ANALYTICAL RESULTS
FROM SOIL INVESTIGATION SAMPLES**

2436.02
#0210

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

3012 16th Avenue West
Seattle, WA 98119-2029
FAX: (206) 283-5044

March 1, 1995

Stacy Anich, Project Leader
Geomatrix Consultants
100 Pine Street, 10th Floor
San Francisco, CA 94111


Dear Ms. Anich:

Enclosed are the results from the testing of material submitted on February 22, 1995 from your project #2436.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.


Bradley T. Benson
Chemist

jdp
Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: March 1, 1995
 Date Received: February 22, 1995
 Project: #2436
 Date Samples Extracted: February 22-13, 1995

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
 FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL
 BY GC/FID (Modified 8015)
 per California LUFT Guidelines
 Results Reported as $\mu\text{g/g}$ (ppm)**

<u>Sample ID</u>	<u>Diesel</u>	<u>Surrogate Standard</u> (% Recovery)
SB1-3.5	110 ^a	115%
SB1-5.5	10 ^b	109%
SB1-9.5	<5	116%
SB6-1.5	40 ^c	108%
SB6-7.0	170 ^d	108%
SB5-1.5	10	109%
SB5-5.5	15	111%
SB3-1.5	<5	112%
SB3-7.0	230	111%
SB3-10.0	<5	111%
SB4-1.5	20	112%
SB4-6.5	240 ^b	111%
SB4-10.0	<5	113%
SB7-1.0	110 ^c	112%
SB7-4.0	250 ^c	79%
SB2-3.5	40 ^c	114%
SB2-7.0	35 ^d	117%
SB8-1.0	75 ^c	124%
SB8-6.5	<5	110%

^a A product heavier than diesel may be present.

^b A product lighter than diesel #2 may be present.

^c Multiple products, including a product heavier than diesel #2 may be present.

^d Multiple products, including a product lighter than diesel #2 may be present.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: March 1, 1995

Date Received: February 22, 1995

Project: #2436

Date Samples Extracted: February 22-13, 1995

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL
BY GC/FID (Modified 8015)
per California LUFT Guidelines
Results Reported as $\mu\text{g/g}$ (ppm)
Quality Assurance**

<u>Sample ID</u>	<u>Diesel</u>	<u>Surrogate Standard</u> (% Recovery)
Blank	<5	110%
SB3-10.0 (Duplicate)	<5	110%
SB3-10.0 (Matrix Spike) % Recovery	99%	112%
SB3-10.0 (Matrix Spike Duplicate) % Recovery	99%	110%
Spike Blank % Recovery	94%	111%
Blank	<5	113%
SB8-6.5 (Duplicate)	<5	105%
SB8-6.5 (Matrix Spike) % Recovery	101%	114%
SB8-6.5 (Matrix Spike Duplicate) % Recovery	104%	118%
Spike Blank % Recovery	92%	113%
Spike Level	250	

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: March 1, 1995

Date Received: February 22, 1995

Project: #2436

Date Samples Extracted: February 23, 1995

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES AND GASOLINE
USING EPA METHODS 8020 AND 8015
per California LUFT Guidelines
Results Reported as µg/g (ppm)**

<u>Sample ID</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl- benzene</u>	<u>Total Xylenes</u>	<u>Gasoline</u>	<u>Surrogate Standard % Recovery</u>
SB1-3.5	<0.02	<0.02	<0.02	<0.06	<1	102%
SB1-9.5	<0.02	<0.02	<0.02	<0.06	<1	110%
SB6-1.5	<0.02	<0.02	<0.02	<0.06	<1	107%
SB1-5.5	0.08	0.20	0.58	0.86	390 ^{ve}	146%
SB6-7.0	<0.02	0.12	0.56	<0.06	400	140%
SB5-1.5	<0.02	<0.02	<0.02	<0.06	<1	114%
SB5-5.5	<0.02	<0.02	<0.02	<0.06	<1	106%
SB3-1.5	<0.02	<0.02	<0.02	<0.06	<1	102%
SB3-7.0	<0.02	0.46	0.58	0.51	150 ^{ve}	130%
SB3-10.0	<0.02	<0.02	<0.02	<0.06	<1	115%
SB4-1.5	<0.02	<0.02	<0.02	<0.06	<1	107%
SB4-6.5	2.0	0.81	3.6	13	860	123%
SB4-10.0	0.34	<0.02	<0.02	<0.06	4	116%
SB7-1.0	<0.02	<0.02	<0.02	<0.06	<1	113%
SB7-4.0	<0.02	<0.02	<0.02	<0.06	<1	102%
SB2-3.5	<0.02	<0.02	<0.02	<0.06	<1	104%
SB2-7.0	3.7	3.4	14	46	2,000 ^{ve}	136%
SB8-1.0	<0.02	<0.02	<0.02	<0.06	<1	105%
SB8-6.5	<0.02	<0.02	<0.02	<0.06	<1	107%

^{ve} The value reported exceeded the calibration range established for the sample.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: March 1, 1995
 Date Received: February 22, 1995
 Project: #2436
 Date Samples Extracted: February 23, 1995

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE,
 XYLENES AND GASOLINE
 USING EPA METHODS 8020 AND 8015
 per California LUFT Guidelines
 Results Reported as µg/g (ppm)
 Quality Assurance**

<u>Sample ID</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl- benzene</u>	<u>Total Xylenes</u>	<u>Gasoline</u>	<u>Surrogate Standard % Recovery</u>
Blank	<0.02	<0.02	<0.02	<0.06	<1	105%
SB3-10.0 (Duplicate)	<0.02	<0.02	<0.02	<0.06	<1	113%
SB3-10.0 (Matrix Spike) % Recovery	93%	86%	94%	89%	na	117%
SB3-10.0 (Matrix Spike Duplicate) % Recovery	92%	87%	95%	89%	na	114%
Spike Blank % Recovery	101%	92%	100%	94%	na	115%
Blank	<0.02	<0.02	<0.02	<0.06	<1	108%
SB8-6.5 (Duplicate)	<0.02	<0.02	<0.02	<0.06	<1	107%
SB8-6.5 (Matrix Spike) % Recovery	98%	91%	95%	90%	na	108%
SB8-6.5 (Matrix Spike Duplicate) % Recovery	98%	88%	94%	89%	na	106%
Spike Blank % Recovery	96%	89%	95%	89%	86%	106%
Spike Level	1	1	1	3	10	

na The analyte indicated was not added to the matrix spike sample.

Date of Report: March 1, 1995
Date Received: February 22, 1995
Project: #2436

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

SB1-3.5

The GC trace using the flame ionization detector (FID) showed the presence of high boiling compounds. The patterns displayed by these peaks are indicative of motor oil and/or biogenic compounds. The high boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₂₁ to beyond *n*-C₃₂ showing a maximum near *n*-C₂₉.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB1-5.5

The GC trace using the flame ionization detector (FID) showed the presence of low and medium boiling compounds. The patterns displayed by these peaks are indicative of a heavy naphtha or biologically weathered gasoline, and branched alkanes commonly seen in a weathered diesel range petroleum product. The low boiling compounds appeared as an irregular pattern of peaks eluting from *n*-C₄ to *n*-C₁₂ showing a maximum near *n*-C₉.

The medium boiling compounds may be norpristane, pristane and phytane at low levels.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB1-9.5

The GC/FID trace showed an absence of volatile and semi-volatile compounds. The detection limit for this analysis is 20, 50 and 100 ppm for gasoline, diesel and motor oil, respectively.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

Date of Report: March 1, 1995
Date Received: February 22, 1995
Project: #2436

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

SB6-1.5

The GC trace using the flame ionization detector (FID) showed the presence of medium and high boiling compounds. The patterns displayed by these peaks are indicative of extremely weathered diesel or hydraulic fluid, along with motor oil and/or biogenic compounds.

The medium boiling material appears as an unresolved hump of material eluting from *n*-C₁₂ to *n*-C₂₄ with a maximum near *n*-C₁₆. The high boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₂₁ to beyond *n*-C₃₂ showing a maximum near *n*-C₂₉.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB6-7.0

The GC trace using the flame ionization detector (FID) showed the presence of low and medium boiling compounds. The patterns displayed by these peaks are indicative of a heavy naphtha, weathered gasoline or kerosene, and branched alkanes commonly seen in a weathered diesel range petroleum product.

The low boiling compounds appeared as an irregular pattern of peaks eluting from *n*-C₄ to *n*-C₁₅ showing a maximum near *n*-C₁₁. The GC/FID trace showed the presence of peaks that appeared to be indicative of low levels of benzene, toluene and ethylbenzene and the xylenes. These compounds are characteristic of the constituents commonly found in gasoline.

There are two prominent peaks on the GC/FID trace near 21 minutes which cannot be identified by this analysis. GC/MS may be able to identify the peaks. Norpristane, pristane and phytane appear in the medium boiling range on the GC/FID trace indicating low levels of a diesel range petroleum product.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

Date of Report: March 1, 1995
Date Received: February 22, 1995
Project: #2436

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

SB5-1.5

The GC trace using the flame ionization detector (FID) showed the presence of high boiling compounds. The patterns displayed by these peaks are indicative of motor oil and/or biogenic compounds. The high boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₂₁ to beyond *n*-C₃₂ showing a maximum near *n*-C₂₉.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB5-5.5

The GC/ECD trace showed an absence of volatile and semi-volatile compounds. The detection limit for this analysis is 20, 50 and 100 ppm for gasoline, diesel and motor oil, respectively.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB3-1.5

The GC/ECD trace showed an absence of volatile and semi-volatile compounds. The detection limit for this analysis is 20, 50 and 100 ppm for gasoline, diesel and motor oil, respectively.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

Date of Report: March 1, 1995
Date Received: February 22, 1995
Project: #2436

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

SB3-7.0

The GC trace using the flame ionization detector (FID) showed the presence of low and medium boiling compounds. The patterns displayed by these peaks are indicative of a heavy naphtha or a weathered gasoline mixed with weathered diesel fuel.

The low boiling compounds appeared as a regular pattern of peaks eluting from $n\text{-C}_4$ to $n\text{-C}_{12}$ overlapping with the medium boiling material. The medium boiling material continues through $n\text{-C}_{24}$. An absence of a dominant pattern of n -alkanes was seen. The material appears to have undergone chemical/biological degradation due to the loss of the n -alkane peaks.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB3-10.0

The GC/ECD trace showed an absence of volatile and semi-volatile compounds. The detection limit for this analysis is 20, 50 and 100 ppm for gasoline, diesel and motor oil, respectively.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB4-1.5

The GC trace using the flame ionization detection (FID) showed the presence of very low levels of high boiling compounds. The patterns displayed by these peaks are indicative of low levels of motor oil and/or biogenic compounds. The high boiling material appeared as a broad hump of peaks eluting from $n\text{-C}_{25}$ to beyond $n\text{-C}_{36}$.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

Date of Report: March 1, 1995
Date Received: February 22, 1995
Project: #2436

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

SB4-6.5

The GC trace using the flame ionization detector (FID) showed the presence of low and medium boiling compounds. The patterns displayed by these peaks are indicative of weathered gasoline, and low levels of very weathered diesel.

The low boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₆ to *n*-C₁₈ showing a maximum near *n*-C₁₀. The GC/FID trace showed the presence of peaks that appeared to be indicative of augmented levels of benzene, toluene and ethylbenzene and the xylenes. These compounds are characteristic of the constituents commonly found in gasoline.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB4-10.0

The GC/ECD trace showed gasoline at less than the standard detection limit of 20 ppm. The detection limit for this analysis is 20, 50 and 100 ppm for gasoline, diesel and motor oil, respectively.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

Date of Report: March 1, 1995
Date Received: February 22, 1995
Project: #2436

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

SB7-1.0

The GC trace using the flame ionization detector (FID) showed the presence of high boiling compounds. The patterns displayed by these peaks are indicative of weathered Bunker C, crude oil or biogenic compounds.

The high boiling compounds appeared as a pattern of peaks eluting from n -C₁₇ to beyond n -C₃₂ showing a maximum near n -C₂₆. The GC/ECD trace showed the presence of halogenated or highly oxidized compounds. There are two unidentified prominent peaks on the GC/FID trace near 21 minutes. They appear at the same retention times as the two peaks seen in sample SB6-7.0.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB7-4.0

This sample appears similar to sample SB7-1.0

SB2-3.5

The GC trace using the flame ionization detector (FID) showed the presence of high boiling compounds. The patterns displayed by these peaks are indicative of motor oil and/or biogenic compounds. The high boiling compounds appeared as a regular pattern of peaks eluting from n -C₂₁ to beyond n -C₃₂ showing a maximum near n -C₂₉.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: March 1, 1995
Date Received: February 22, 1995
Project: #2436

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

SB2-7.0

The GC trace using the flame ionization detector (FID) showed the presence of low and medium boiling compounds. The patterns displayed by these peaks are indicative of weathered gasoline, and low levels of diesel.

The low boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₆ to *n*-C₁₈ showing a maximum near *n*-C₁₀. The GC/FID trace showed the presence of peaks that appeared to be indicative of low levels of benzene, toluene and ethylbenzene and the xylenes. These compounds are characteristic of the constituents commonly found in gasoline.

The medium boiling material appeared as a regular pattern of peaks eluting from *n*-C₁₄ through *n*-C₂₄. A regular pattern of *n*-alkanes was seen, indicating that the diesel material was not extensively biodegraded.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

SB8-1.0

The GC trace using the flame ionization detector (FID) showed the presence of high boiling compounds. The patterns displayed by these peaks are indicative of motor oil and/or biogenic compounds. The high boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₂₁ to beyond *n*-C₃₂ showing a maximum near *n*-C₂₉.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

Date of Report: March 1, 1995
Date Received: February 22, 1995
Project: #2436

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

SB8-6.5

The GC/ECD trace showed an absence of volatile and semi-volatile compounds. The detection limit for this analysis is 20, 50 and 100 ppm for gasoline, diesel and motor oil, respectively.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

02-22-95
11:49
Page 1 of

Chain-of-Custody Record No. **6384** Date: **2/21/95**

Project No: **2436**
 Samplers (Signatures): *Timothy F Woods*

Date	Time	Sample Number	ANALYSES												Cooled	Soil (S) or water (W)	Acidified	Number of containers	
			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	GC/MS	held								
2/17/95		SB1-3.5					X	X	X	X						X	S		1
		SB1-5.5					X	X	X	X						X	S		1
		SB1-9.5					X	X	X	X						X	S		1
		SB6-1.5					X	X	X	X						X	S		1
		SB6-7.0					X	X	X	X						X	S		1
		SB6-5.0					X	X	X	X						X	S		1
		SB5-1.5					X	X	X	X						X	S		1
		SB5-5.5					X	X	X	X						X	S		1
		SB5-10.0					X	X	X	X						X	S		1
		SB3-1.5					X	X	X	X						X	S		1
		SB3-7.0					X	X	X	X						X	S		1
		SB3-10.0					X	X	X	X						X	S		1

REMARKS
 Additional comments
 bill to
 David
 Mr. Monroe Wingate
 Wingate Company
 5980 Stoneridge Dr
 suite 119
 Pleasanton, Ca
 94588
 Re: 510-734-0640
 David Wingate asked
 Report to Geomatrix a
 Invoice to Wingate corp
 ATM 3/1/95

Turnaround time: *normal*
 Results to: *Geomatrix Story Arich*
 Total No. of containers: **12**

Relinquished by
 Signature: *Timothy F Woods*
 Printed name: *Timothy F Woods*
 Company:

Date: **2/21/95**
 Relinquished by
 Signature:
 Printed name:
 Company:

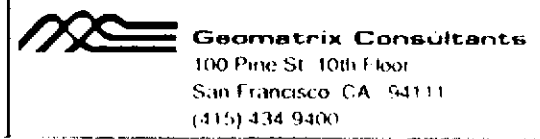
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 Relinquished by
 Signature:
 Printed name:
 Company:

Date:
 Method of shipment: **F2D EX**
 Laboratory comments and Log No:

Received by
 Signature: *Cathy Riggs*
 Printed name: *Cathy Riggs*
 Company: *ATM*

Time: **1:00**
 Received by
 Signature:
 Printed name:
 Company:

Time:
 Received by
 Signature:
 Printed name:
 Company:



02-22-95
11:49

Chain-of-Custody Record No 6883 Date 2/21/95 Page 2 of 2

Project No 2436			ANALYSES														REMARKS					
Samplers (Signatures) Timothy F Wood			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	BTEX	GC fingerprint	Weld							Cooled	Soil (S) or water (W)	Acidified	Number of containers	Additional comments
Date	Time	Sample Number																				
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		SBA - 6.5					X	X	X	X								X	S		1	
		SBA - 10.0					X	X	X	X								X	S		1	
		SB7 - 1.0					X	X	X	X								X	S		1	
		SB7 - 4.0					X	X	X	X								X	S		1	
		SB7 - 9.5					X	X	X	X	X							X	S		1	
2/20/95		SB2 - 3.5					X	X	X	X								X	S		1	
		SB2 - 7.0					X	X	X	X								X	S		1	
		SB2 - 10.0								X								X	S		1	
		SBE - 1.0					X	X	X	X								X	S		1	
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		SBE - 9.5					X	X	X	X	X							X	S		1	

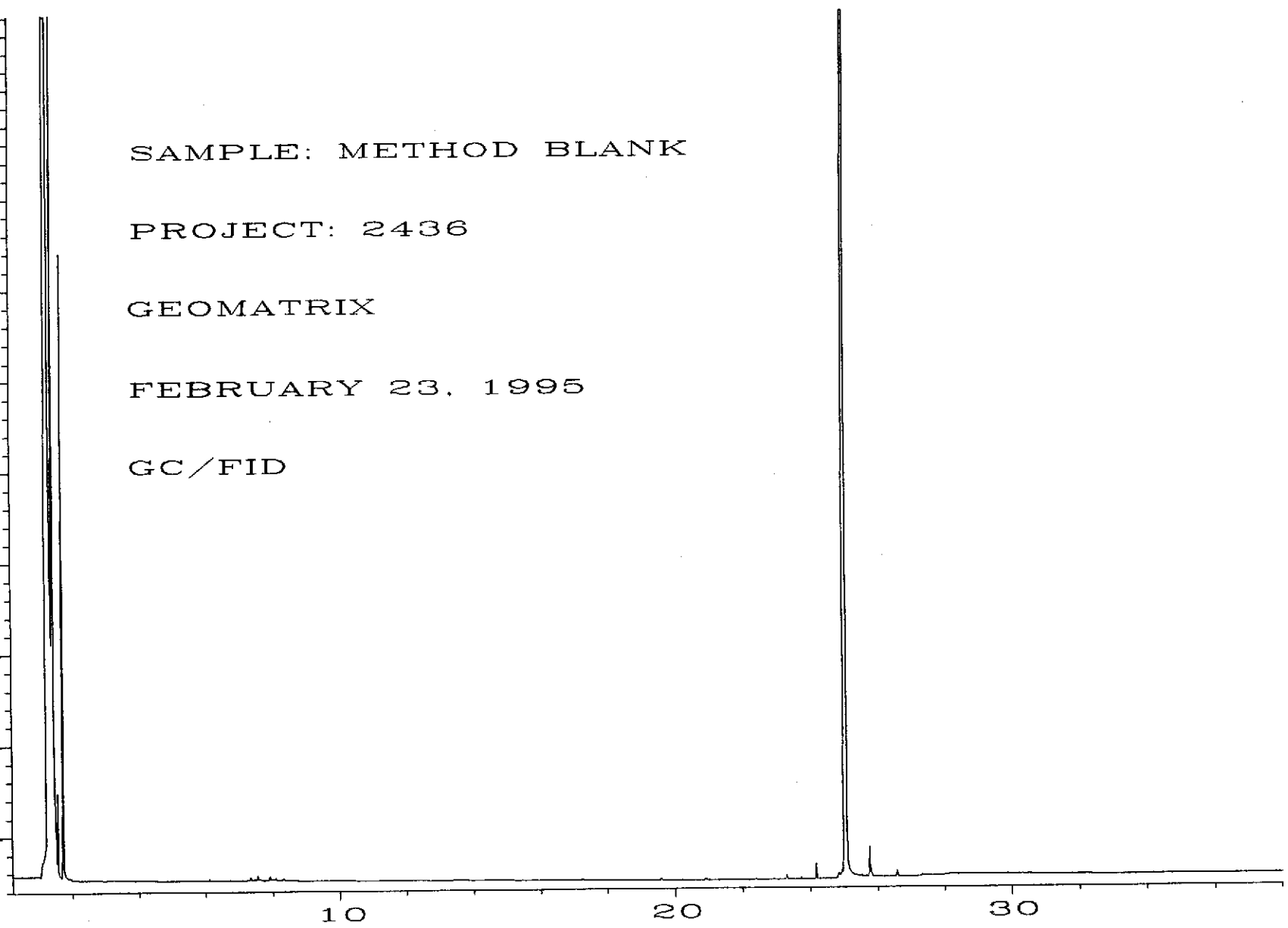
Turnaround time: *normal* Results to: *Geomatrix Stacy Arick* Total No. of containers: 12

Relinquished by		Date	Relinquished by		Date	Relinquished by		Date	Method of shipment	
Signature: <i>Timothy F Wood</i>		2/21/95	Signature			Signature			FSDEx	
Printed name: TIMOTHY F. WOOD			Printed name			Printed name			Laboratory comments and Log No	
Company: <i>GEOMETRIX</i>			Company			Company				
Received by		Time	Received by		Time	Received by		Time		
Signature: <i>Cathy Riggs</i>		1:22 2-22-95 11:49 AM	Signature			Signature				
Printed name: CATHY RIGGS			Printed name			Printed name				
Company: <i>GEOMETRIX</i>			Company			Company				

Geomatrix Consultants
100 Pine St. 10th Floor
San Francisco, CA 94111
(415) 434 9400

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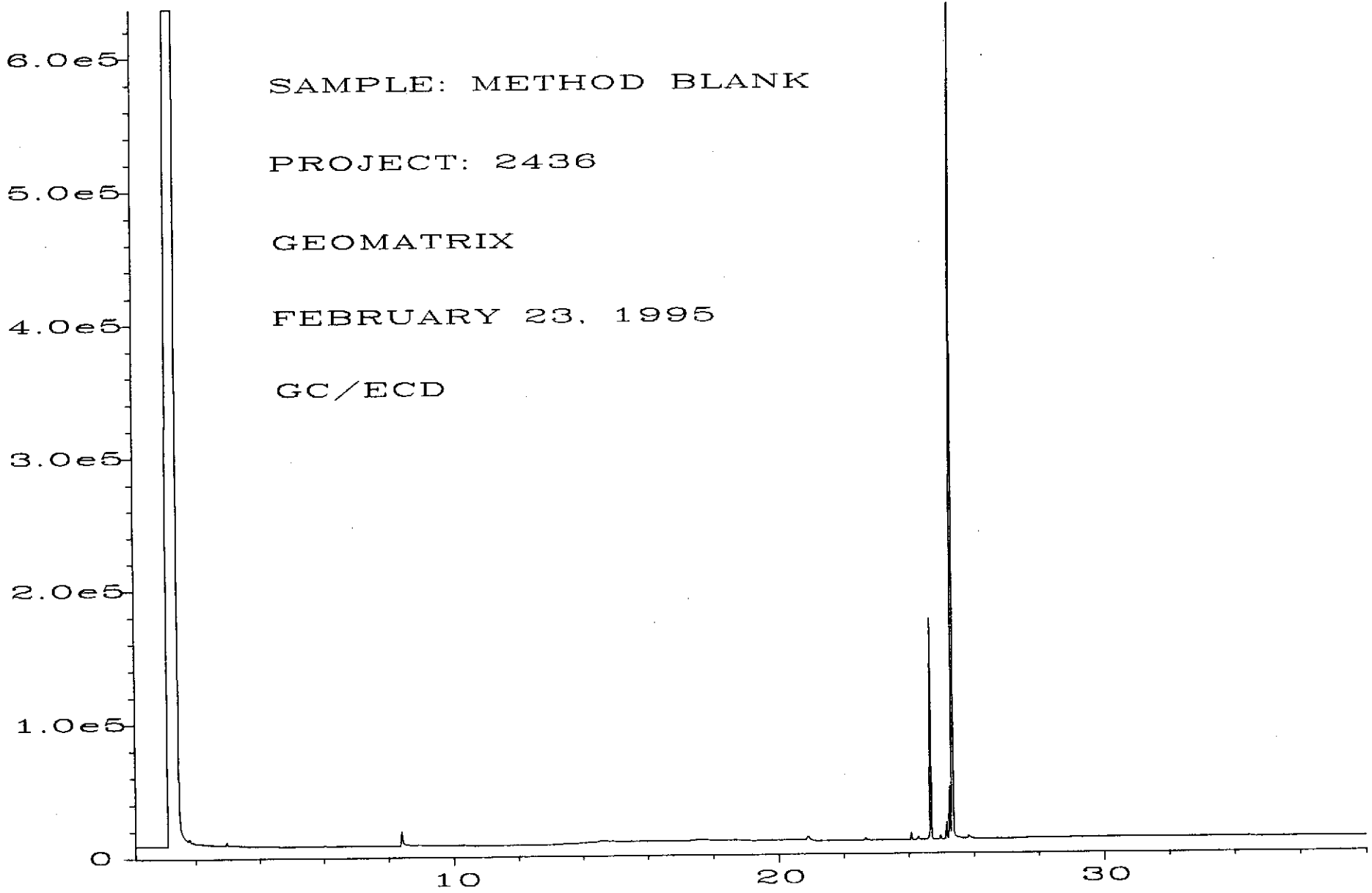
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PROJECT: 2436
GEOMATRIX
FEBRUARY 23, 1995
GC/FID

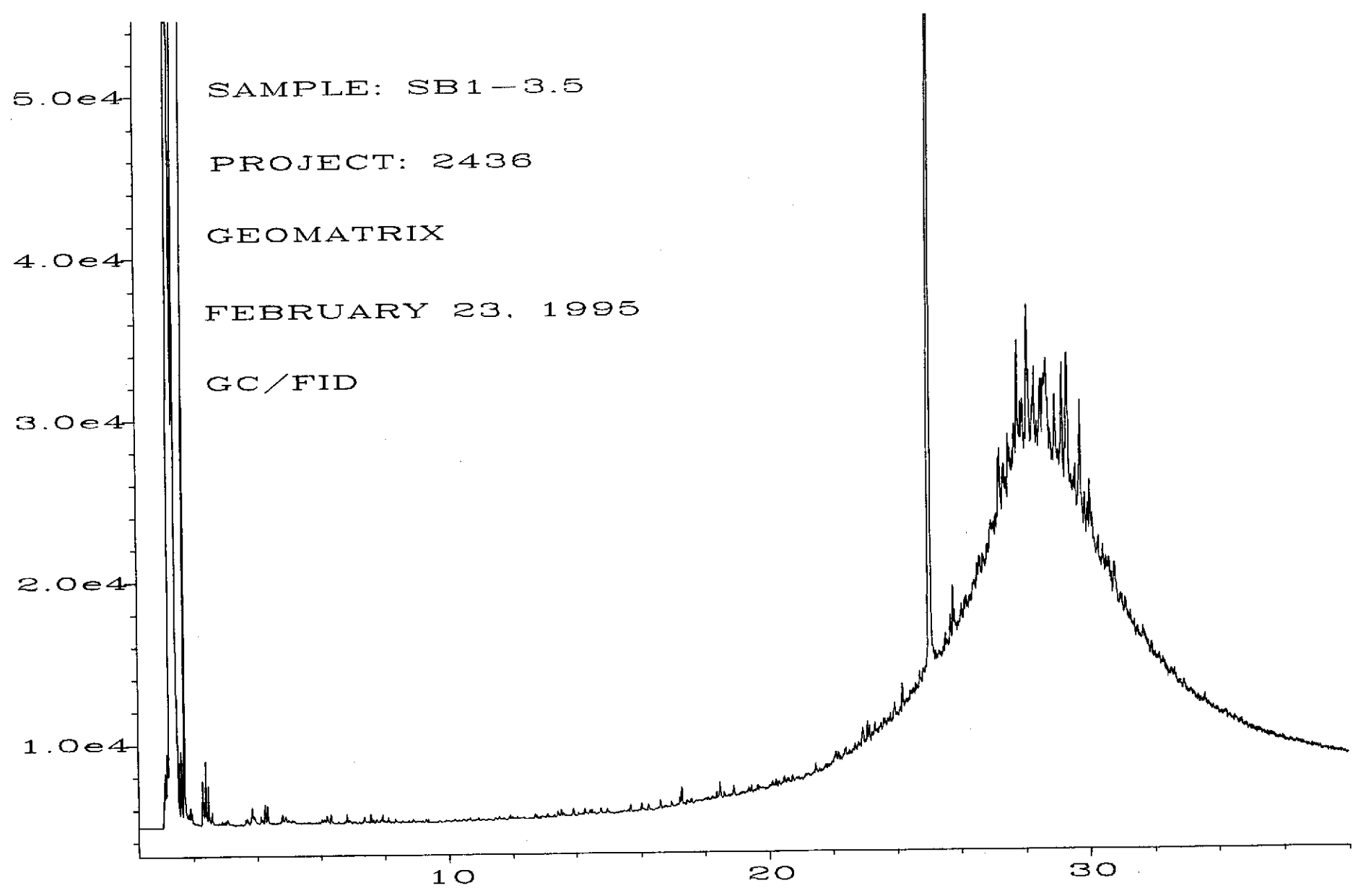


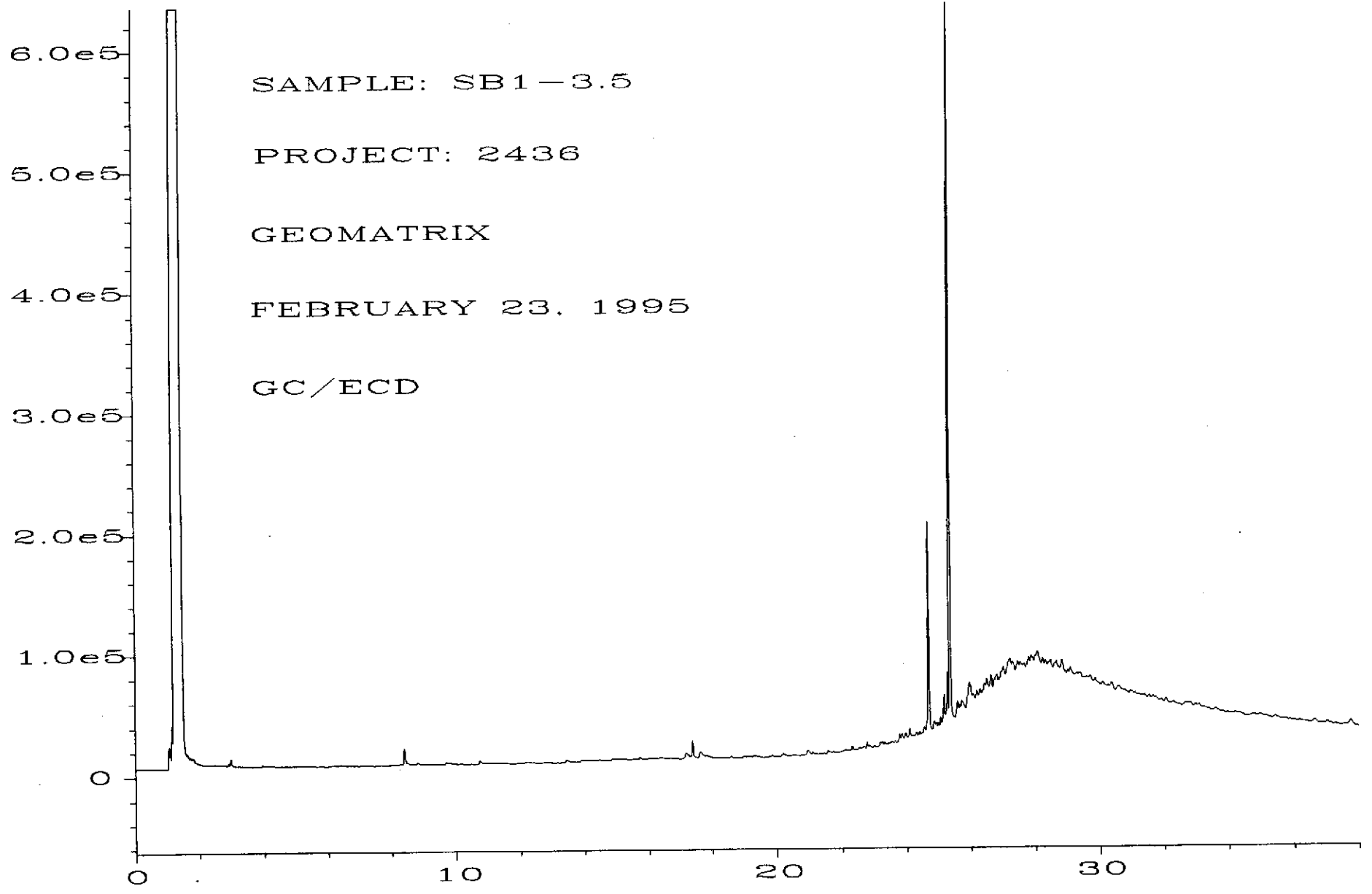
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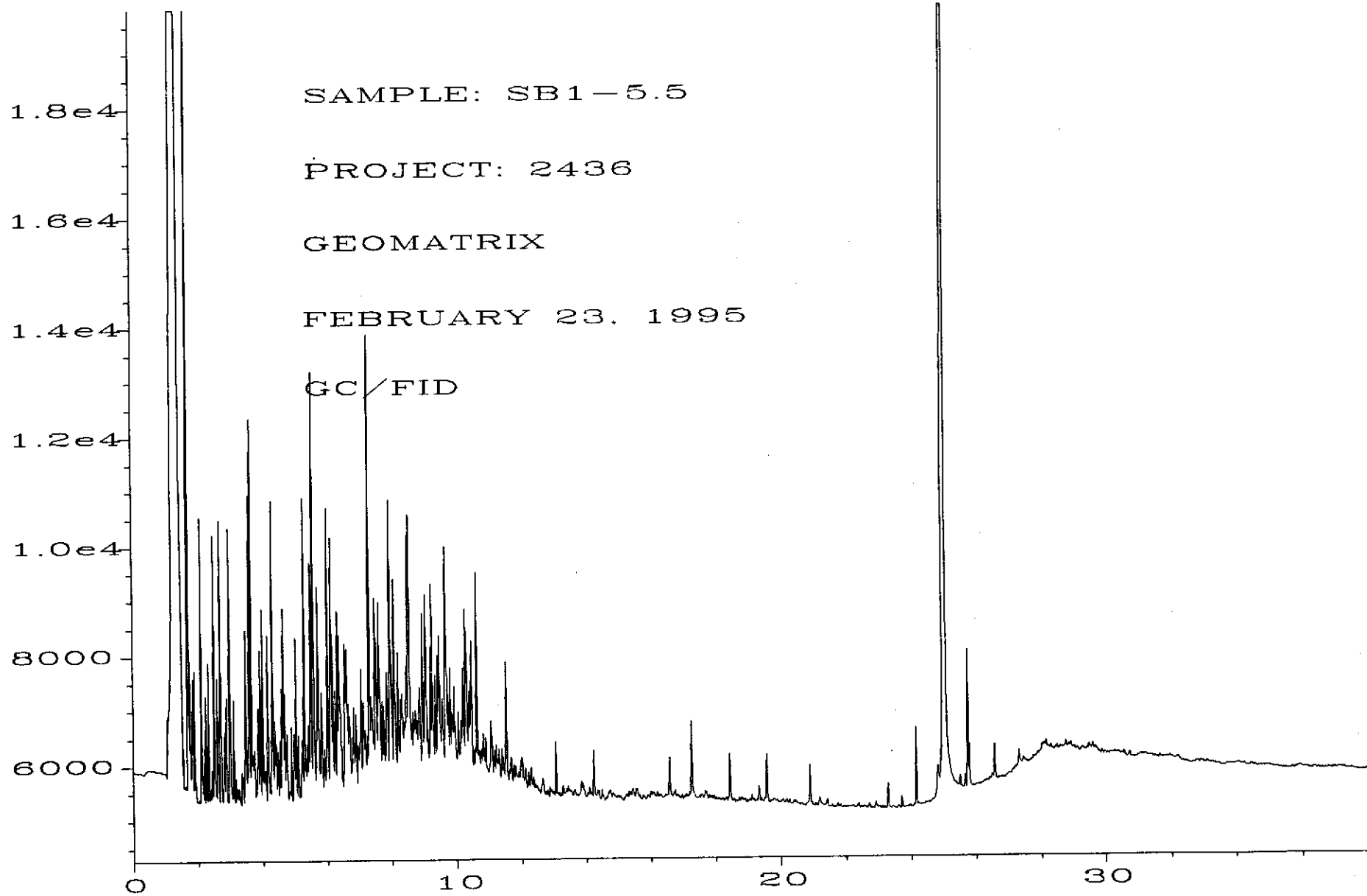
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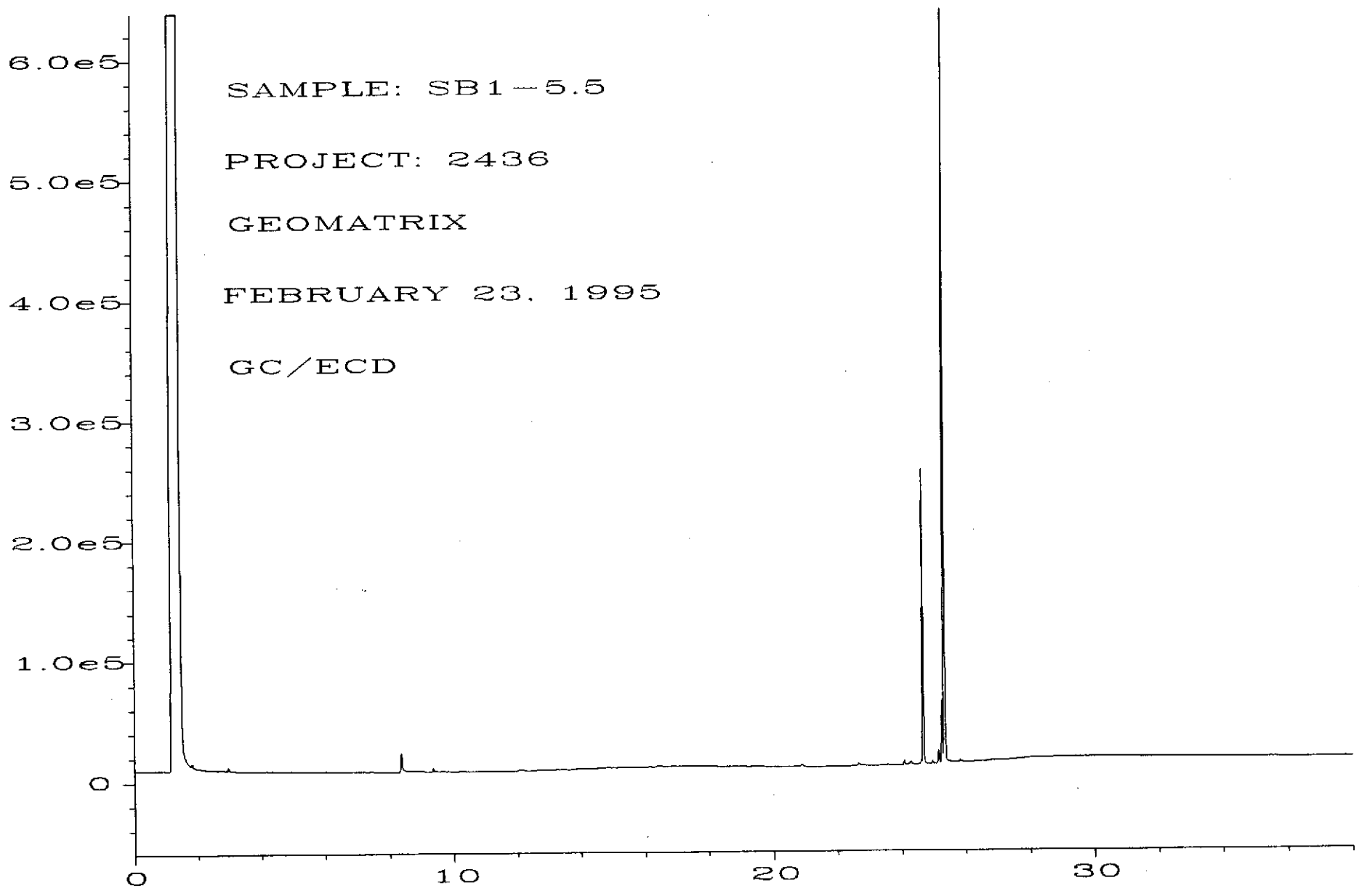


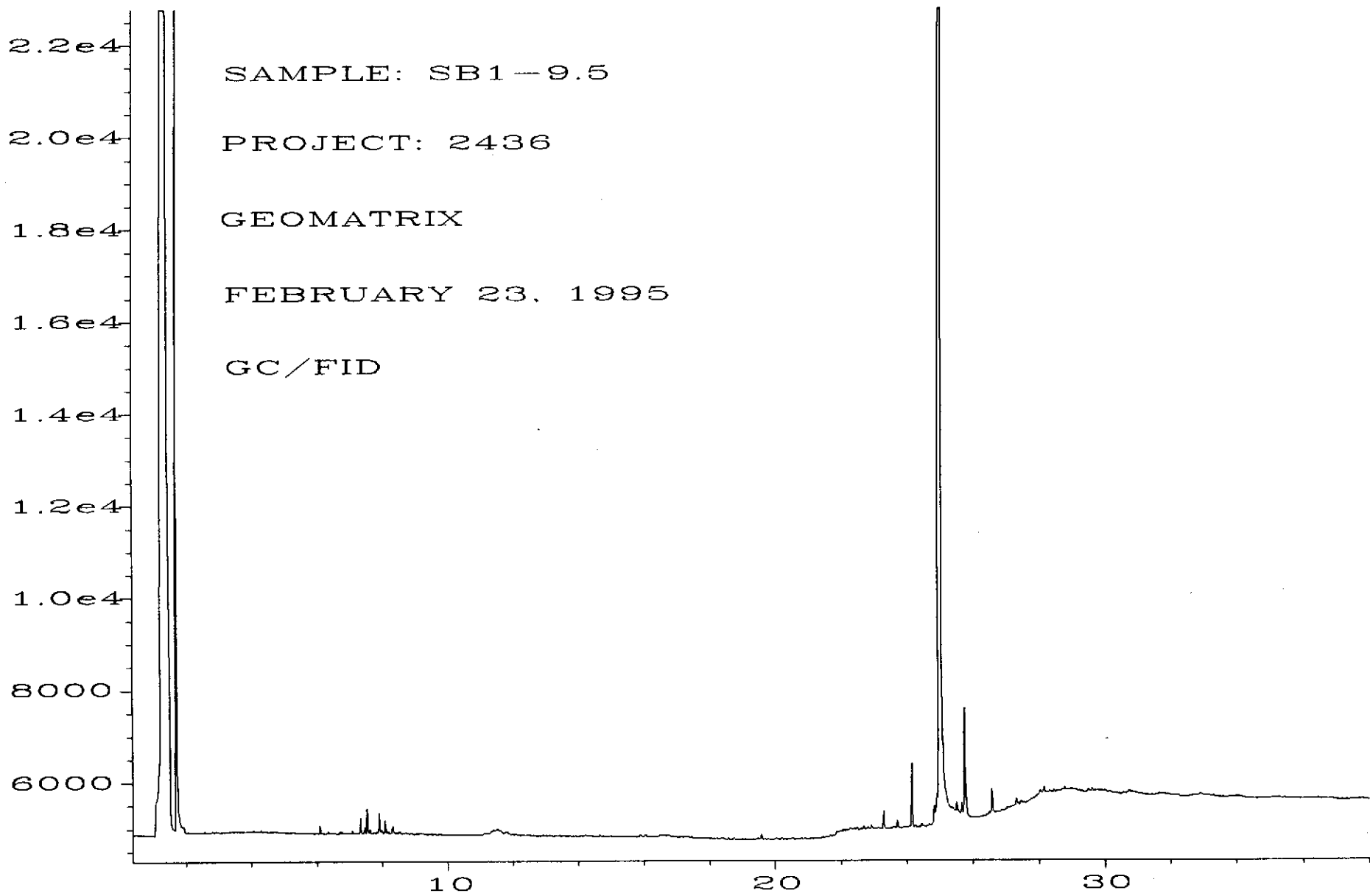


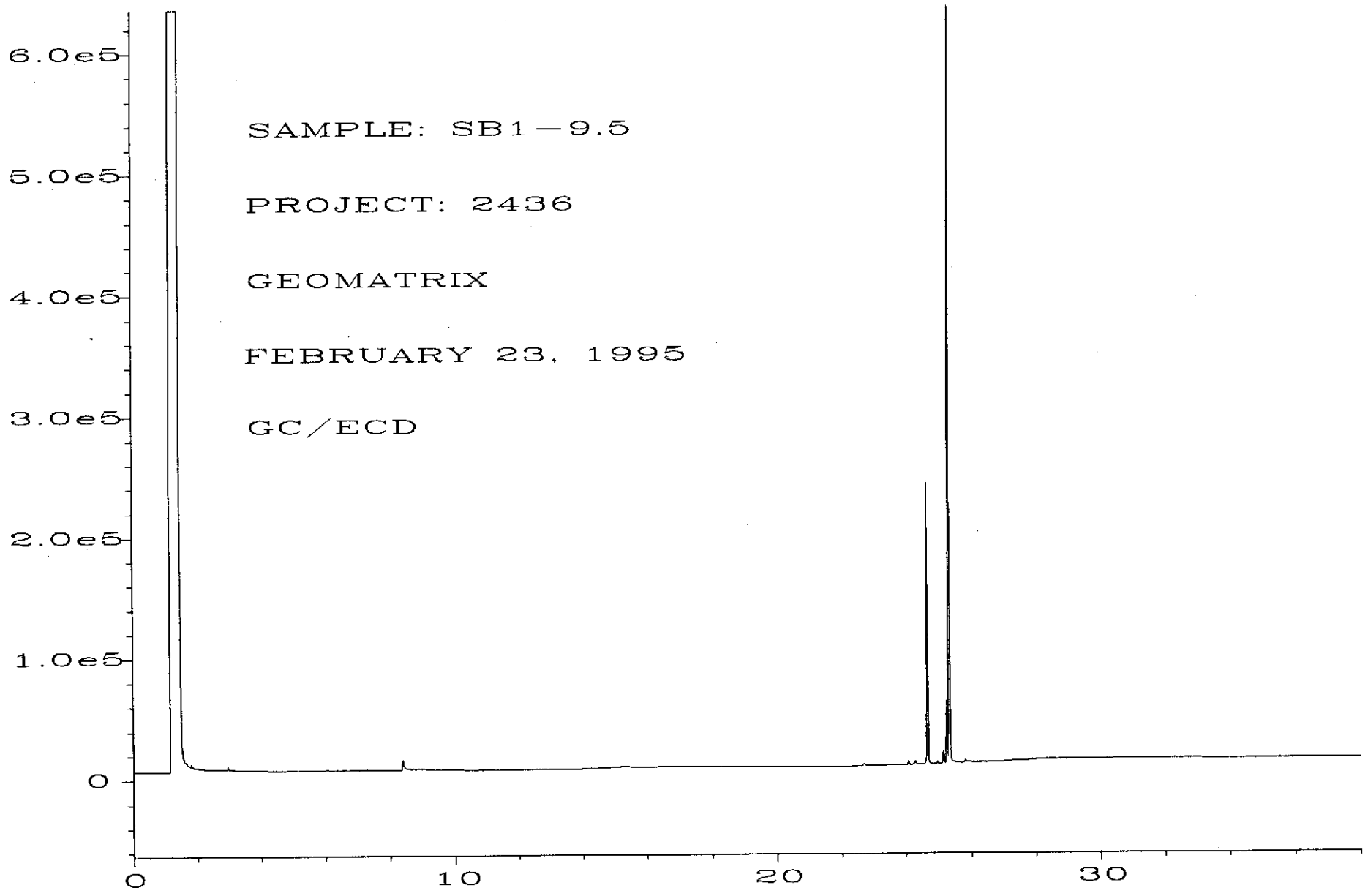


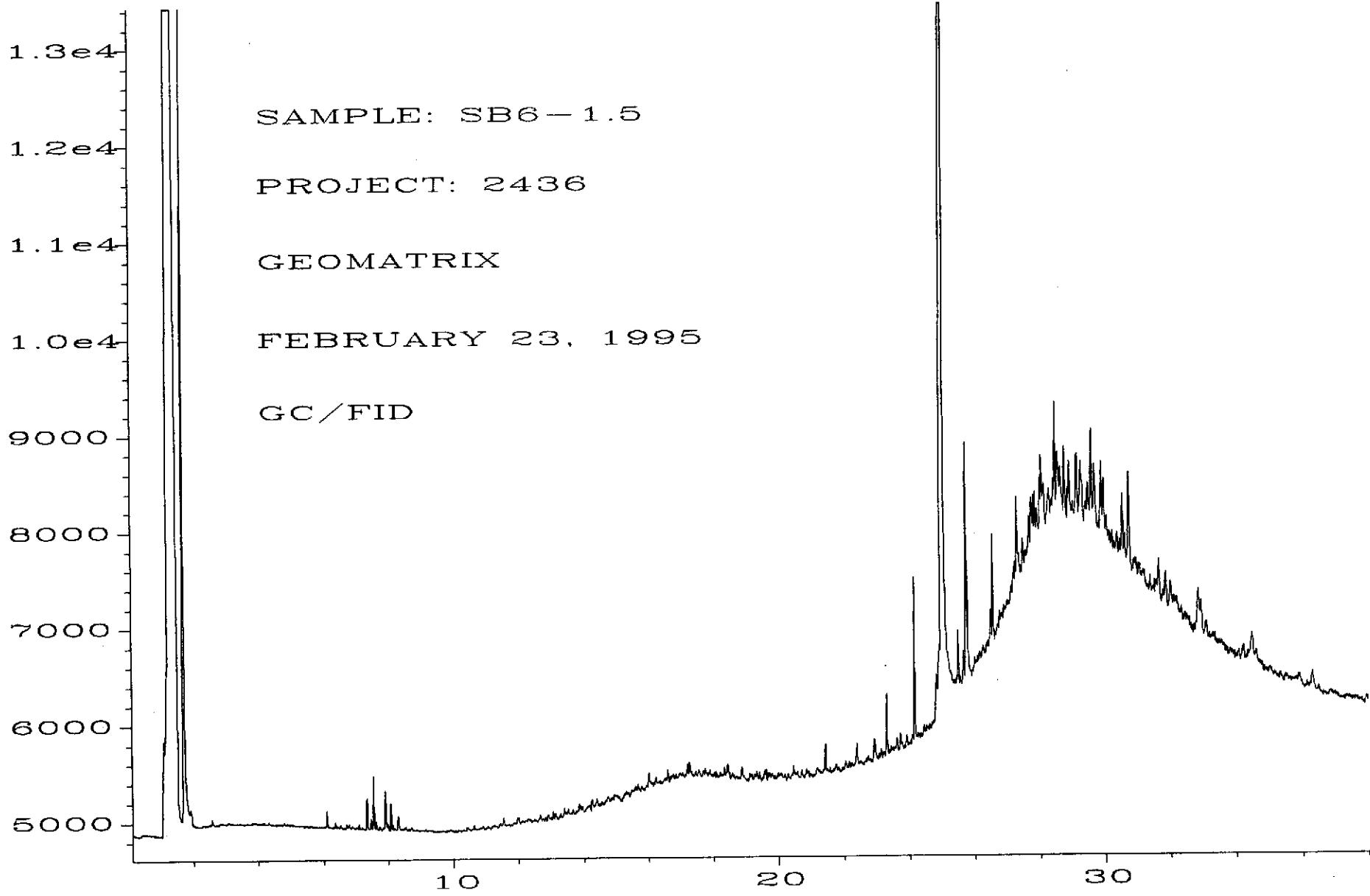


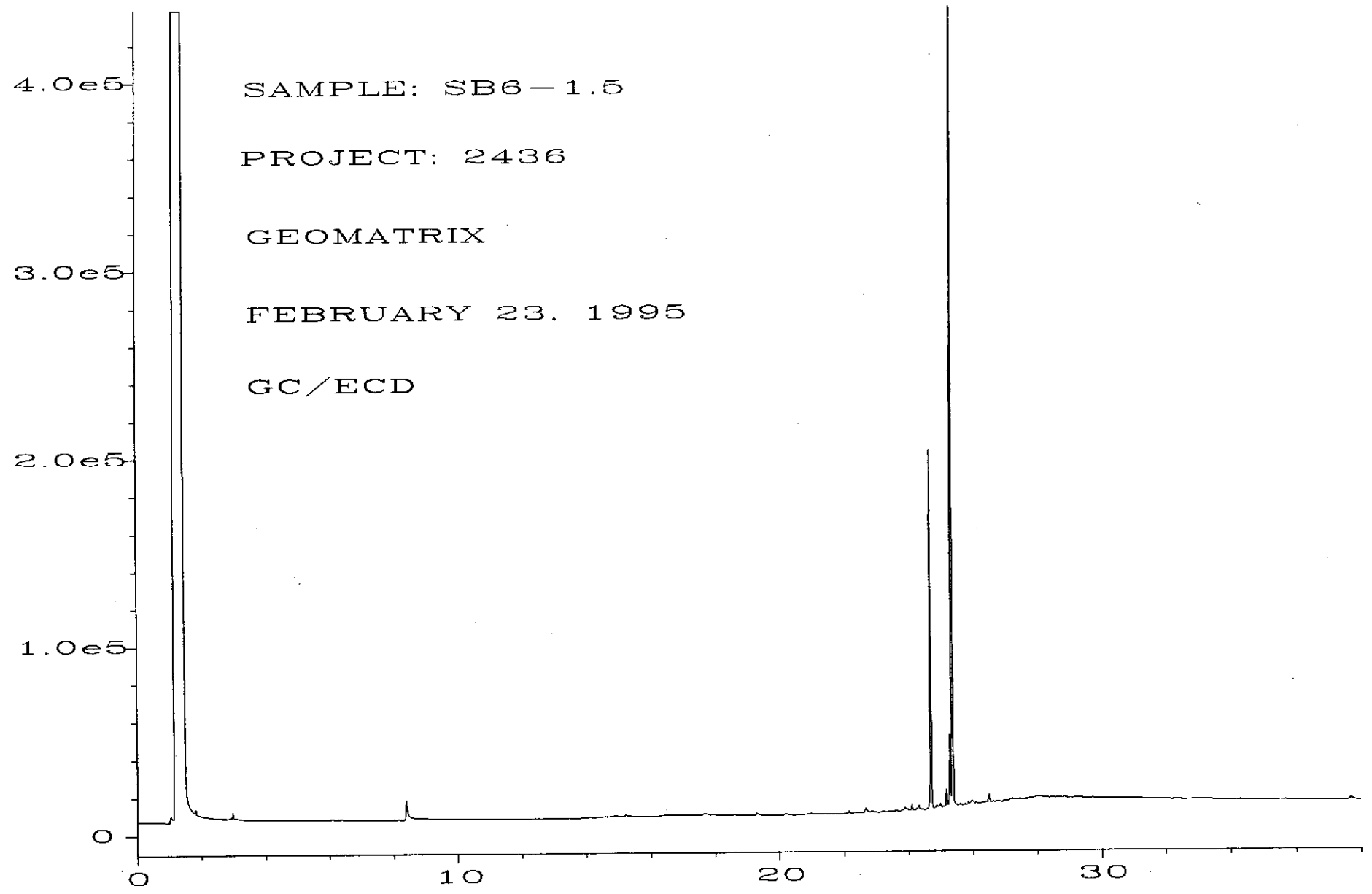
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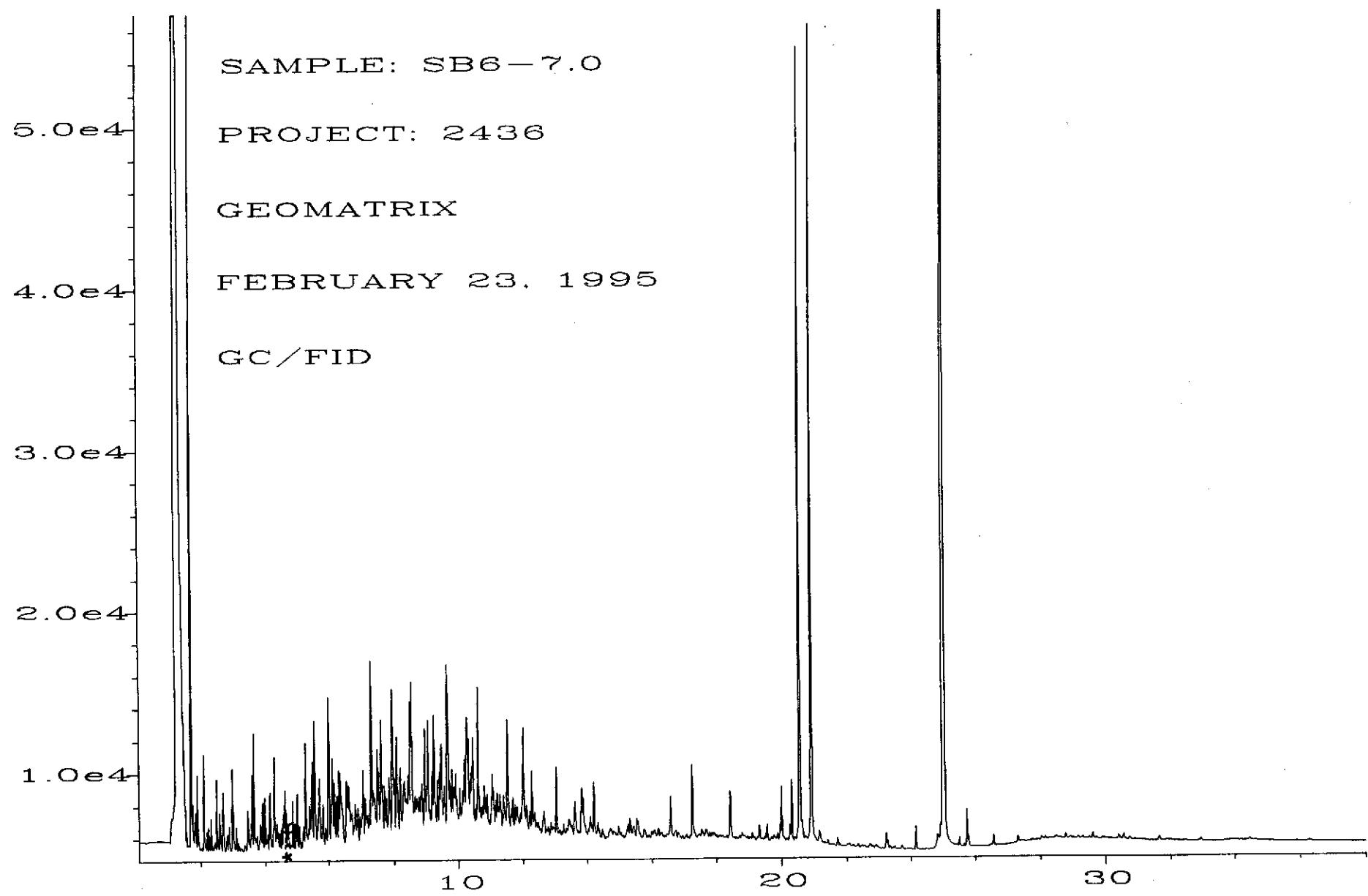


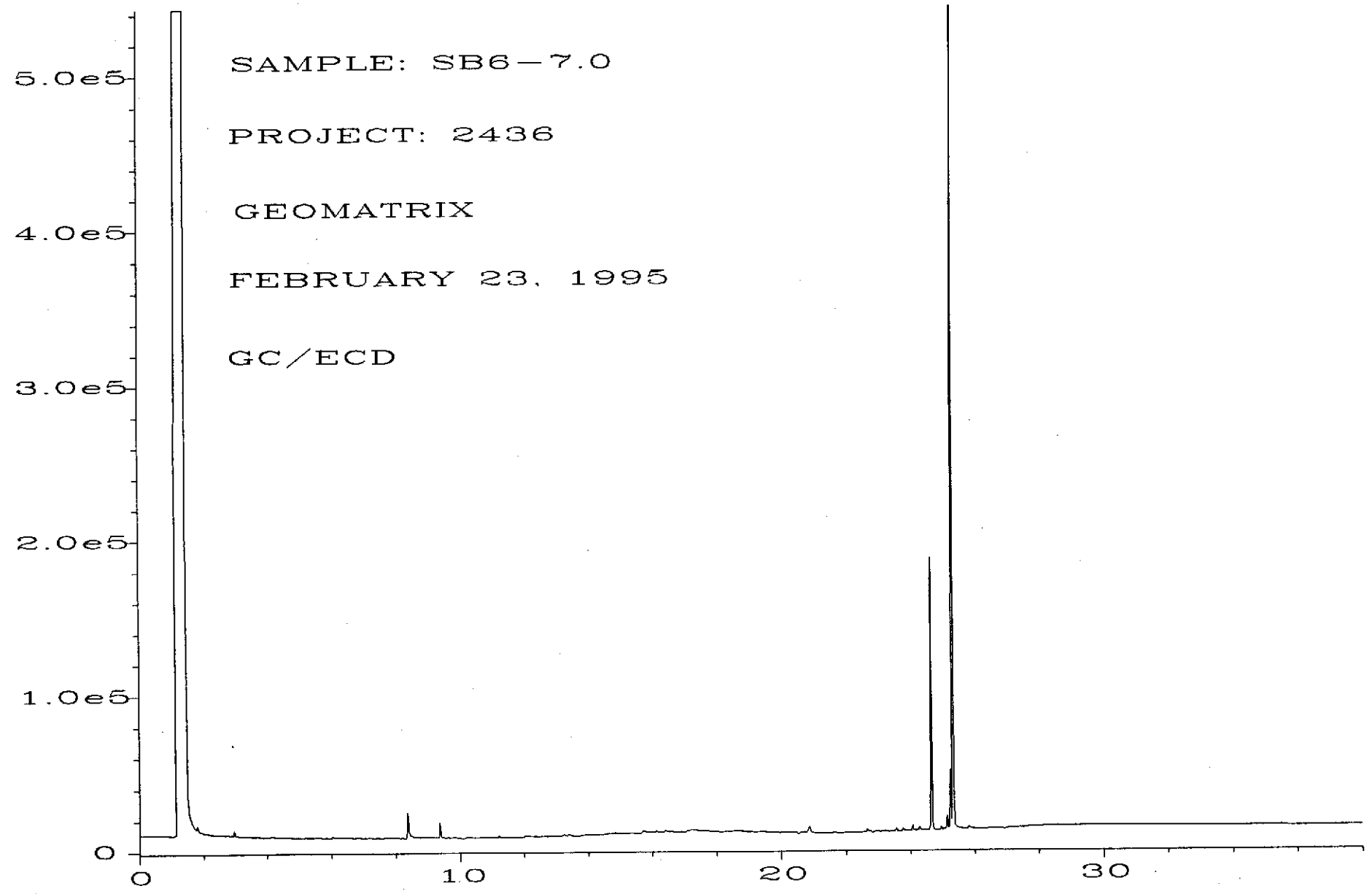












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SAMPLE: SB5-1.5

PROJECT: 2436

GEOMATRIX

FEBRUARY 23, 1995

GC/FID

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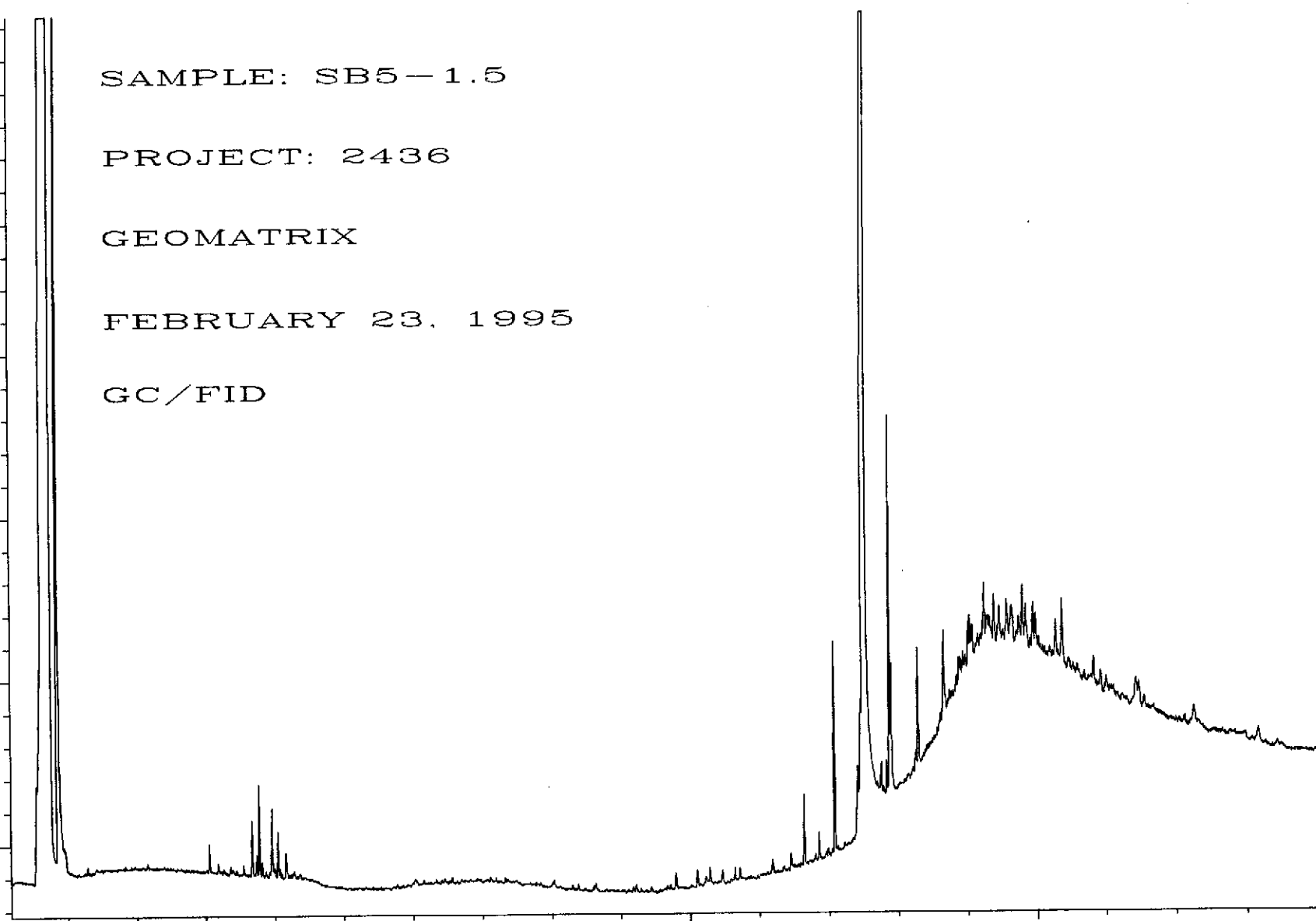
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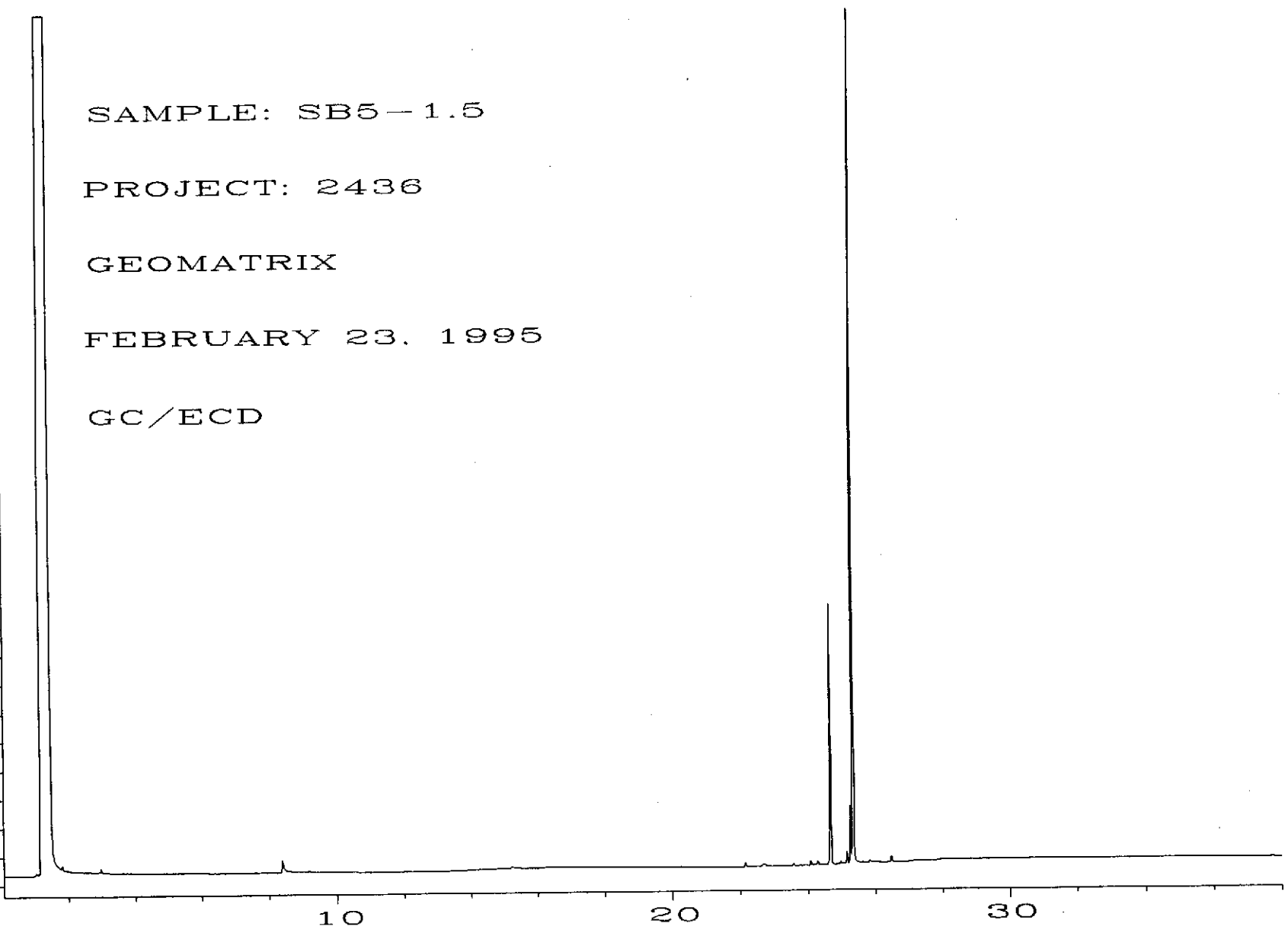
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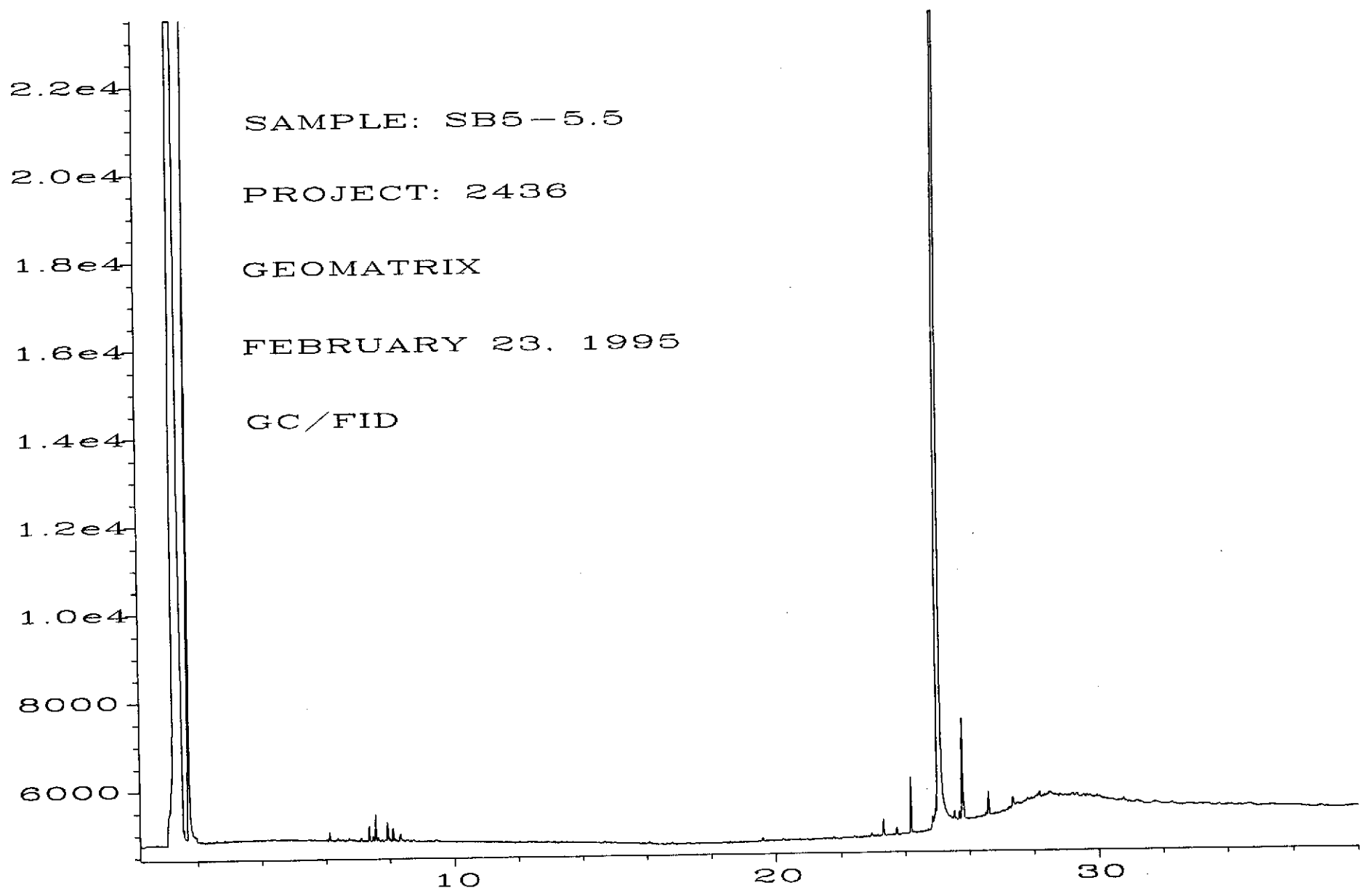


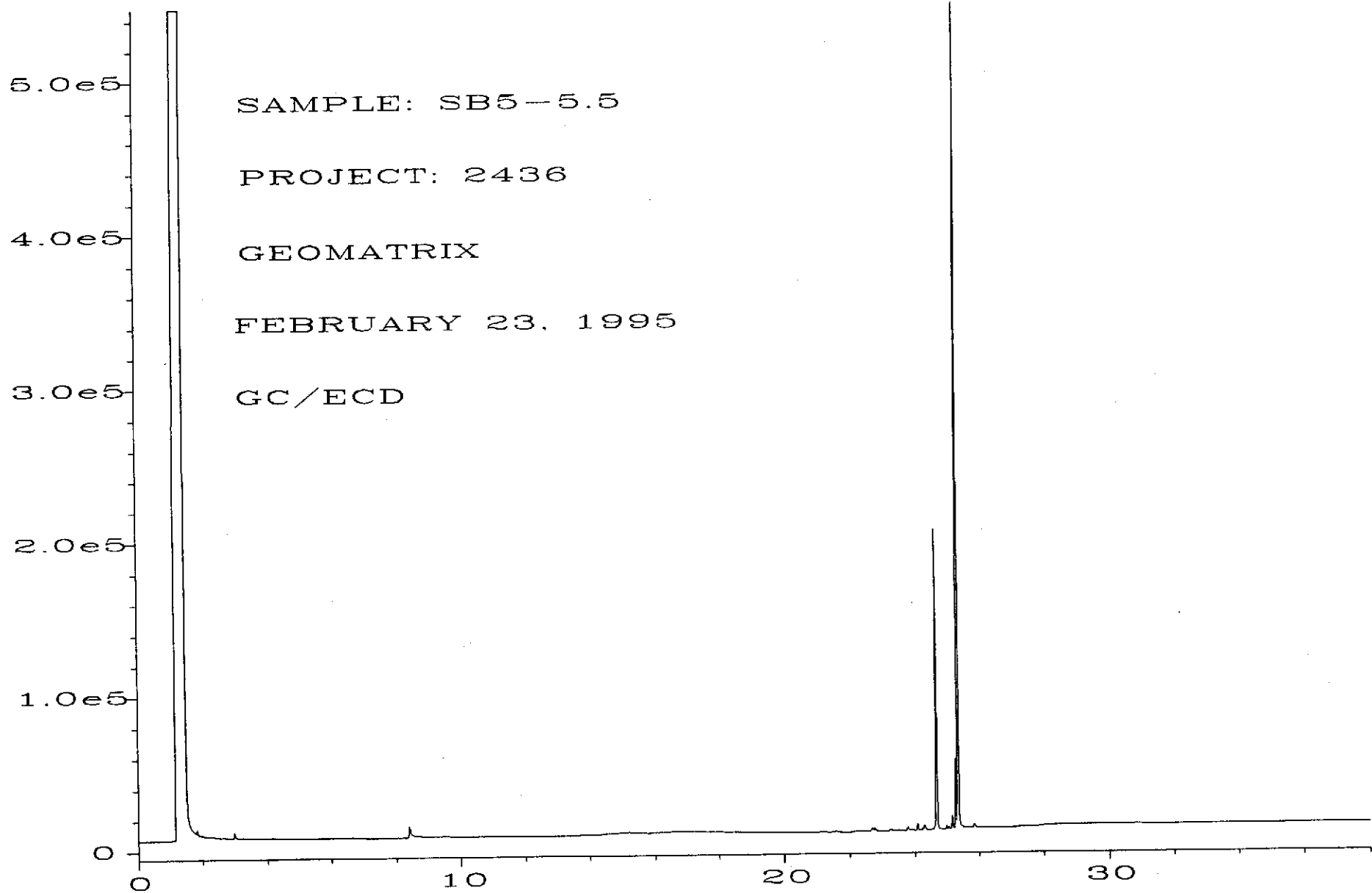
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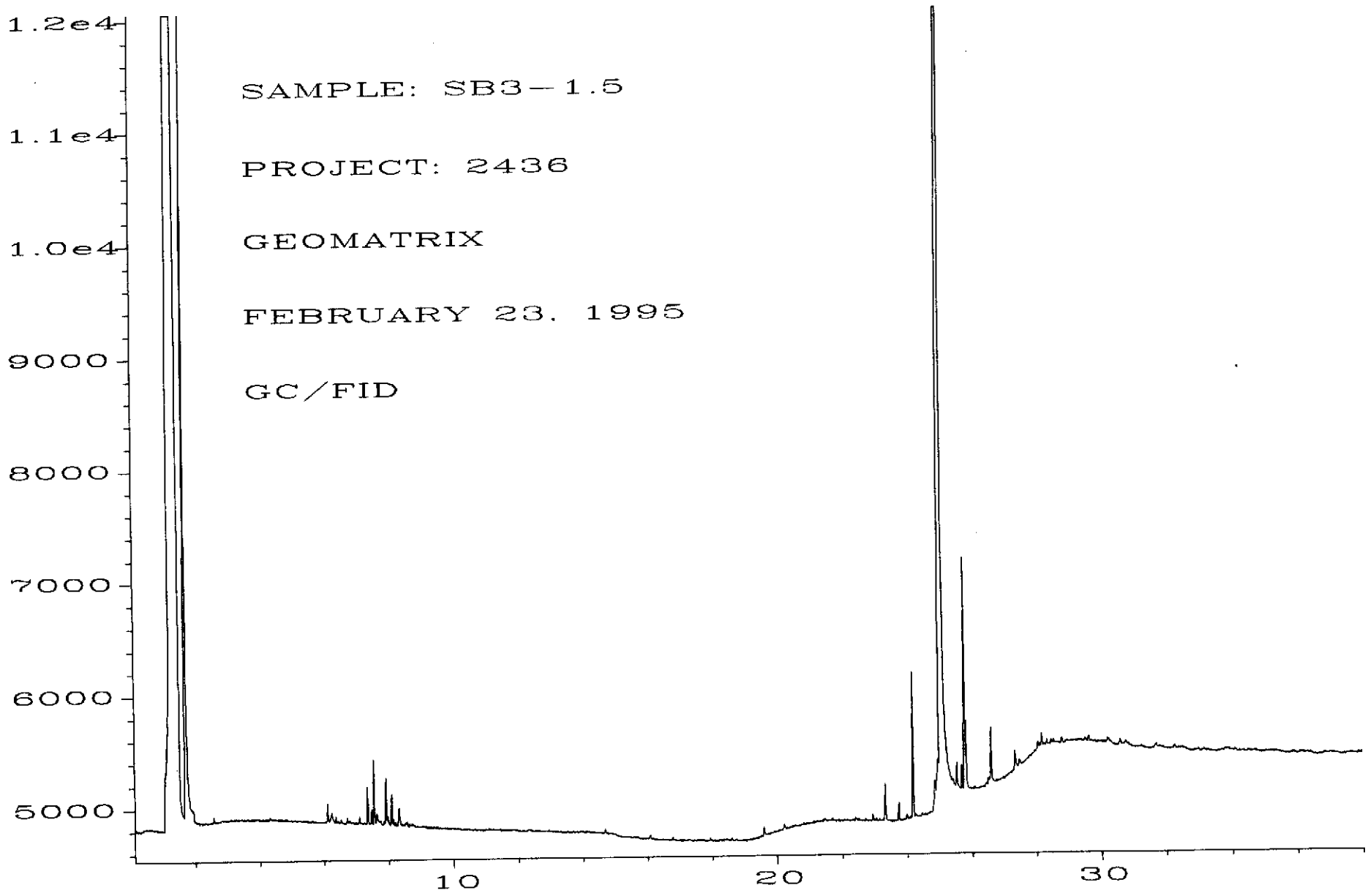
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PROJECT: 2436
GEOMATRIX
FEBRUARY 23, 1995
GC/ECD

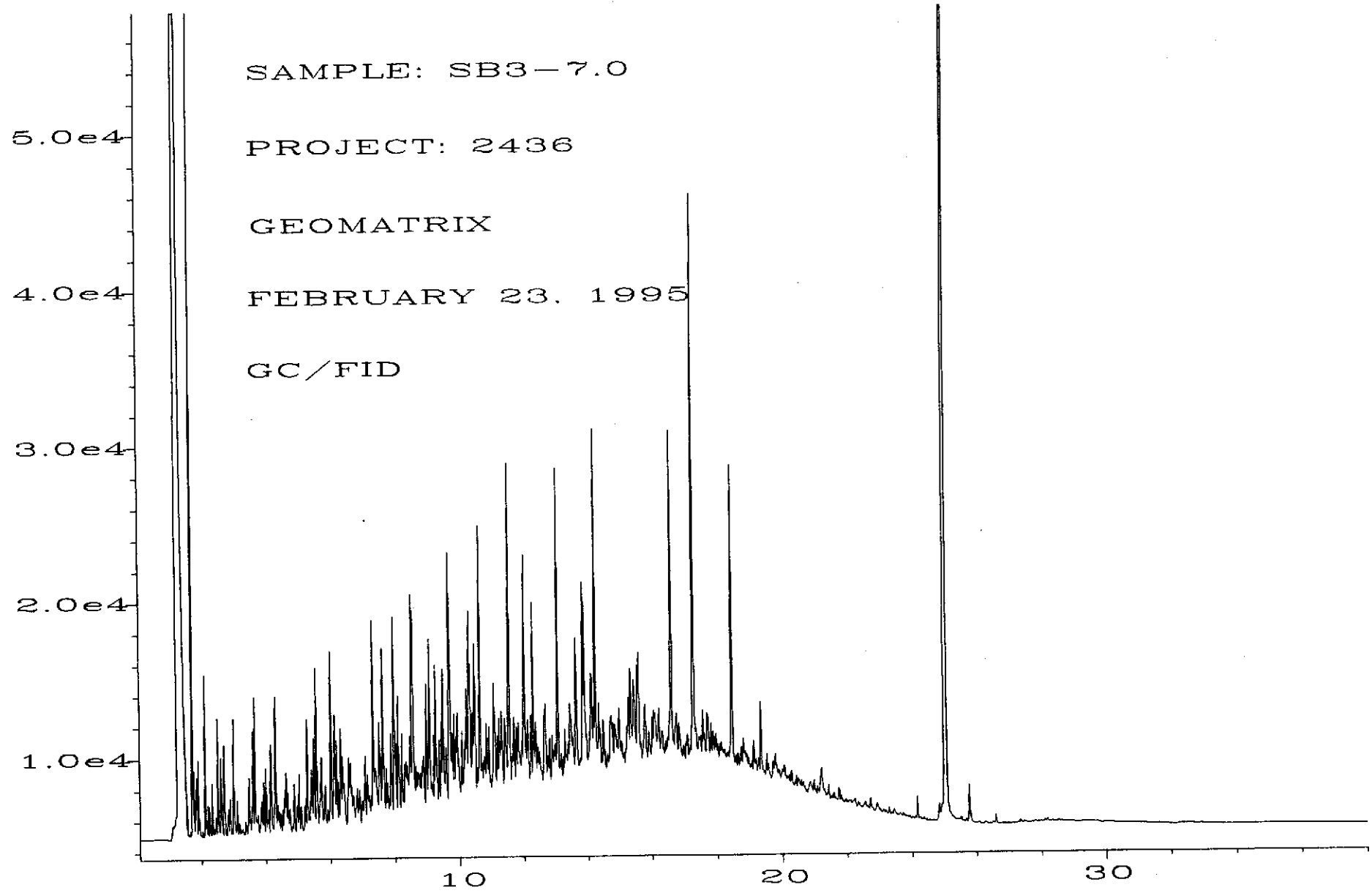


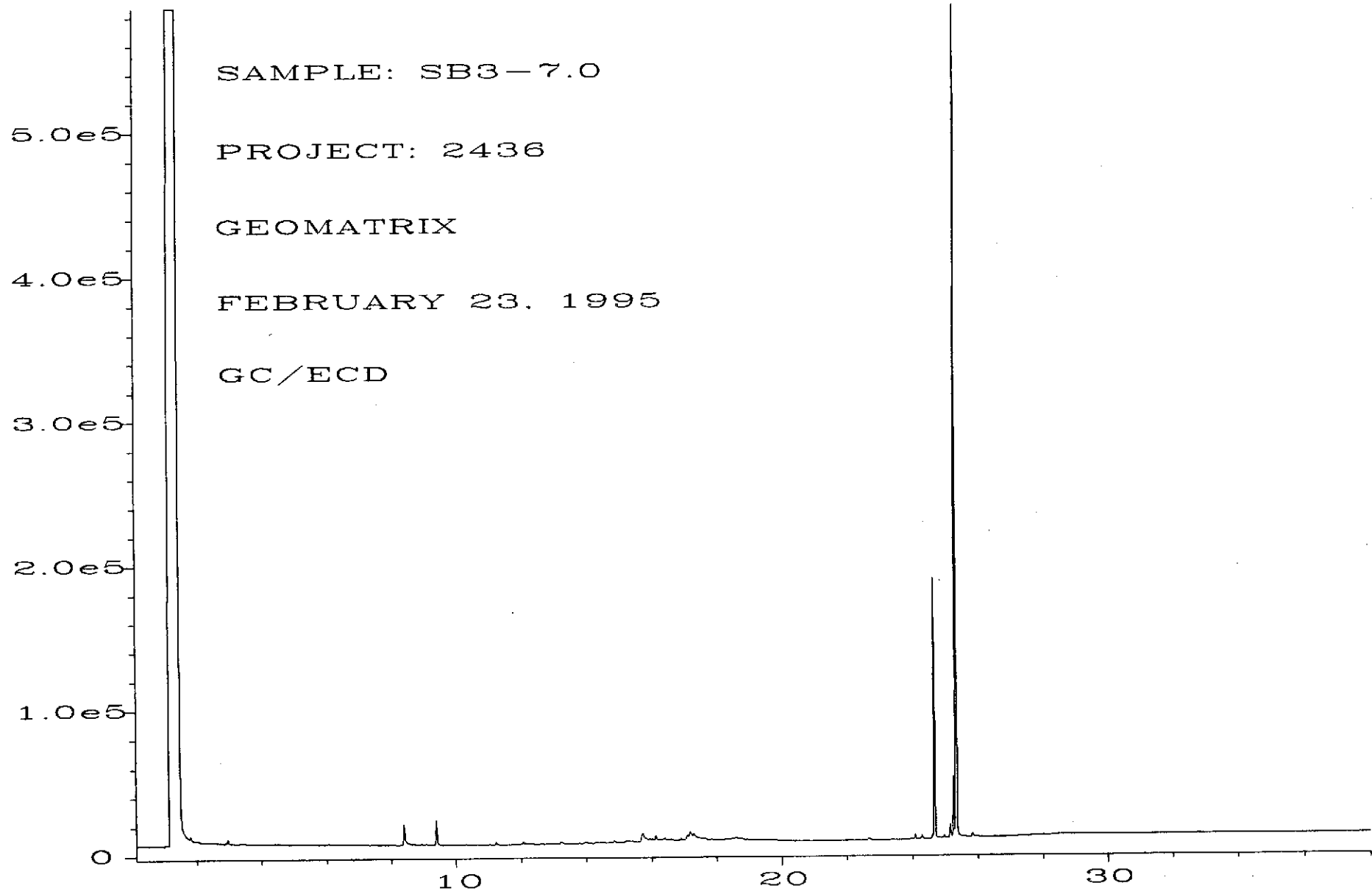
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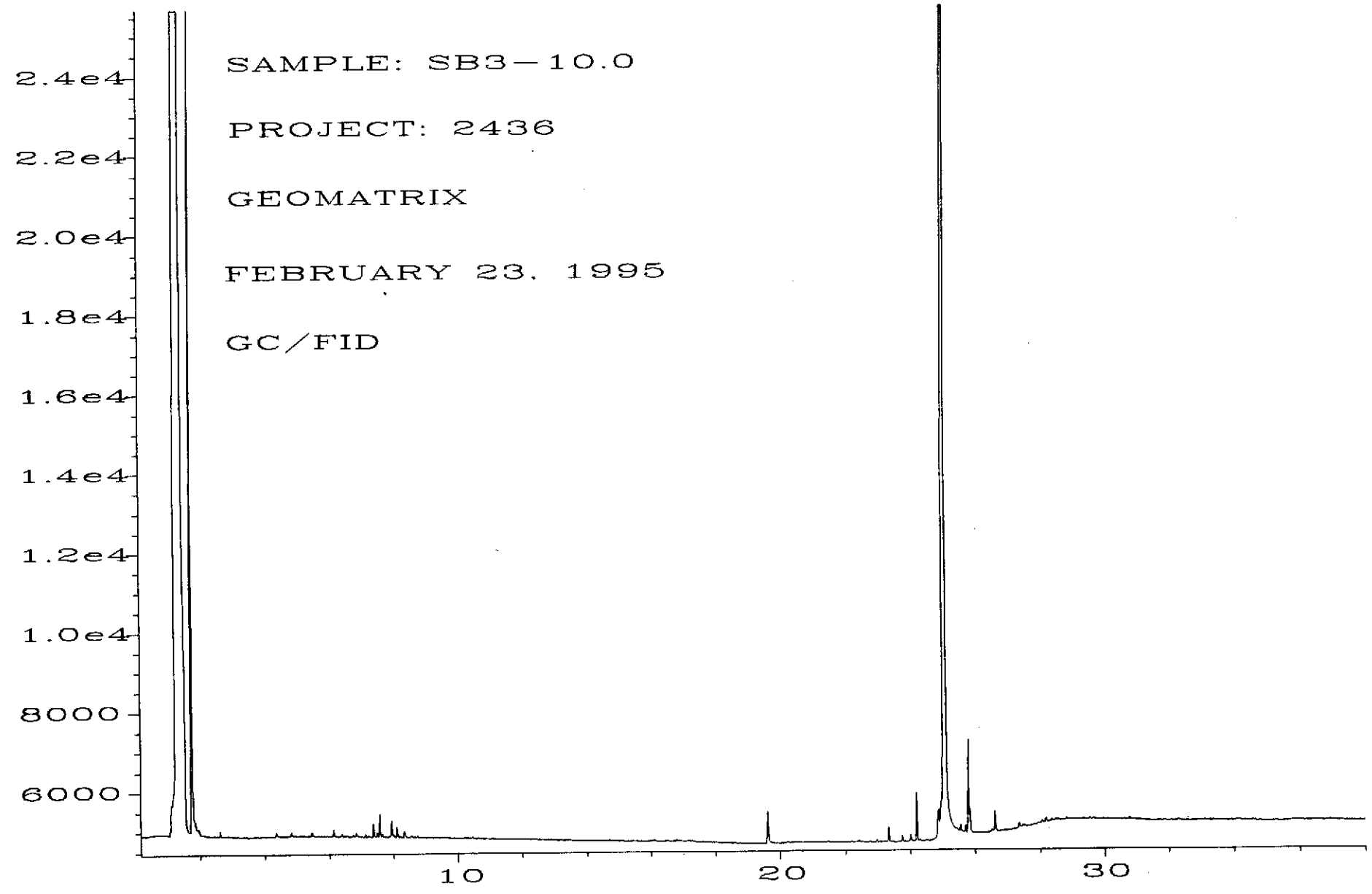


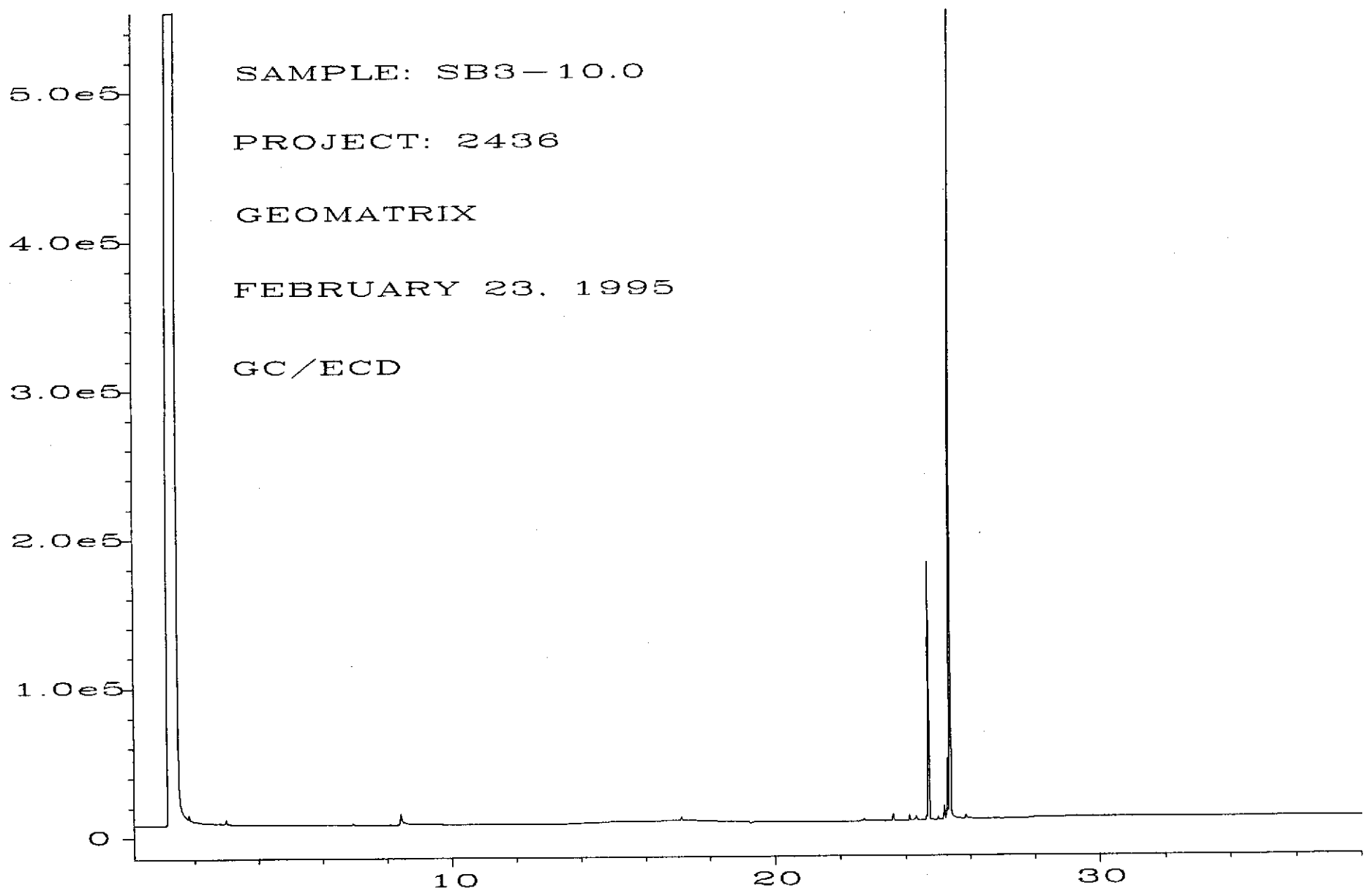


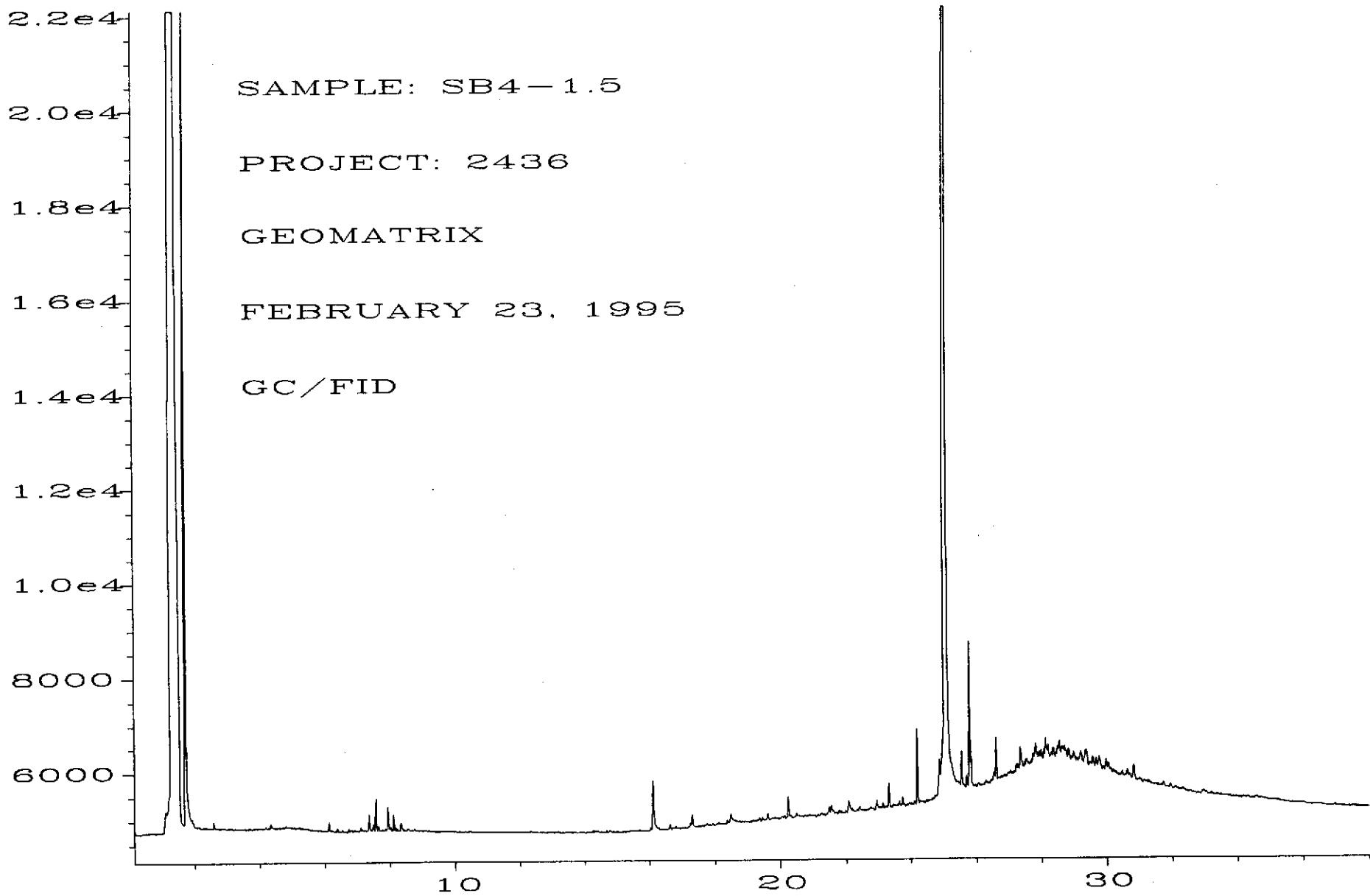




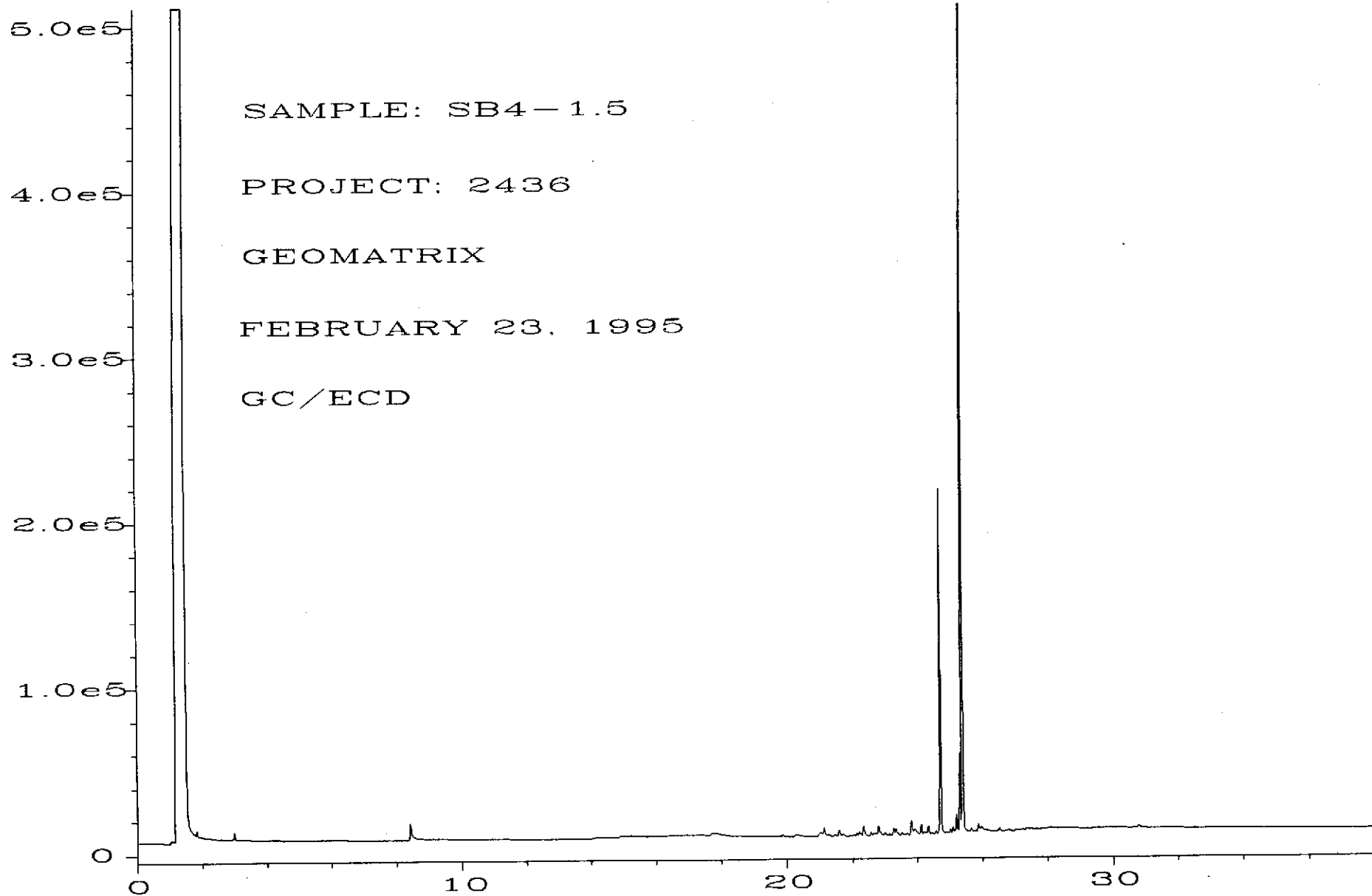


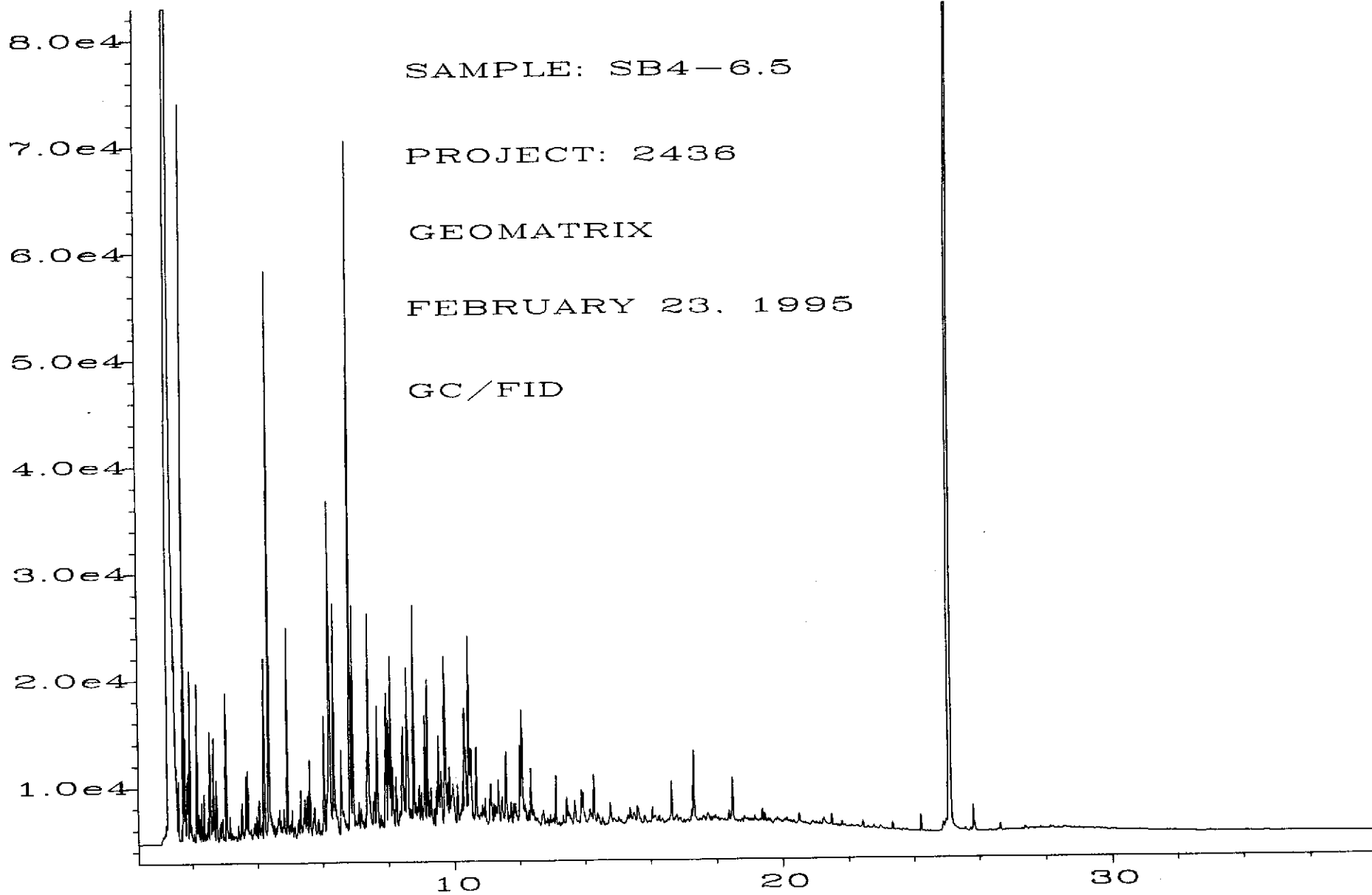




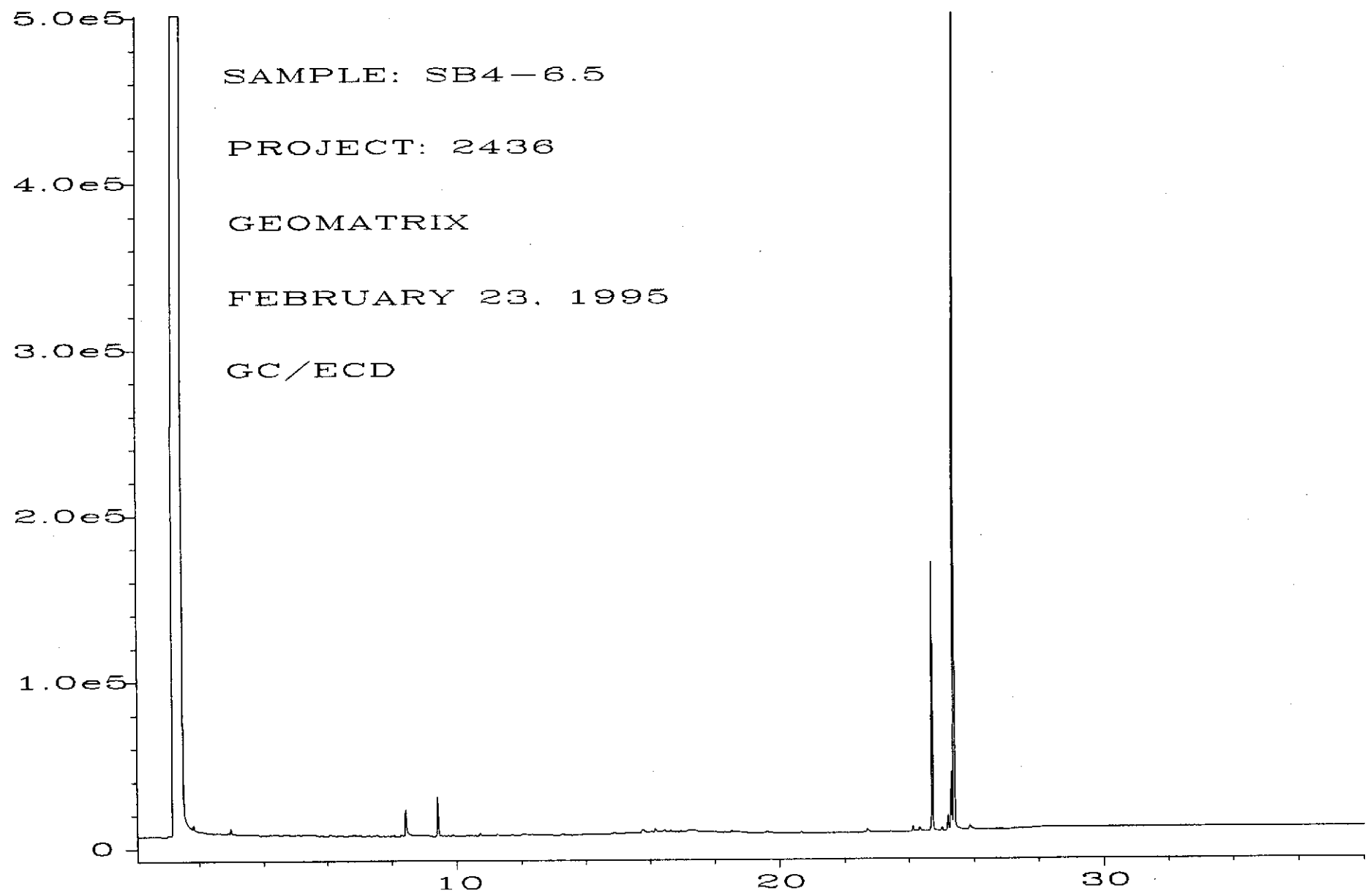


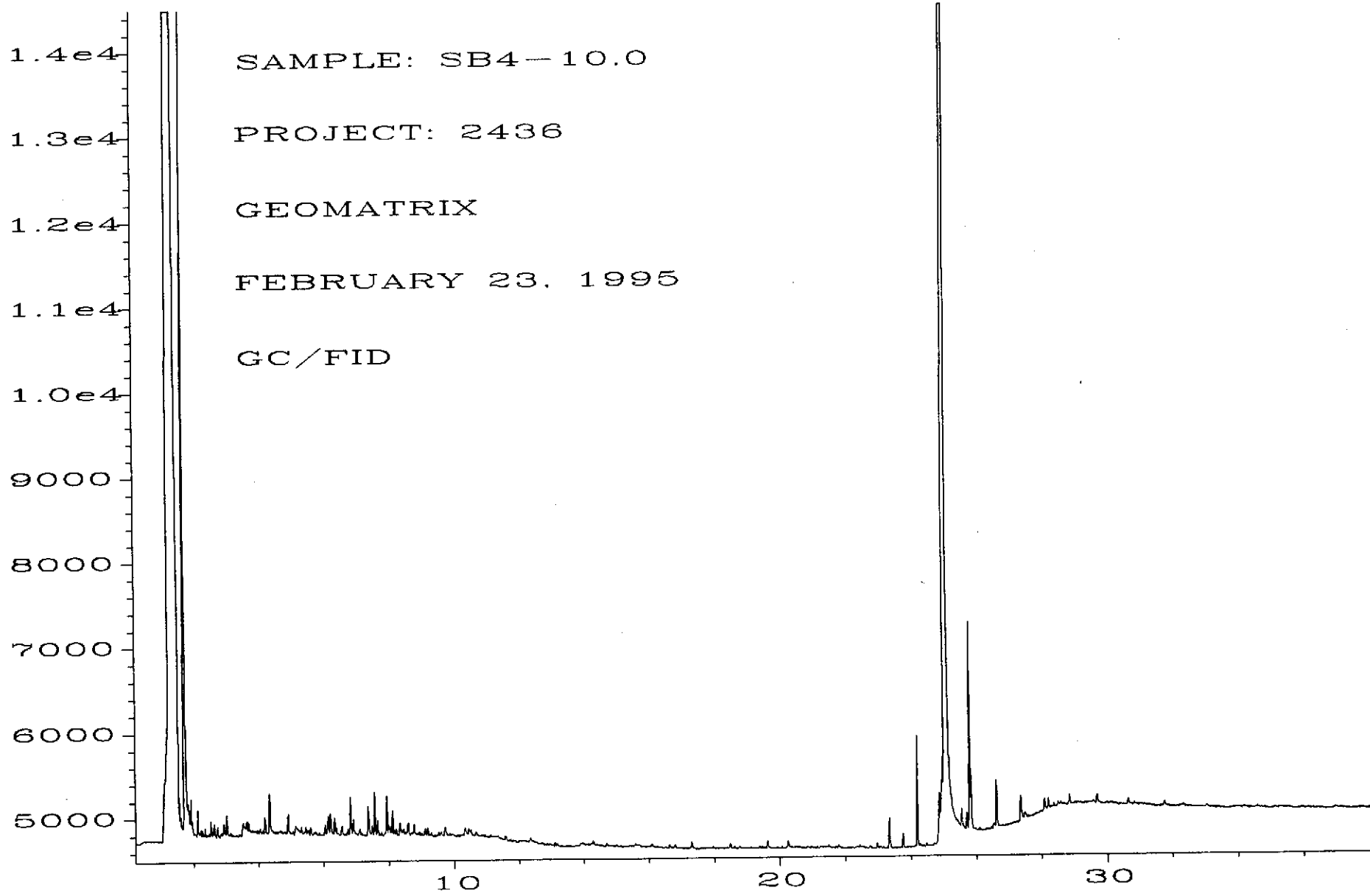
SAMPLE: SB4-1.5
PROJECT: 2436
GEOMATRIX
FEBRUARY 23, 1995
GC/FID

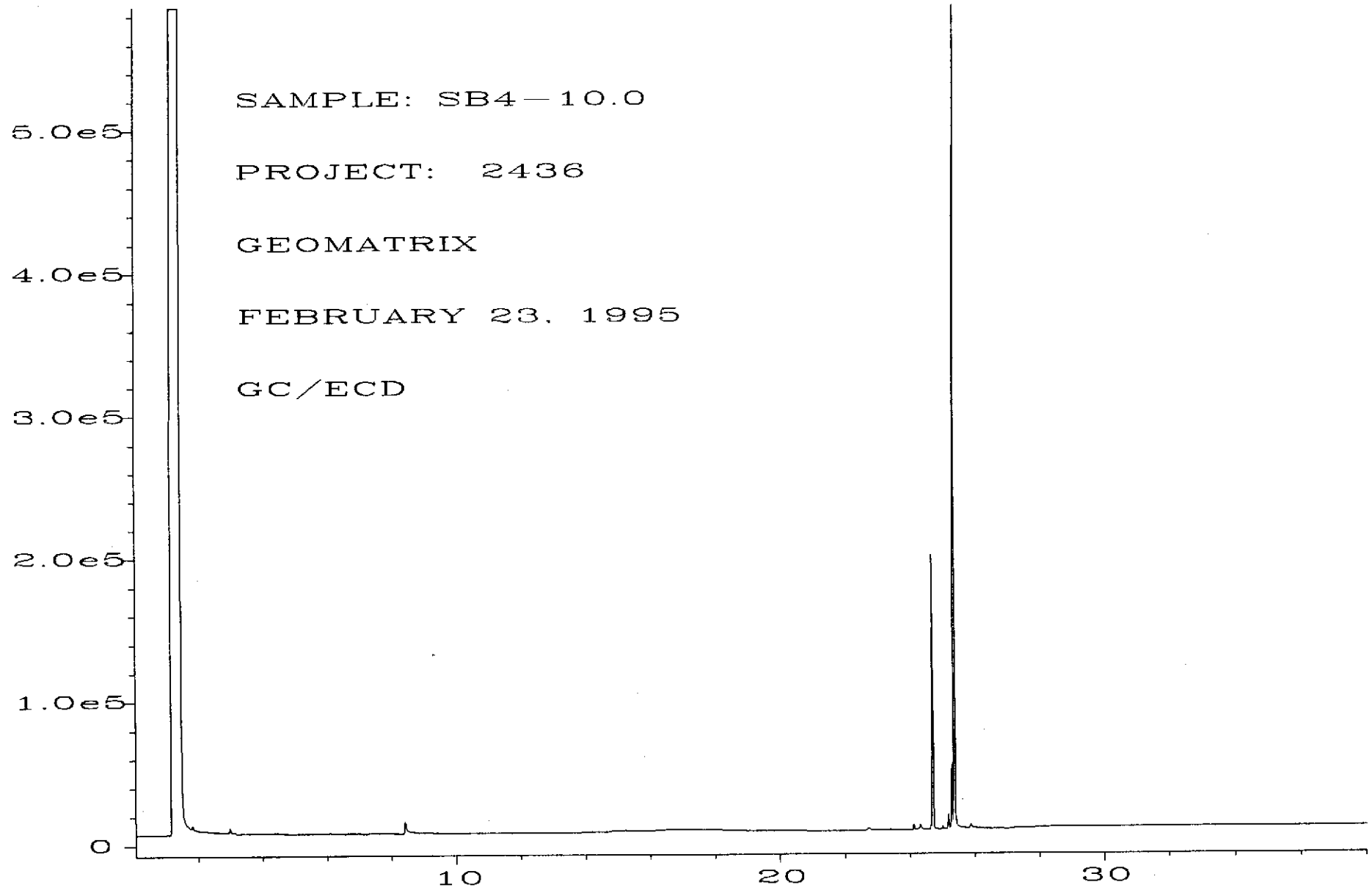


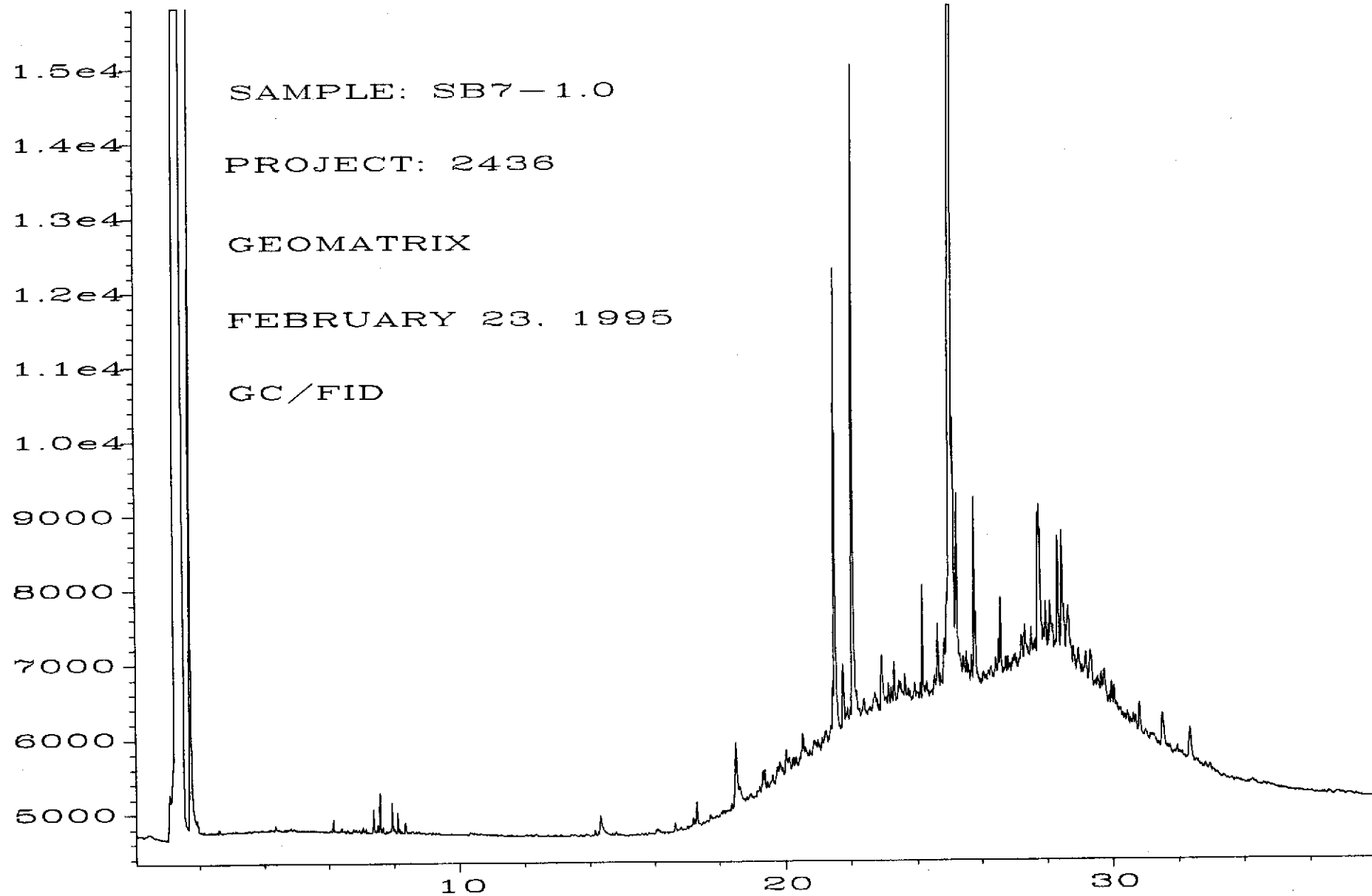


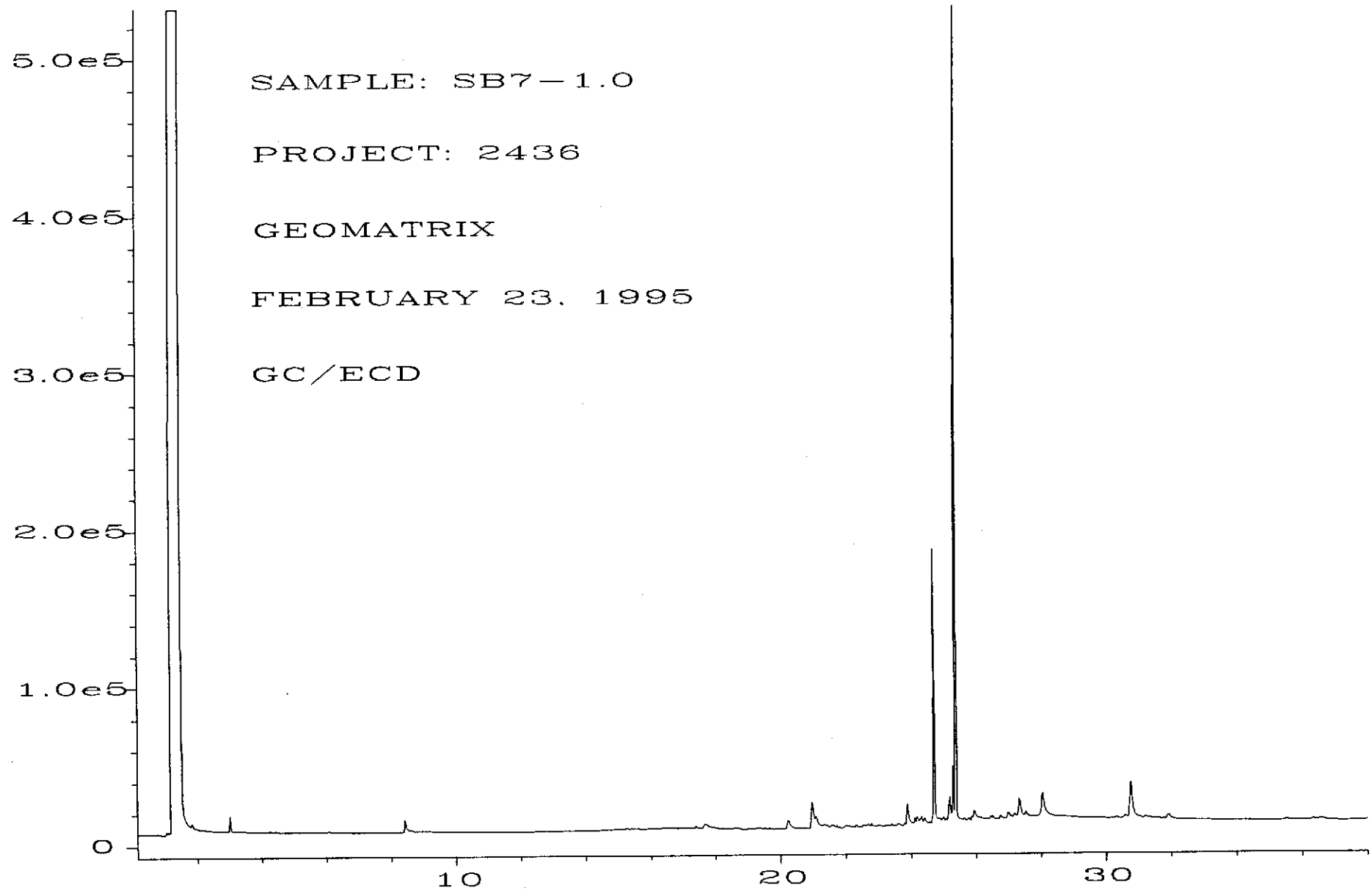
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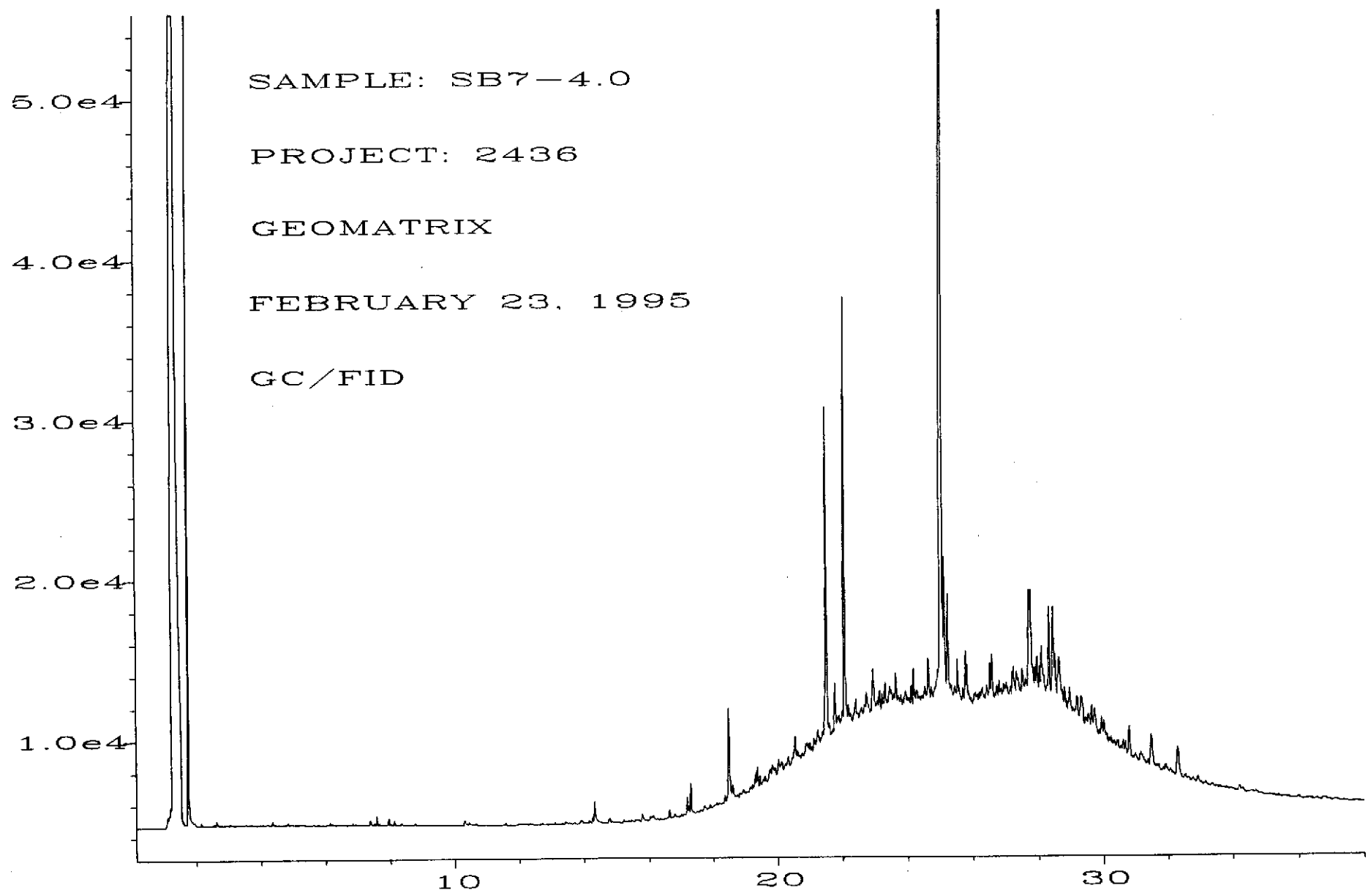


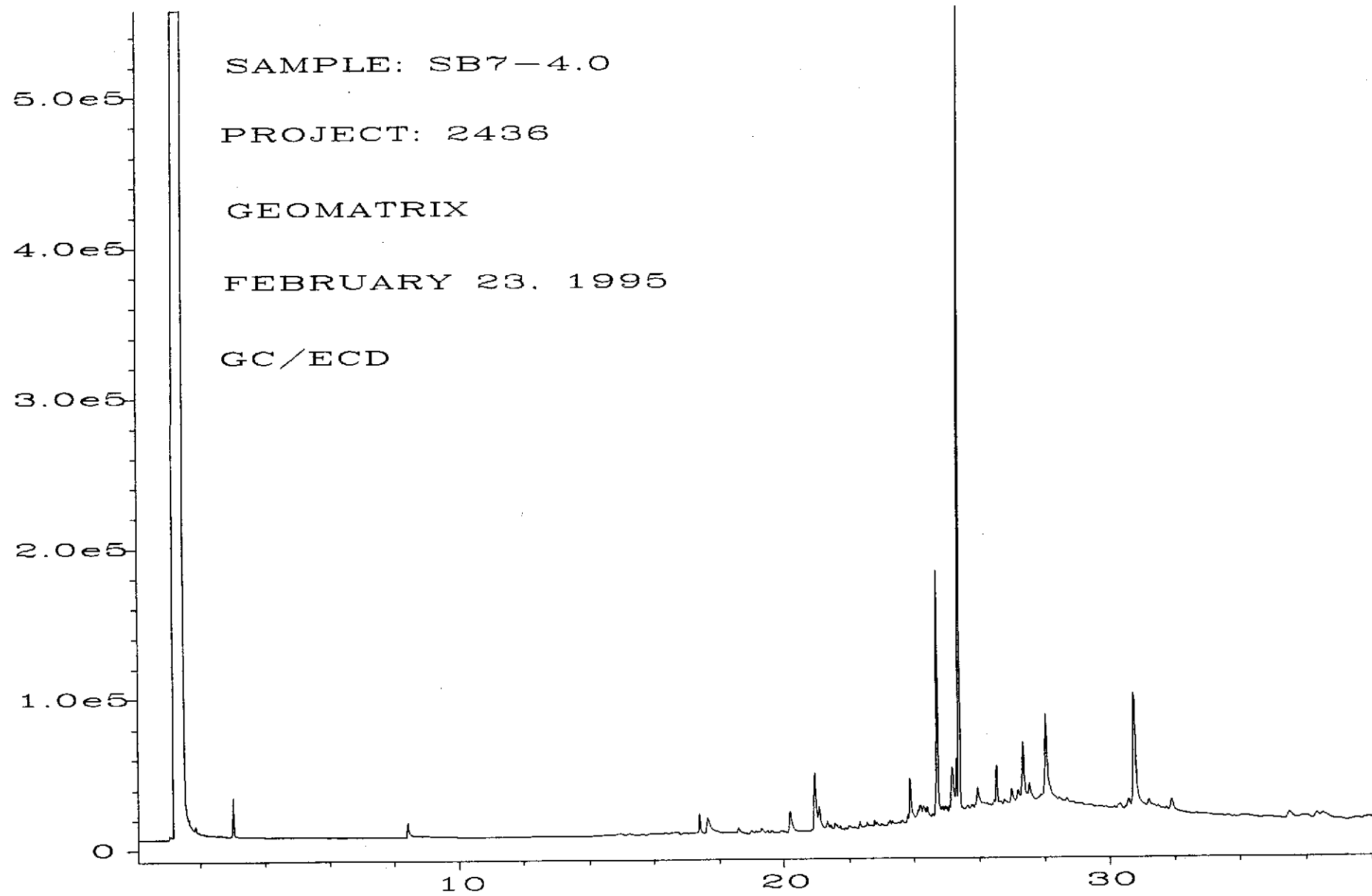


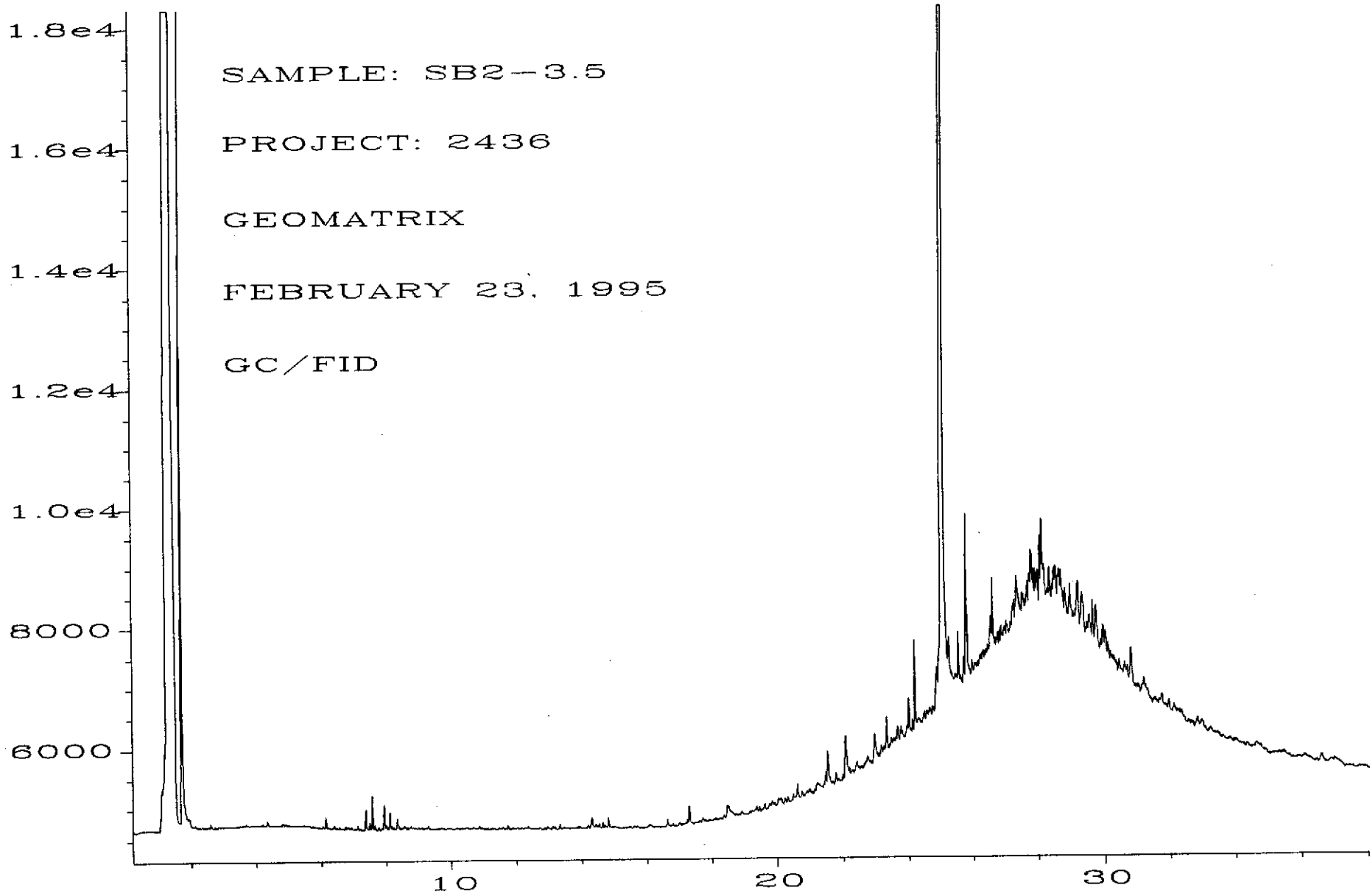


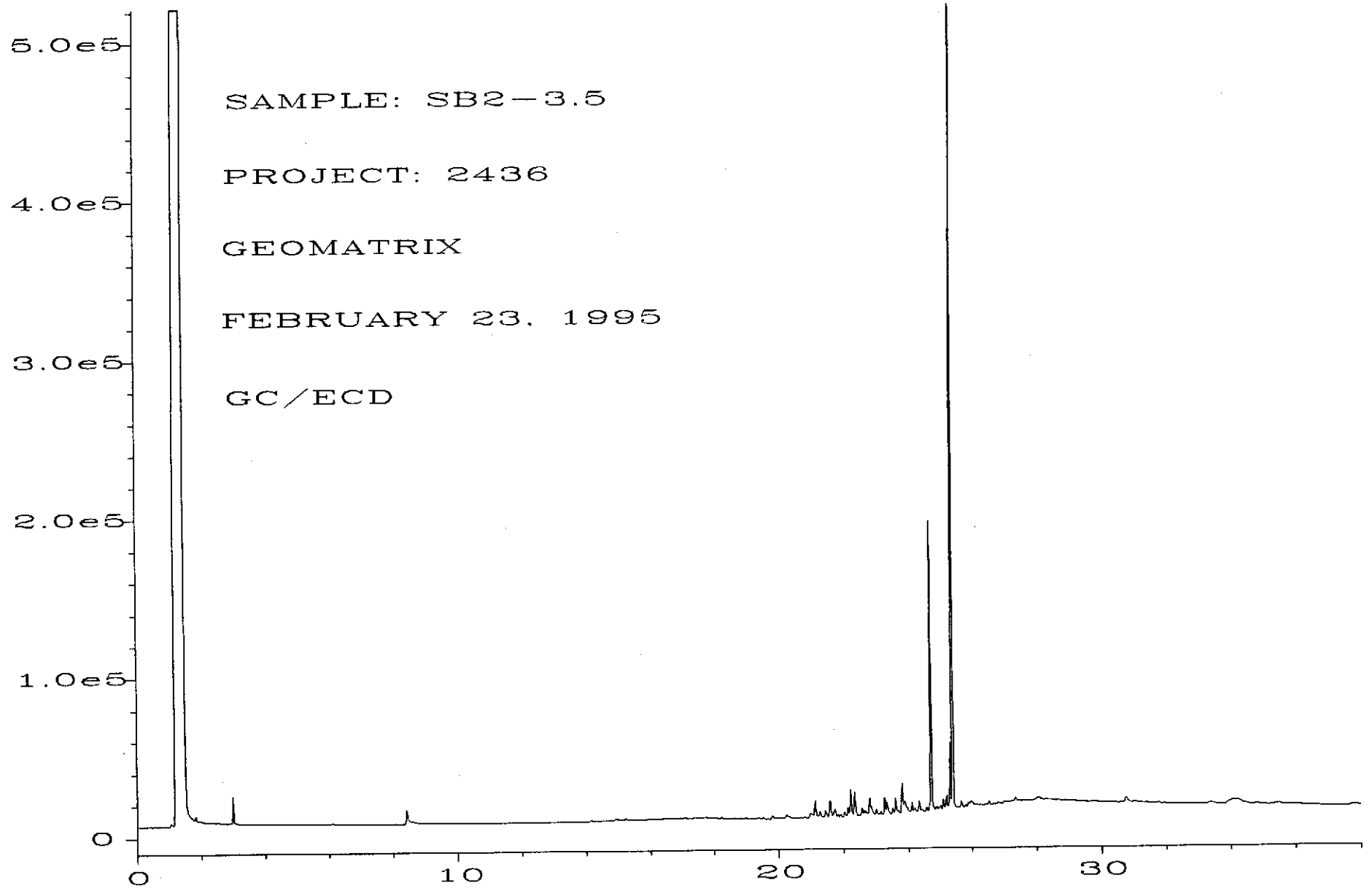


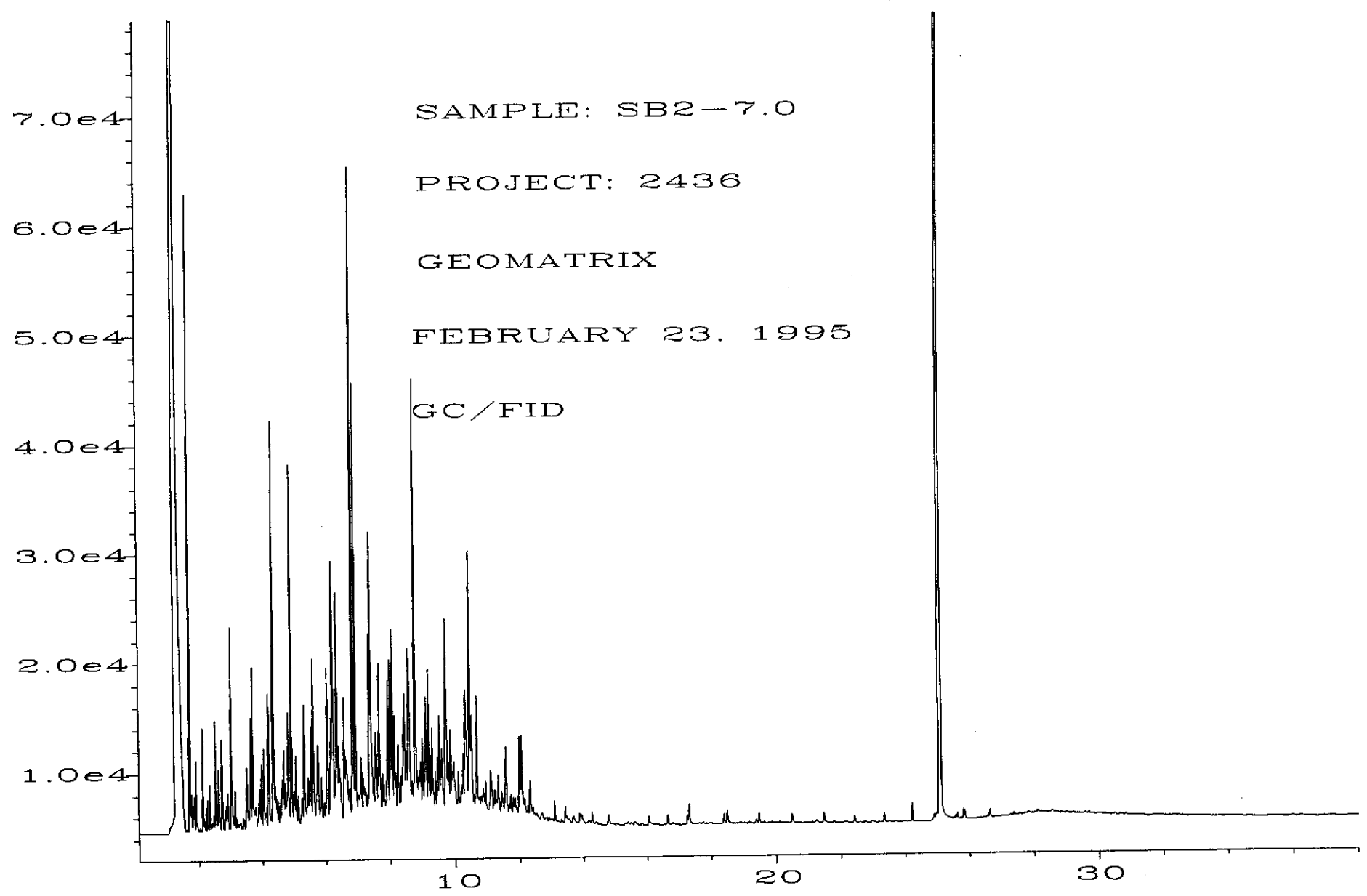


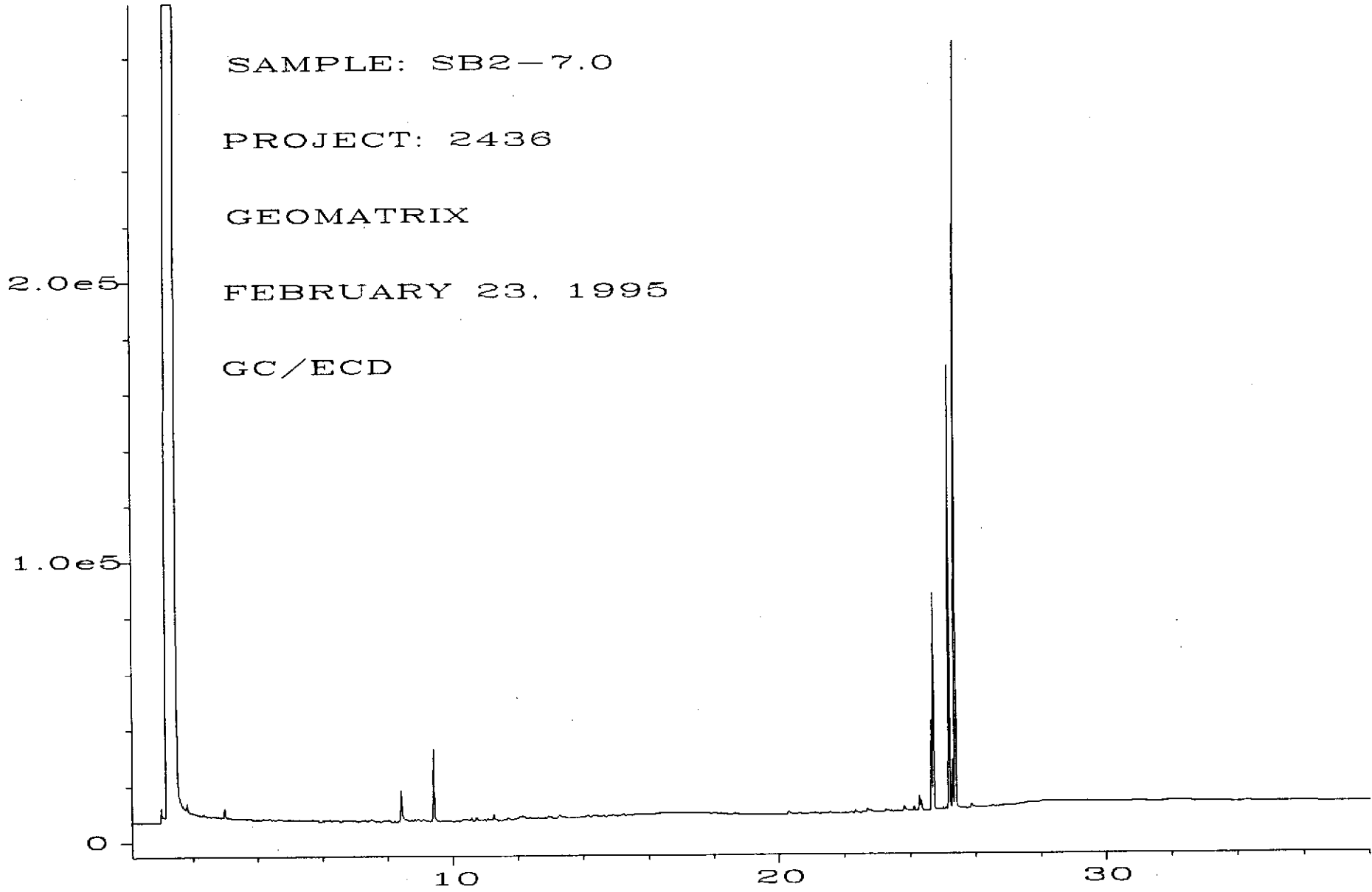


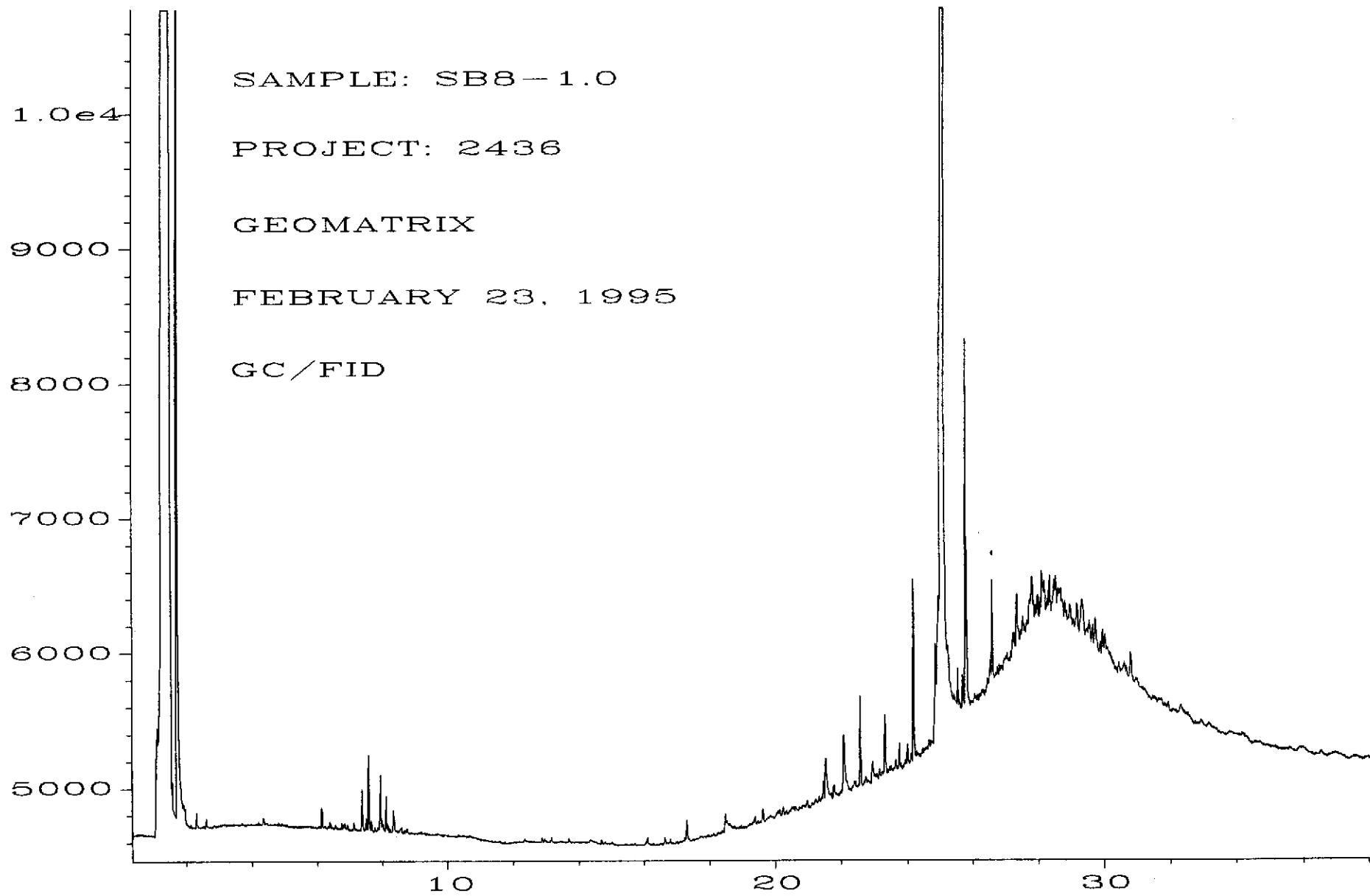


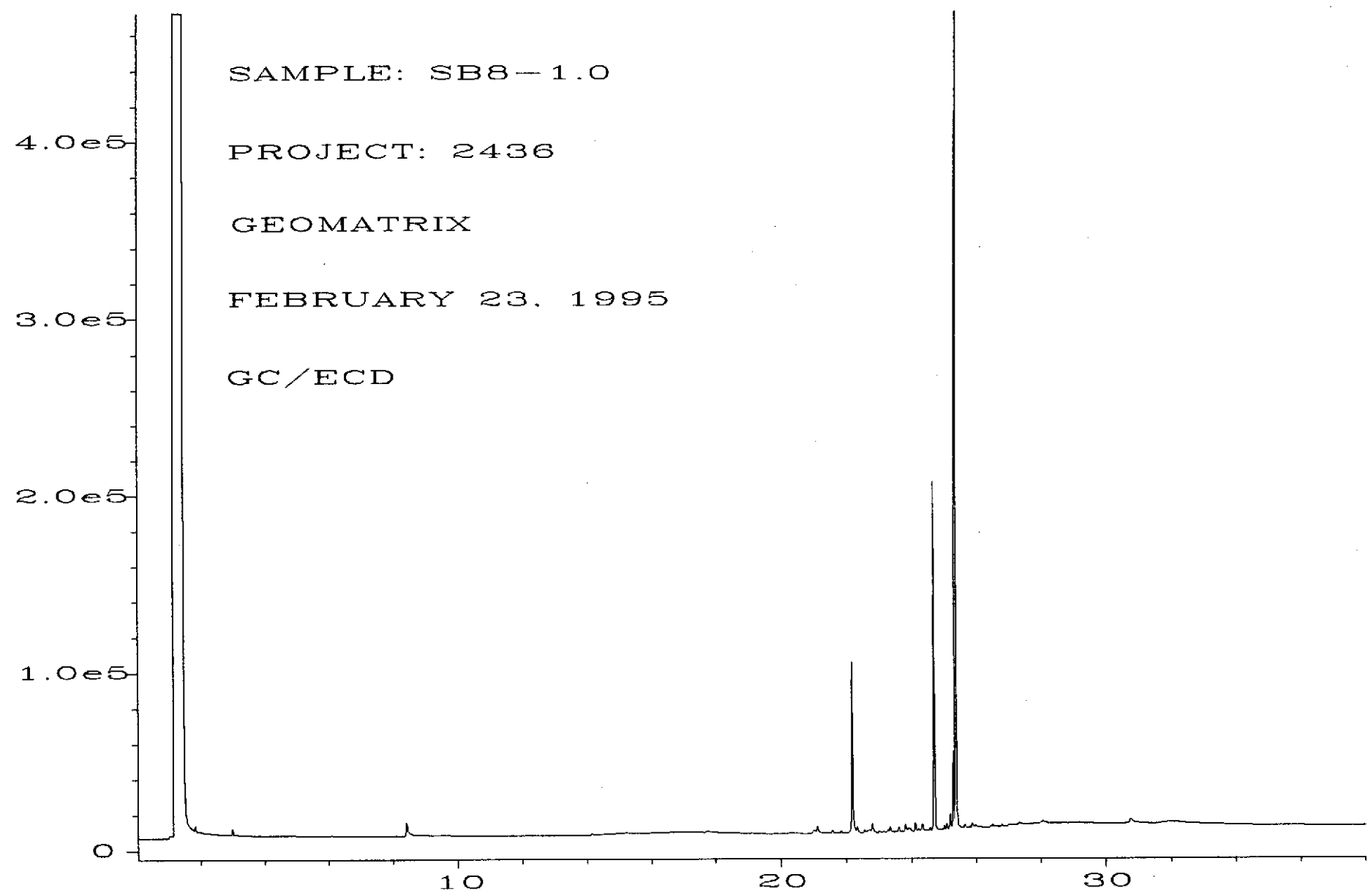


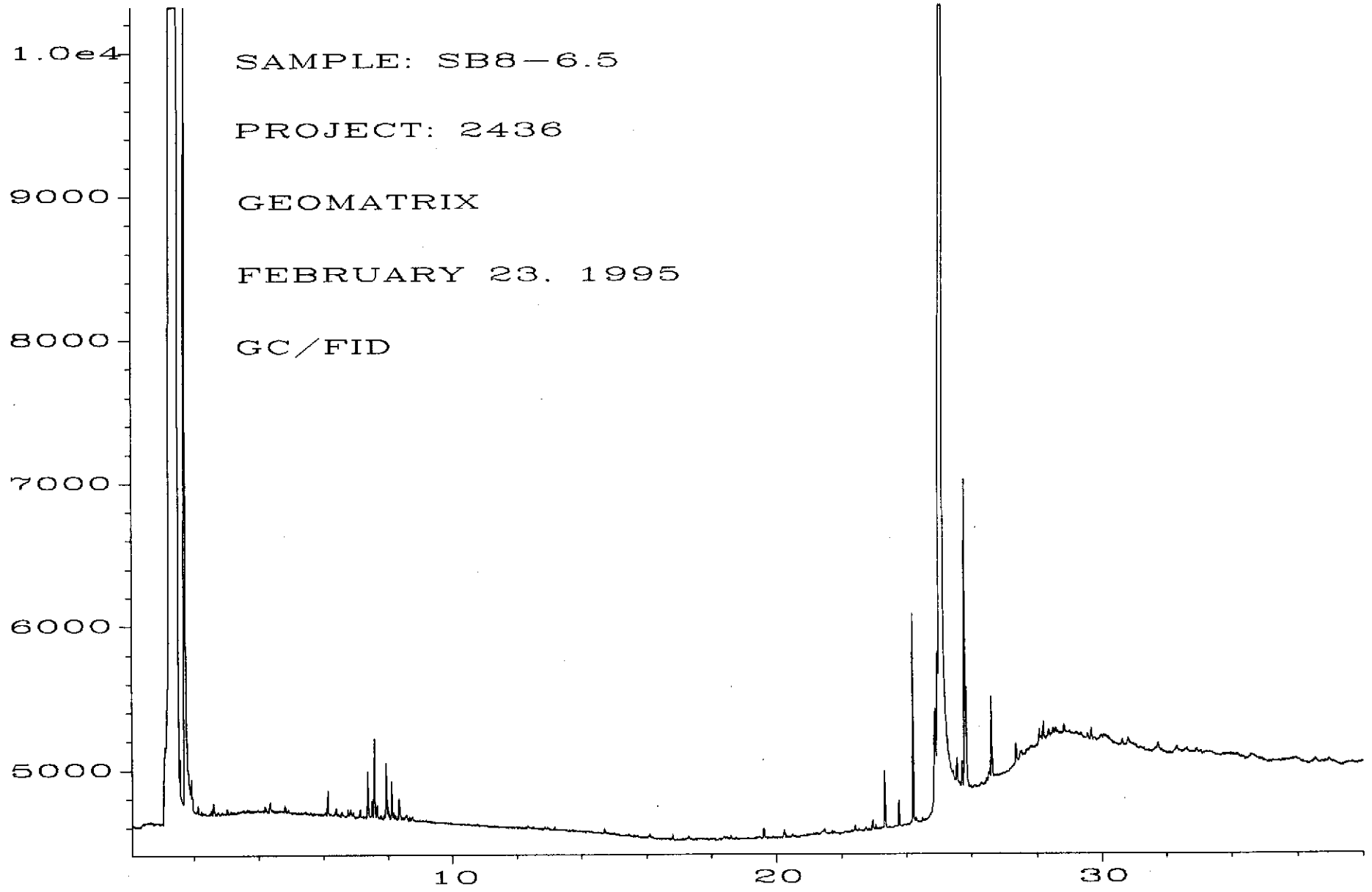


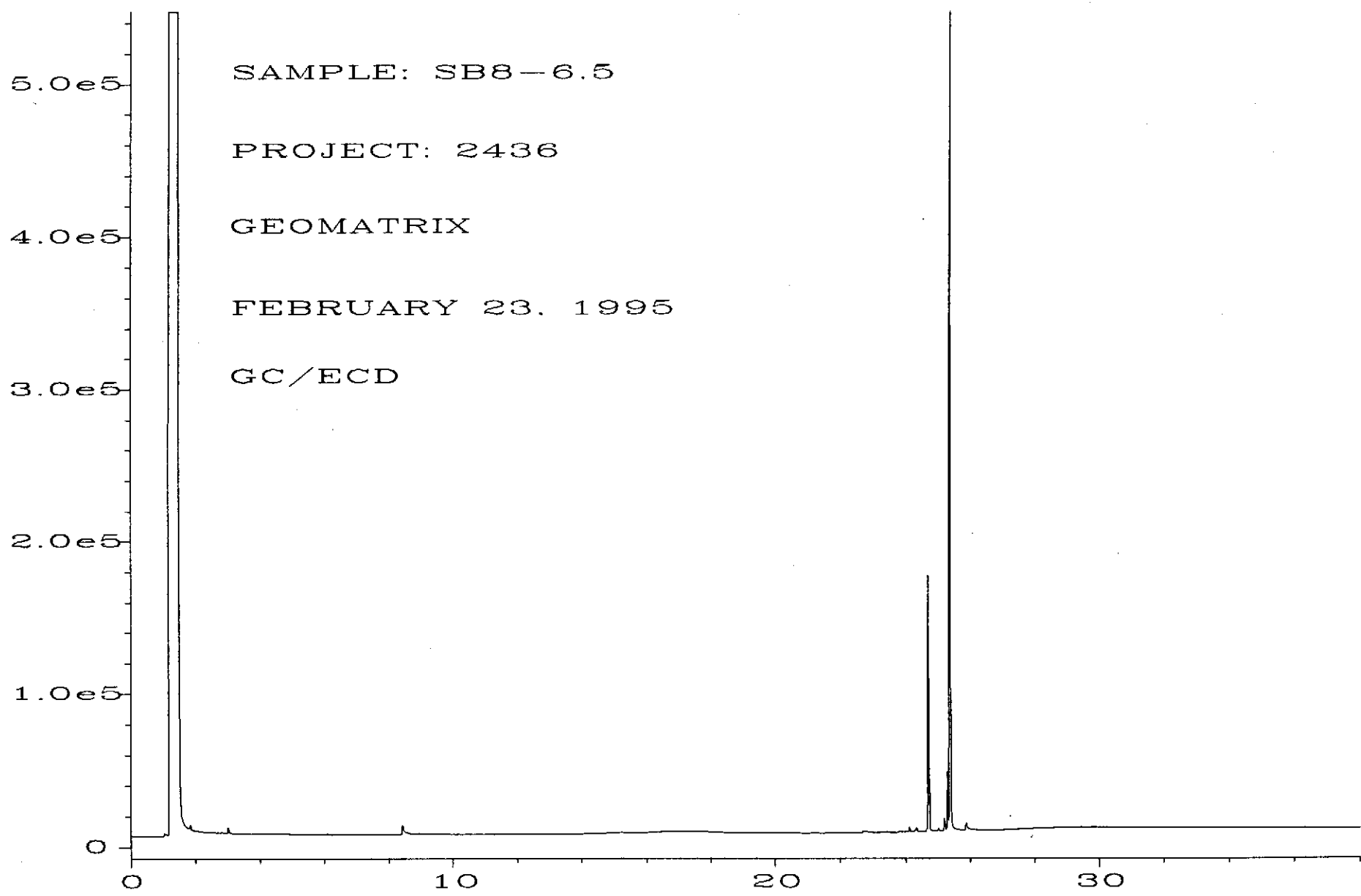












1436.02
0210

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

GEOMATRIX CONSULTANTS
100 PINE ST., SUITE 1000
SAN FRANCISCO, CA 94111

REPORT DATE: 03/10/95

DATE(S) SAMPLED: 02/17/95-02/20/95

DATE RECEIVED: 02/21/95

ATTN: STACY ANICH
CLIENT PROJ. ID: 2436

AEN WORK ORDER: 9502268

C.O.C. NUMBER: 6375,6385

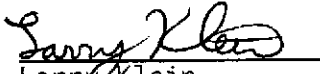
PROJECT SUMMARY:

On February 21, 1995, this laboratory received 24 soil sample(s).

Client requested 10 sample(s) be analyzed for inorganic and organic parameters. Fourteen samples were placed on hold. On February 21, 1995, client requested one sample be taken off hold. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.


Larry Klein
Laboratory Director

GEOMATRIX CONSULTANTS

SAMPLE ID: SB1-3.0
 AEN LAB NO: 9502268-01
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	02/27/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	02/27/95
CCR 17 Metals					
Ag	Silver EPA 6010	0.1 *	0.1	mg/kg	02/28/95
As	Arsenic EPA 7060	6.1 *	0.5	mg/kg	03/01/95
Ba	Barium EPA 6010	110 *	1	mg/kg	02/28/95
Be	Beryllium EPA 6010	0.2 *	0.1	mg/kg	02/28/95
Cd	Cadmium EPA 6010	0.7 *	0.2	mg/kg	02/28/95
Co	Cobalt EPA 6010	9.6 *	0.2	mg/kg	02/28/95
Cr	Chromium EPA 6010	39 *	0.5	mg/kg	02/28/95
Cu	Copper EPA 6010	51 *	0.5	mg/kg	02/28/95
Hg	Mercury EPA 7471	0.43 *	0.06	mg/kg	02/24/95
Mo	Molybdenum EPA 6010	ND	0.2	mg/kg	02/28/95
Ni	Nickel EPA 6010	30 *	1	mg/kg	02/28/95
Pb	Lead EPA 6010	110 *	1	mg/kg	02/28/95
Sb	Antimony EPA 6010	2 *	1	mg/kg	02/28/95
Se	Selenium EPA 7740	ND	1	mg/kg	03/01/95
Tl	Thallium EPA 6010	7 *	1	mg/kg	02/28/95
V	Vanadium EPA 6010	37 *	0.5	mg/kg	02/28/95
Zn	Zinc EPA 6010	210 *	1	mg/kg	02/28/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB6-1.0
 AEN LAB NO: 9502268-04
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	02/27/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	02/27/95
CCR 17 Metals					
Ag	Silver EPA 6010	0.7 *	0.1	mg/kg	02/28/95
As	Arsenic EPA 7060	130 *	0.5	mg/kg	03/01/95
Ba	Barium EPA 6010	67 *	1	mg/kg	02/28/95
Be	Beryllium EPA 6010	0.2 *	0.1	mg/kg	02/28/95
Cd	Cadmium EPA 6010	ND	0.2	mg/kg	02/28/95
Co	Cobalt EPA 6010	8.7 *	0.2	mg/kg	02/28/95
Cr	Chromium EPA 6010	16 *	0.5	mg/kg	02/28/95
Cu	Copper EPA 6010	31 *	0.5	mg/kg	02/28/95
Hg	Mercury EPA 7471	0.94 *	0.06	mg/kg	02/24/95
Mo	Molybdenum EPA 6010	1.1 *	0.2	mg/kg	02/28/95
Ni	Nickel EPA 6010	23 *	1	mg/kg	02/28/95
Pb	Lead EPA 6010	32 *	1	mg/kg	02/28/95
Sb	Antimony EPA 6010	4 *	1	mg/kg	02/28/95
Se	Selenium EPA 7740	ND	1	mg/kg	03/01/95
Tl	Thallium EPA 6010	8 *	1	mg/kg	02/28/95
V	Vanadium EPA 6010	34 *	0.5	mg/kg	02/28/95
Zn	Zinc EPA 6010	100 *	1	mg/kg	02/28/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB5-1.0
 AEN LAB NO: 9502268-07
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	02/27/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	02/27/95
CCR 17 Metals					
Ag	Silver EPA 6010	0.2 *	0.1	mg/kg	02/28/95
As	Arsenic EPA 7060	12 *	0.5	mg/kg	03/01/95
Ba	Barium EPA 6010	46 *	1	mg/kg	02/28/95
Be	Beryllium EPA 6010	0.2 *	0.1	mg/kg	02/28/95
Cd	Cadmium EPA 6010	ND	0.2	mg/kg	02/28/95
Co	Cobalt EPA 6010	7.7 *	0.2	mg/kg	02/28/95
Cr	Chromium EPA 6010	19 *	0.5	mg/kg	02/28/95
Cu	Copper EPA 6010	21 *	0.5	mg/kg	02/28/95
Hg	Mercury EPA 7471	0.37 *	0.06	mg/kg	02/24/95
Mo	Molybdenum EPA 6010	ND	0.2	mg/kg	02/28/95
Ni	Nickel EPA 6010	22 *	1	mg/kg	02/28/95
Pb	Lead EPA 6010	12 *	1	mg/kg	02/28/95
Sb	Antimony EPA 6010	1 *	1	mg/kg	02/28/95
Se	Selenium EPA 7740	ND	1	mg/kg	03/01/95
Tl	Thallium EPA 6010	3 *	1	mg/kg	02/28/95
V	Vanadium EPA 6010	32 *	0.5	mg/kg	02/28/95
Zn	Zinc EPA 6010	74 *	1	mg/kg	02/28/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB5-6.0
 AEN LAB NO: 9502268-08
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
VOCs in Soil by 8240	EPA 8240				
Acetone	67-64-1	ND	100	ug/kg	02/28/95
Benzene	71-43-2	ND	5	ug/kg	02/28/95
Bromodichloromethane	75-27-4	ND	5	ug/kg	02/28/95
Bromoform	75-25-2	ND	5	ug/kg	02/28/95
Bromomethane	74-83-9	ND	10	ug/kg	02/28/95
2-Butanone	78-93-3	ND	100	ug/kg	02/28/95
Carbon Disulfide	75-15-0	ND	10	ug/kg	02/28/95
Carbon Tetrachloride	56-23-5	ND	5	ug/kg	02/28/95
Chlorobenzene	108-90-7	ND	5	ug/kg	02/28/95
Chloroethane	75-00-3	ND	10	ug/kg	02/28/95
2-Chloroethyl Vinyl Ether	110-75-8	ND	10	ug/kg	02/28/95
Chloroform	67-66-3	ND	5	ug/kg	02/28/95
Chloromethane	74-87-3	ND	10	ug/kg	02/28/95
Dibromochloromethane	124-48-1	ND	5	ug/kg	02/28/95
1,1-Dichloroethane	75-43-3	ND	5	ug/kg	02/28/95
1,2-Dichloroethane	107-06-2	ND	5	ug/kg	02/28/95
1,1-Dichloroethene	75-35-4	ND	5	ug/kg	02/28/95
cis-1,2-Dichloroethene	156-59-2	ND	5	ug/kg	02/28/95
trans-1,2-Dichloroethene	156-60-5	ND	5	ug/kg	02/28/95
1,2-Dichloropropane	78-87-5	ND	5	ug/kg	02/28/95
cis-1,3-Dichloropropene	10061-01-5	ND	5	ug/kg	02/28/95
trans-1,3-Dichloropropene	10061-02-6	ND	5	ug/kg	02/28/95
Ethylbenzene	100-41-4	ND	5	ug/kg	02/28/95
2-Hexanone	591-78-6	ND	50	ug/kg	02/28/95
Methylene Chloride	75-09-2	ND	20	ug/kg	02/28/95
4-Methyl-2-pentanone	108-10-1	ND	50	ug/kg	02/28/95
Styrene	100-42-5	ND	5	ug/kg	02/28/95
1,1,2,2-Tetrachloroethane	79-34-5	ND	5	ug/kg	02/28/95
Tetrachloroethene	127-18-4	ND	5	ug/kg	02/28/95
Toluene	108-88-3	ND	5	ug/kg	02/28/95
1,1,1-Trichloroethane	71-55-6	ND	5	ug/kg	02/28/95
1,1,2-Trichloroethane	79-00-5	ND	5	ug/kg	02/28/95
Trichloroethene	79-01-6	ND	5	ug/kg	02/28/95
Vinyl Acetate	108-05-4	ND	50	ug/kg	02/28/95
Vinyl Chloride	75-01-4	ND	10	ug/kg	02/28/95
Xylenes Total	1330-20-7	ND	10	ug/kg	02/28/95

ND = Not detected at or above the reporting limit
 * = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB3-1.0
 AEN LAB NO: 9502268-10
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	02/27/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	02/27/95
CCR 17 Metals					
Ag	Silver EPA 6010	0.2 *	0.1	mg/kg	02/28/95
As	Arsenic EPA 7060	68 *	0.5	mg/kg	03/01/95
Ba	Barium EPA 6010	56 *	1	mg/kg	02/28/95
Be	Beryllium EPA 6010	0.2 *	0.1	mg/kg	02/28/95
Cd	Cadmium EPA 6010	ND	0.2	mg/kg	02/28/95
Co	Cobalt EPA 6010	7.4 *	0.2	mg/kg	02/28/95
Cr	Chromium EPA 6010	12 *	0.5	mg/kg	02/28/95
Cu	Copper EPA 6010	19 *	0.5	mg/kg	02/28/95
Hg	Mercury EPA 7471	0.71 *	0.06	mg/kg	02/24/95
Mo	Molybdenum EPA 6010	0.3 *	0.2	mg/kg	02/28/95
Ni	Nickel EPA 6010	16 *	1	mg/kg	02/28/95
Pb	Lead EPA 6010	22 *	1	mg/kg	02/28/95
Sb	Antimony EPA 6010	2 *	1	mg/kg	02/28/95
Se	Selenium EPA 7740	ND	1	mg/kg	03/01/95
Tl	Thallium EPA 6010	6 *	1	mg/kg	02/28/95
V	Vanadium EPA 6010	32 *	0.5	mg/kg	02/28/95
Zn	Zinc EPA 6010	90 *	1	mg/kg	02/28/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB4-1.0
 AEN LAB NO: 9502268-13
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	02/27/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	02/27/95
CCR 17 Metals					
Ag	Silver EPA 6010	0.3 *	0.1	mg/kg	02/28/95
As	Arsenic EPA 7060	46 *	0.5	mg/kg	03/01/95
Ba	Barium EPA 6010	59 *	1	mg/kg	02/28/95
Be	Beryllium EPA 6010	0.2 *	0.1	mg/kg	02/28/95
Cd	Cadmium EPA 6010	ND	0.2	mg/kg	02/28/95
Co	Cobalt EPA 6010	9.3 *	0.2	mg/kg	02/28/95
Cr	Chromium EPA 6010	17 *	0.5	mg/kg	02/28/95
Cu	Copper EPA 6010	36 *	0.5	mg/kg	02/28/95
Hg	Mercury EPA 7471	0.63 *	0.06	mg/kg	02/24/95
Mo	Molybdenum EPA 6010	0.7 *	0.2	mg/kg	02/28/95
Ni	Nickel EPA 6010	22 *	1	mg/kg	02/28/95
Pb	Lead EPA 6010	30 *	1	mg/kg	02/28/95
Sb	Antimony EPA 6010	2 *	1	mg/kg	02/28/95
Se	Selenium EPA 7740	ND	1	mg/kg	03/01/95
Tl	Thallium EPA 6010	4 *	1	mg/kg	02/28/95
V	Vanadium EPA 6010	34 *	0.5	mg/kg	02/28/95
Zn	Zinc EPA 6010	110 *	1	mg/kg	02/28/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB4-7.0
 AEN LAB NO: 9502268-14
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
VOCs in Soil by 8240	EPA 8240				
Acetone	67-64-1	ND	10000	ug/kg	02/28/95
Benzene	71-43-2	2,300 *	500	ug/kg	02/28/95
Bromodichloromethane	75-27-4	ND	500	ug/kg	02/28/95
Bromoform	75-25-2	ND	500	ug/kg	02/28/95
Bromomethane	74-83-9	ND	1000	ug/kg	02/28/95
2-Butanone	78-93-3	ND	10000	ug/kg	02/28/95
Carbon Disulfide	75-15-0	ND	1000	ug/kg	02/28/95
Carbon Tetrachloride	56-23-5	ND	500	ug/kg	02/28/95
Chlorobenzene	108-90-7	ND	500	ug/kg	02/28/95
Chloroethane	75-00-3	ND	1000	ug/kg	02/28/95
2-Chloroethyl Vinyl Ether	110-75-8	ND	1000	ug/kg	02/28/95
Chloroform	67-66-3	ND	500	ug/kg	02/28/95
Chloromethane	74-87-3	ND	1000	ug/kg	02/28/95
Dibromochloromethane	124-48-1	ND	500	ug/kg	02/28/95
1,1-Dichloroethane	75-43-3	ND	500	ug/kg	02/28/95
1,2-Dichloroethane	107-06-2	ND	500	ug/kg	02/28/95
1,1-Dichloroethene	75-35-4	ND	500	ug/kg	02/28/95
cis-1,2-Dichloroethene	156-59-2	ND	500	ug/kg	02/28/95
trans-1,2-Dichloroethene	156-60-5	ND	500	ug/kg	02/28/95
1,2-Dichloropropane	78-87-5	ND	500	ug/kg	02/28/95
cis-1,3-Dichloropropene	10061-01-5	ND	500	ug/kg	02/28/95
trans-1,3-Dichloropropene	10061-02-6	ND	500	ug/kg	02/28/95
Ethylbenzene	100-41-4	8,700 *	500	ug/kg	02/28/95
2-Hexanone	591-78-6	ND	5000	ug/kg	02/28/95
Methylene Chloride	75-09-2	ND	2000	ug/kg	02/28/95
4-Methyl-2-pentanone	108-10-1	ND	5000	ug/kg	02/28/95
Styrene	100-42-5	ND	500	ug/kg	02/28/95
1,1,2,2-Tetrachloroethane	79-34-5	ND	500	ug/kg	02/28/95
Tetrachloroethene	127-18-4	ND	500	ug/kg	02/28/95
Toluene	108-88-3	3,500 *	500	ug/kg	02/28/95
1,1,1-Trichloroethane	71-55-6	ND	500	ug/kg	02/28/95
1,1,2-Trichloroethane	79-00-5	ND	500	ug/kg	02/28/95
Trichloroethene	79-01-6	ND	500	ug/kg	02/28/95
Vinyl Acetate	108-05-4	ND	5000	ug/kg	02/28/95
Vinyl Chloride	75-01-4	ND	1000	ug/kg	02/28/95
Xylenes Total	1330-20-7	35,000 *	1000	ug/kg	02/28/95

GEOMATRIX CONSULTANTS

SAMPLE ID: SB7-1.5
 AEN LAB NO: 9502268-16
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	02/27/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	02/27/95
CCR 17 Metals					
Ag	Silver EPA 6010	0.1 *	0.1	mg/kg	02/28/95
As	Arsenic EPA 7060	ND	0.5	mg/kg	03/01/95
Ba	Barium EPA 6010	150 *	1	mg/kg	02/28/95
Be	Beryllium EPA 6010	0.1 *	0.1	mg/kg	02/28/95
Cd	Cadmium EPA 6010	0.3 *	0.2	mg/kg	02/28/95
Co	Cobalt EPA 6010	7.1 *	0.2	mg/kg	02/28/95
Cr	Chromium EPA 6010	36 *	0.5	mg/kg	02/28/95
Cu	Copper EPA 6010	44 *	0.5	mg/kg	02/28/95
Hg	Mercury EPA 7471	0.16 *	0.06	mg/kg	02/24/95
Mo	Molybdenum EPA 6010	ND	0.2	mg/kg	02/28/95
Ni	Nickel EPA 6010	24 *	1	mg/kg	02/28/95
Pb	Lead EPA 6010	89 *	1	mg/kg	02/28/95
Sb	Antimony EPA 6010	2 *	1	mg/kg	02/28/95
Se	Selenium EPA 7740	ND	1	mg/kg	03/01/95
Tl	Thallium EPA 6010	ND	1	mg/kg	02/28/95
V	Vanadium EPA 6010	47 *	0.5	mg/kg	02/28/95
Zn	Zinc EPA 6010	200 *	1	mg/kg	02/28/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB2-2.0
 AEN LAB NO: 9502268-19
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/20/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	02/27/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	02/27/95
CCR 17 Metals					
Ag	Silver	EPA 6010	0.1 *	0.1 mg/kg	02/28/95
As	Arsenic	EPA 7060	9.7 *	0.5 mg/kg	03/01/95
Ba	Barium	EPA 6010	120 *	1 mg/kg	02/28/95
Be	Beryllium	EPA 6010	0.1 *	0.1 mg/kg	02/28/95
Cd	Cadmium	EPA 6010	ND	0.2 mg/kg	02/28/95
Co	Cobalt	EPA 6010	11 *	0.2 mg/kg	02/28/95
Cr	Chromium	EPA 6010	89 *	0.5 mg/kg	02/28/95
Cu	Copper	EPA 6010	170 *	0.5 mg/kg	02/28/95
Hg	Mercury	EPA 7471	0.70 *	0.06 mg/kg	02/24/95
Mo	Molybdenum	EPA 6010	0.7 *	0.2 mg/kg	02/28/95
Ni	Nickel	EPA 6010	49 *	1 mg/kg	02/28/95
Pb	Lead	EPA 6010	77 *	1 mg/kg	02/28/95
Sb	Antimony	EPA 6010	2 *	1 mg/kg	02/28/95
Se	Selenium	EPA 7740	ND	1 mg/kg	03/01/95
Tl	Thallium	EPA 6010	ND	1 mg/kg	02/28/95
V	Vanadium	EPA 6010	35 *	0.5 mg/kg	02/28/95
Zn	Zinc	EPA 6010	280 *	1 mg/kg	02/28/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB8-0.5
 AEN LAB NO: 9502268-22
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/20/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	02/27/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	02/27/95
CCR 17 Metals					
Ag Silver	EPA 6010	ND	0.1	mg/kg	02/28/95
As Arsenic	EPA 7060	4.5 *	0.5	mg/kg	02/28/95
Ba Barium	EPA 6010	88 *	1	mg/kg	02/28/95
Be Beryllium	EPA 6010	0.2 *	0.1	mg/kg	02/28/95
Cd Cadmium	EPA 6010	ND	0.2	mg/kg	02/28/95
Co Cobalt	EPA 6010	7.8 *	0.2	mg/kg	02/28/95
Cr Chromium	EPA 6010	23 *	0.5	mg/kg	02/28/95
Cu Copper	EPA 6010	30 *	0.5	mg/kg	02/28/95
Hg Mercury	EPA 7471	0.09 *	0.06	mg/kg	02/28/95
Mo Molybdenum	EPA 6010	ND	0.2	mg/kg	02/28/95
Ni Nickel	EPA 6010	15 *	1	mg/kg	02/28/95
Pb Lead	EPA 6010	30 *	1	mg/kg	02/28/95
Sb Antimony	EPA 6010	2 *	1	mg/kg	02/28/95
Se Selenium	EPA 7740	ND	1	mg/kg	02/28/95
Tl Thallium	EPA 6010	ND	1	mg/kg	02/28/95
V Vanadium	EPA 6010	29 *	0.5	mg/kg	02/28/95
Zn Zinc	EPA 6010	110 *	1	mg/kg	02/28/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB8-7.0
 AEN LAB NO: 9502268-23
 AEN WORK ORDER: 9502268
 CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/20/95
 DATE RECEIVED: 02/21/95
 REPORT DATE: 03/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
VOCs in Soil by 8240	EPA 8240				
Acetone	67-64-1	ND	100	ug/kg	02/28/95
Benzene	71-43-2	ND	5	ug/kg	02/28/95
Bromodichloromethane	75-27-4	ND	5	ug/kg	02/28/95
Bromoform	75-25-2	ND	5	ug/kg	02/28/95
Bromomethane	74-83-9	ND	10	ug/kg	02/28/95
2-Butanone	78-93-3	ND	100	ug/kg	02/28/95
Carbon Disulfide	75-15-0	ND	10	ug/kg	02/28/95
Carbon Tetrachloride	56-23-5	ND	5	ug/kg	02/28/95
Chlorobenzene	108-90-7	ND	5	ug/kg	02/28/95
Chloroethane	75-00-3	ND	10	ug/kg	02/28/95
2-Chloroethyl Vinyl Ether	110-75-8	ND	10	ug/kg	02/28/95
Chloroform	67-66-3	ND	5	ug/kg	02/28/95
Chloromethane	74-87-3	ND	10	ug/kg	02/28/95
Dibromochloromethane	124-48-1	ND	5	ug/kg	02/28/95
1,1-Dichloroethane	75-43-3	ND	5	ug/kg	02/28/95
1,2-Dichloroethane	107-06-2	ND	5	ug/kg	02/28/95
1,1-Dichloroethene	75-35-4	ND	5	ug/kg	02/28/95
cis-1,2-Dichloroethene	156-59-2	ND	5	ug/kg	02/28/95
trans-1,2-Dichloroethene	156-60-5	ND	5	ug/kg	02/28/95
1,2-Dichloropropane	78-87-5	ND	5	ug/kg	02/28/95
cis-1,3-Dichloropropene	10061-01-5	ND	5	ug/kg	02/28/95
trans-1,3-Dichloropropene	10061-02-6	ND	5	ug/kg	02/28/95
Ethylbenzene	100-41-4	ND	5	ug/kg	02/28/95
2-Hexanone	591-78-6	ND	50	ug/kg	02/28/95
Methylene Chloride	75-09-2	ND	20	ug/kg	02/28/95
4-Methyl-2-pentanone	108-10-1	ND	50	ug/kg	02/28/95
Styrene	100-42-5	ND	5	ug/kg	02/28/95
1,1,2,2-Tetrachloroethane	79-34-5	ND	5	ug/kg	02/28/95
Tetrachloroethene	127-18-4	ND	5	ug/kg	02/28/95
Toluene	108-88-3	ND	5	ug/kg	02/28/95
1,1,1-Trichloroethane	71-55-6	ND	5	ug/kg	02/28/95
1,1,2-Trichloroethane	79-00-5	ND	5	ug/kg	02/28/95
Trichloroethene	79-01-6	ND	5	ug/kg	02/28/95
Vinyl Acetate	108-05-4	ND	50	ug/kg	02/28/95
Vinyl Chloride	75-01-4	ND	10	ug/kg	02/28/95
Xylenes Total	1330-20-7	ND	10	ug/kg	02/28/95

ND = Not detected at or above the reporting limit
 * = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9502268

CLIENT PROJECT ID: 2436

Quality Control Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

AEN JOB NO: 9502268
 AEN LAB NO: 0228-BLANK
 DATE ANALYZED: 02/28/95
 INSTRUMENT: 13
 MATRIX: SOIL

Method: EPA 8240

Analyte	CAS #	Result (ug/kg)	Reporting Limit (ug/kg)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,2-Dichlorobenzene	95-50-1	ND	5
1,3-Dichlorobenzene	541-73-1	ND	5
1,4-Dichlorobenzene	106-46-7	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1,2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
cis-1,2-Dichloroethene	156-59-2	ND	5
trans-1,2-Dichloroethene	156-60-5	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	20
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	5
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	ND	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	1330-20-7	ND	10

QUALITY CONTROL DATA

METHOD: EPA 8240

AEN JOB NO: 9502268
 INSTRUMENT: 13
 MATRIX: SOIL

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery		
			1,2-Dichloroethane-d ₄	Toluene-d ₈	p-Bromofluorobenzene
02/28/95	SB5-6.0	08	108	112	93
02/28/95	SB4-7.0	14	105	95	103
02/28/95	SB8-7.0	23	99	103	98
QC Limits:			46-138	81-124	70-111

DATE ANALYZED: 02/28/95
 SAMPLE SPIKED: LCS
 INSTRUMENT: 13

Laboratory Control Sample

Analyte	Spike Added (ug/kg)	LCS Result (ug/kg)	Percent Recovery	QC Limits
				Percent Recovery
1,1-Dichloroethene	50.0	46.7	93	75-151
Trichloroethene	50.0	52.7	105	82-125
Benzene	50.0	51.1	102	87-131
Toluene	50.0	50.4	101	81-122
Chlorobenzene	50.0	55.1	110	91-113

QUALITY CONTROL DATA

AEN JOB NO: 9502268
 SAMPLE SPIKED: SAND
 DATE(S) ANALYZED: 02/24-03/01/95
 MATRIX: SOIL

Method Spike Recovery Summary


Analyte	Inst./ Method	Spike Conc. (mg/kg)	Sample Result (mg/kg)	MS Result (mg/kg)	MSD Result (mg/kg)	Average Percent Recovery	RPD	QC Limits	
								Percent Recovery	RPD
Ag, Silver	ICP/6010	10	ND	5.26	5.19	52	1	33- 95	5
As, Arsenic	4000/7060	10	ND	10.31	10.96	106	6	76-128	15
Ba, Barium	ICP/6010	150	ND	140.0	138.3	93	1	91-107	5
Cd, Cadmium	ICP/6010	10	ND	9.46	9.26	94	2	87-108	5
Cr, Chromium	ICP/6010	50	ND	47.2	46.4	94	2	88-110	5
Cu, Copper	ICP/6010	50	ND	46.1	46.4	93	1	91-108	5
Hg, Mercury	Hg/7471	0.4	ND	0.409	0.414	103	1	75-125	15
Ni, Nickel	ICP/6010	50	ND	46.2	46.8	93	1	88-109	5
Pb, Lead	ICP/6010	50	ND	47.7	47.7	95	<1	88-110	5
Se, Selenium	4000/7740	20	ND	17.2	18.6	90	8	70-125	14
Zn, Zinc	ICP/6010	50	ND	46.2	46.3	93	<1	85-105	5

*** END OF REPORT ***

AEN

R-510-N

9502260

Chain-of-Custody Record			No 6385		Date: 2/21/95		Page 1 of 1											
Project No.: 2436			ANALYSES						REMARKS									
Samplers (Signatures): Timothy F Wood			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	CCR-17 metals	8240	holds	Cooled	Soil (S) or water (W)	Acidified	Number of containers	Additional comments	
Date	Time	Sample Number																
2/17/95	0930	SB1 - 3.0								x			x	S		1	Please bill: Mr. Monroe Wingate Wingate Company 5580 Stoneridge Dr. suite 119 Pleasanton, Ca 94588 @ CCR-17 metals using EPA method 6010/7000 series 2/21/95 Per Stacy Knich, plc. take sample SB8-7.0 off 1104D and analyze for 8240. JLF	
	0930	SB1 - 10.0									x		x	S		1		
	0930	SB1 - 5.0									x		x	S		1		
	1430	SB6 - 1.0								x			x	S		1		
	1430	SB6 - 8.0								x			x	S		1		
	1430	SB6 - 10.0								x			x	S		1		
	1600	SB5 - 1.0								x			x	S		1		
	1600	SB5 - 6.0									x		x	S		1		
	1600	SB5 - 9.5										x	x	S		1		
	1340	SB3 - 1.0								x			x	S		1		
	1340	SB3 - 6.5										x	x	S		1		
	1340	SB3 - 9.5										x	x	S		1		
Turnaround time: normal			Results to: Geomatrix Stacy Knich			Total No. of containers: 12												
Relinquished by: Signature: Timothy F Wood Printed name: TIMOTHY F WOOD Company: GEOMATRIX		Date: 2/22/95	Relinquished by: Signature: [Signature] Printed name: AEN Company: AEN		Date: 2/21/95	Relinquished by: Signature: Printed name: Company:		Date:	Method of shipment: Lab PU									
Received by: Signature: [Signature] Printed name: AEN Company:		Time: 1:00	Received by: Signature: [Signature] Printed name: Lori L. Pruitt Company: AEN		Time: 1:10	Received by: Signature: Printed name: Company:		Time:	Laboratory comments and Log No.:									
 Geomatrix Consultants 100 Pine St. 10th Floor San Francisco, CA. 94111 (415) 434-9400																		

01A X
 02A X
 03A X
 04A X
 05A X
 06A X
 07A X
 08A X
 09A X
 10A X
 11A X
 12A X

AEN


R-5, S-N

9502268

Chain-of-Custody Record No 6375 Date: 2/21/95 Page 2 of

Project No.: 2436			ANALYSES												REMARKS										
Samplers (Signatures): Timothy F Wood			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	CEC-17 metals	B240	hold									Additional comments				
Date	Time	Sample Number																							
31AX	2/17/95	1620	SBA - 1.0							x									x	S					
4AX		1620	SBA - 7.0								x								x	S					
5AX		1620	SBA - 9.5									x							x	S					
6AX		1700	SB7 - 1.5							x									x	S					
7AX		1700	SB7 - 10.0									x							x	S					
8AX		1700	SB7 - 7.0									x							x	S					
9AX	2/20/95	1200	SB2 - 2.0							x									x	S					
10AX		1200	SB2 - 4.0									x							x	S					
11AX		1200	SB2 - 9.5									x							x	S					
12AX		1040	SB8 - 0.5							x									x	S					
13AX		1040	SB8 - 7.0									x							x	S					
14AX		1040	SB8 - 16.0									x							x	S					

Please bill:
Mr. Monroe Wingate
Wingate Company

Turnaround time: normal		Results to: Geomatrix Stacy Anich		Total No. of containers: 12	
Relinquished by: Signature: Timothy F Wood Printed name: Company:	Date: 2/21/95	Relinquished by: Signature: NEIL HERPICK Printed name: Company:	Date: 2/21/95	Relinquished by: Signature: Printed name: Company:	Date:
Received by: Signature: NEIL HERPICK Printed name: AEN Company:	Time: 1700	Received by: Signature: Lori L. Pruitt Printed name: Lori L. Pruitt Company: AEN	Time: 18:10	Received by: Signature: Printed name: Company:	Time:
				Method of shipment: Lab PIU	
				Laboratory comments and Log No.:	
 Geomatrix Consultants 100 Pine St. 10th Floor San Francisco, CA. 94111 (415) 434-9400					

9436.02 0210

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

GEOMATRIX CONSULTANTS
100 PINE ST., SUITE 1000
SAN FRANCISCO, CA 94111

REPORT DATE: 04/10/95

DATE(S) SAMPLED: 02/17/95

DATE RECEIVED: 02/22/95

ATTN: STACY ANICH
CLIENT PROJ. ID: 2436

AEN WORK ORDER: 9503436

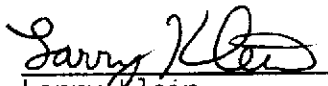
C.O.C. NUMBER: 6385

PROJECT SUMMARY:

On March 28, 1995, client requested two soil samples received by this laboratory on February 22, 1995, be taken off hold. Samples were analyzed for inorganic parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.


Larry Klein
Laboratory Director

GEOMATRIX CONSULTANTS

SAMPLE ID: SB6-8.0
AEN LAB NO: 9503436-01
AEN WORK ORDER: 9503436
CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
DATE RECEIVED: 02/22/95
REPORT DATE: 04/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Arsenic	EPA 7060	2.5 *	0.5	mg/kg	04/05/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	04/01/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: SB3-6.5
AEN LAB NO: 9503436-02
AEN WORK ORDER: 9503436
CLIENT PROJ. ID: 2436

DATE SAMPLED: 02/17/95
DATE RECEIVED: 02/22/95
REPORT DATE: 04/10/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Arsenic	EPA 7060	ND	0.5	mg/kg	04/05/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	04/01/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9503436

CLIENT PROJECT ID: 2436

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

AEN JOB NO: 9503436
DATE ANALYZED: 04/05/95
SAMPLE SPIKED: SAND
MATRIX: SOIL

Method Blank and Spike Recovery Summary

Analyte	Inst./ Method	Spike Conc. (mg/kg)	Blank Result (mg/kg)	MS Result (mg/kg)	MSD Result (mg/kg)	Average Percent Recovery	RPD	QC Limits	
								Percent Recovery	RPD
As, Arsenic	4000/7060	10	ND	8.51	9.28	89	9	76-128	15

*** END OF REPORT ***

AEN

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9503436

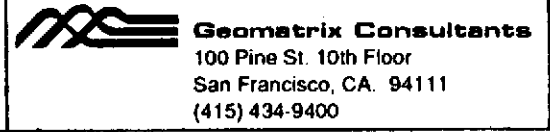
9502260 RB

Chain-of-Custody Record No. **6385** Date: **2/21/95** Page **1** of **1**

Project No.: 2436			ANALYSES													REMARKS		
Samplers (Signatures): <i>Timothy F Wood</i>			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	CCR-17 metals	8240	hold	TLC-AS	Cooled	Soil (S) or water (W)	Acidified	Number of containers	Additional comments
Date	Time	Sample Number																
2/17/95	0830	SB1 - 3.0								x				x	S		1	Please bill: Mr. Monroe Wingate Wingate Company 5980 Stoneridge Dr. suite 119 Pleasanton, Ca 94588 ② CCR-17 metals using EPA method 6010/7000 series 3/21/95 Per Stacy Knich, pls. take sample SB8-7.0 off the and analyze for 8240. JRS
	0830	SB1 - 10.0									x			x	S		1	
	0930	SB1 - 5.0									x			x	S		1	
	1430	SB6 - 1.0								x				x	S		1	
OIA	1430	SB6 - 8.0										x		x	S		1	
	1430	SB6 - 10.0									x			x	S		1	
	1600	SB5 - 1.0								x				x	S		1	
	1600	SB5 - 6.0									x			x	S		1	
	1600	SB5 - 9.5										x		x	S		1	
	1340	SB3 - 1.0								x				x	S		1	
OZA	1340	SB3 - 6.5										x		x	S		1	
	1340	SB3 - 9.5										x		x	S		1	

Turnaround time: **normal** Results to: **Geometrix Stacy Knich** Total No. of containers: **12**

Relinquished by: <i>Timothy F Wood</i> Signature: <i>Timothy F Wood</i> Printed name: TIMOTHY F WOOD Company: GEOMETRIX	Date: 2/22/95	Relinquished by: <i>WAIL HERRICK</i> Signature: <i>WAIL HERRICK</i> Printed name: AEN Company: AEN	Date: 2/21/95	Relinquished by: Signature: Printed name: Company:	Date:	Method of shipment: Lab PIO
Received by: <i>WAIL HERRICK</i> Signature: <i>WAIL HERRICK</i> Printed name: AEN Company:	Time: 17:00	Received by: <i>John L. Pruitt</i> Signature: <i>John L. Pruitt</i> Printed name: John L. Pruitt Company: AEN	Time: 18:10	Received by: Signature: Printed name: Company:	Time:	Laboratory comments and Log No.: 3/20/95 Per Stacy Knich, pls. add TLC AC to samples SB3-6.5 and SB6-8. A std. TAT is requested. JRS



OIA
 OZA
 98

CHANGE ORDER REQUEST

AMERICAN ENVIRONMENTAL NETWORK (AEN)
3440 VINCENT ROAD
PLEASANT HILL, CA 94523

PHONE (510) 930-9090

FAX (510) 930-0256

DATE/TIME 3-28-95 pm

COMPANY Geomatrix

AEN REP. Robin Byrns

CONTACT Stacy Anich

AEN PROJ NO. 9502268 *

PROJECT 2436 6385
PROJ # COC #

* A new AEN # will be assigned

ADDITIONAL ANALYSIS CHANGED ANALYSIS OTHER

Total As for SB3-6.5 & SB6-8.0
Standard TAT

ACCEPTED - The above specifications of this Change Order are satisfactory and are hereby accepted

X DATE OF ACCEPTANCE 3/29/95 X SIGNATURE Stacy Anich

PLEASE AUTHORIZE BY SIGNING REQUEST AND RETURN BY FAX

APPENDIX D
19 APRIL 1995 WORK PLAN

19 April 1995
Project 2436.02

Mr. Monroe Wingate
Wingate Company
5980 Stoneridge Drive, Suite 119
Pleasanton, California 94588

Subject: Work Plan to Perform a Shallow Groundwater Investigation
Northwestern Portion of the Park Street Landing Site
Alameda, California

Dear Mr. Wingate:

At your request, Geomatrix Consultants, Inc. (Geomatrix) has prepared this Work Plan for a shallow groundwater survey in the northwestern portion of the Park Street Landing Site located at 2307-2337 Blanding Avenue in Alameda, California (the Site; Figure 1). As you know, petroleum hydrocarbons and associated compounds were detected in soil during a Phase II investigation performed by Geomatrix in February 1995. It is our understanding that you will be seeking refinancing for the property in 1997 and would like a shallow groundwater survey to assess the affect, if any, that the petroleum hydrocarbon-containing soil has had on shallow groundwater quality beneath the site.

The following Work Plan includes a description of the proposed scope of work and a proposed schedule.

OBJECTIVE AND APPROACH

The objective of the shallow groundwater survey is to assess the possible effect that petroleum hydrocarbon-containing soils detected during a recent Site investigation performed by Geomatrix have had on the groundwater beneath the Site. To meet this objective, the shallow groundwater survey will include installing nine borings to a depth of 25 to 30 feet below grade and collecting grab groundwater samples from the borings for chemical analysis. Continuous coring will be performed at four of the ten locations to evaluate the lithology beneath the Site and to better assess the depth to groundwater. The proposed boring locations are shown on Figure 2.

The rationale for each sample location is as follows:

- GWS-7, GWS-8, and GWS-9, GWS-10, GWS-11, and GWS-12 are located along the northeastern portion of the Site adjacent to the Alameda Canal at an approximate 60 foot spacing. Chemical analyses results for groundwater

Mr. Monroe Wingate
Wingate Company
19 April 1995
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samples collected from these locations will aid in assessing whether chemically-affected groundwater within the Site is flowing toward the Alameda Canal.

- GWS-13, GWS-14, and GWS-15 are located in anticipated hydraulically upgradient positions. The location of these samples and their data will help to evaluate the quality of groundwater flowing onto the Site and if there is a possible source of environmental concern located upgradient of the Site.
- GWS-16 is located in an area where chemical analysis results indicated that soil at 7 feet below grade contained elevated concentrations of petroleum hydrocarbons as gasoline and associated compounds. This boring will be drilled approximately five to ten feet deeper than the other borings to assess deeper groundwater quality in the area of the petroleum containing soil.

Grab groundwater samples will be analyzed by a California certified analytical laboratory for the possible presence of total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), and benzene, toluene, ethylbenzene, and xylenes (BTEX). The following section presents the field procedures and analytical methods to be used for this investigation.

SCOPE OF WORK

The following presents the tasks for the groundwater sampling and chemical analysis program.

- Task 1: Health and Safety Plan and Prefield Activities
- Task 2: Groundwater Sampling Program
- Task 3: Chemical Analysis of Groundwater Samples
- Task 4: Data Evaluation and Report Preparation
- Task 5: Project Management and Meetings

The following describes each of these tasks.

Task 1: Health and Safety Plan and Prefield Activities

The Site Health and Safety Plan (HSP) prepared for the Site investigation conducted in February 1995 will be revised to address health and safety issues during planned field activities for this groundwater survey. In addition, Geomatrix will conduct prefield

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19 April 1995
Page 3

activities, including a site meeting with the shallow groundwater survey contractor, marking the groundwater sample locations, obtaining appropriate permits for the borings, notifying Underground Services Alert (USA), a regional underground utility notification service that marks public utilities in the area of the sampling, and retaining a private utility location company to check for the presence of subsurface utilities in the vicinity of each sample location.

Task 2: Groundwater Sampling Program

To allow access for the drilling, the proposed boring locations for the shallow groundwater survey have been located along sidewalks. Therefore, prior to drilling, the sidewalk concrete will be cored. A drill rig will be used to install small-diameter borings for collection of grab groundwater samples. Four of the 10 locations will be continuously cored to assess lithology and estimate the depth to groundwater. One will be installed in all of the borings and the screened interval placed across the estimated depth of the water table. Based on the soil investigation conducted in November 1994, the soil at or near the depth of the anticipated water table at the Site is primarily clay and may have low hydraulic conductivity. Therefore, the well points will remain in place overnight, if needed, to allow groundwater to enter the bore holes. Grab groundwater samples will then be collected using a small-diameter bailer and poured into laboratory-supplied containers.

The samples will be labeled and placed in a chilled cooler for transport to an analytical laboratory under chain-of-custody procedures.

Groundwater sampling equipment that come into contact with Site soil will be steam-cleaned between each sample location and at the conclusion of the field program. Soil cuttings generated during this field program will be placed in a 55-gallon drum and stored temporarily on site. Water used to clean the equipment will be collected and placed in 55-gallon drums or other suitable containers and stored temporarily on site. Geomatrix will not be considered the generator of this waste. However, if requested, Geomatrix can aid in assessing appropriate disposal options and in coordinating the disposal.

Task 3: Chemical Analysis of Groundwater Samples

Groundwater samples collected during Task 2, above, will be submitted to a California certified laboratory for chemical analysis. The groundwater samples will be analyzed for the constituents that were detected in soil samples collected during the former underground drum excavation activities performed at the Site in November 1994. The samples will be analyzed for TPHg using EPA Method 5030/GCFID, TPHd using EPA Method 3550/GCFID, and volatile organic compounds (VOCs) using EPA Method 8240.

Mr. Monroe Wingate
Wingate Company
19 April 1995
Page 4

Task 4: Data Evaluation and Report Preparation

Results from Tasks 2 and 3 will be evaluated and a report prepared. The report will include a description of the lithology encountered during drilling, a discussion of the chemical results, recommendations for additional work, if warranted, and appendices with copies of the laboratory data sheets. A draft copy of the report will be prepared for your review. After we have received your comments, the report will be finalized and transmitted to you.

Task 5: Project Management and Meetings

Geomatrix will conduct periodic telephone calls to update you on the status of the project (an estimated 2 or 3 telephone conversations). For budgeting purposes, we have assumed we will conduct one meeting with you to present and discuss the results of the groundwater sampling program and recommendations, if any, for additional work and a second meeting with ACHCSA staff to present the results. This task also includes administrative activities associated with the project, such as cost tracking and project coordination.

ESTIMATED BUDGET

The following presents the estimated budget to complete the above scope of work. The estimated budget assumes that the Wingate Company will contract directly with the utility location, shallow groundwater survey contractor, and the laboratory, and that field work will not require more than two days.

ESTIMATED SCHEDULE

It is anticipated that prefield and field activities can be completed within 4 to 6 weeks of our receipt of written authorization to proceed, barring delays out of the control of Geomatrix (e.g. subcontractor unavailability, inclement weather, etc.) The groundwater samples will be analyzed on a standard two-week turnaround time. Once laboratory analysis results are received by Geomatrix, a draft report can be prepared within 3 to 4 weeks.



Mr. Monroe Wingate
Wingate Company
19 April 1995
Page 5

We look forward to working with you on this project. If you have any questions, please do not hesitate to call Amanda Spencer, R.G., or either of the undersigned.

Sincerely yours,

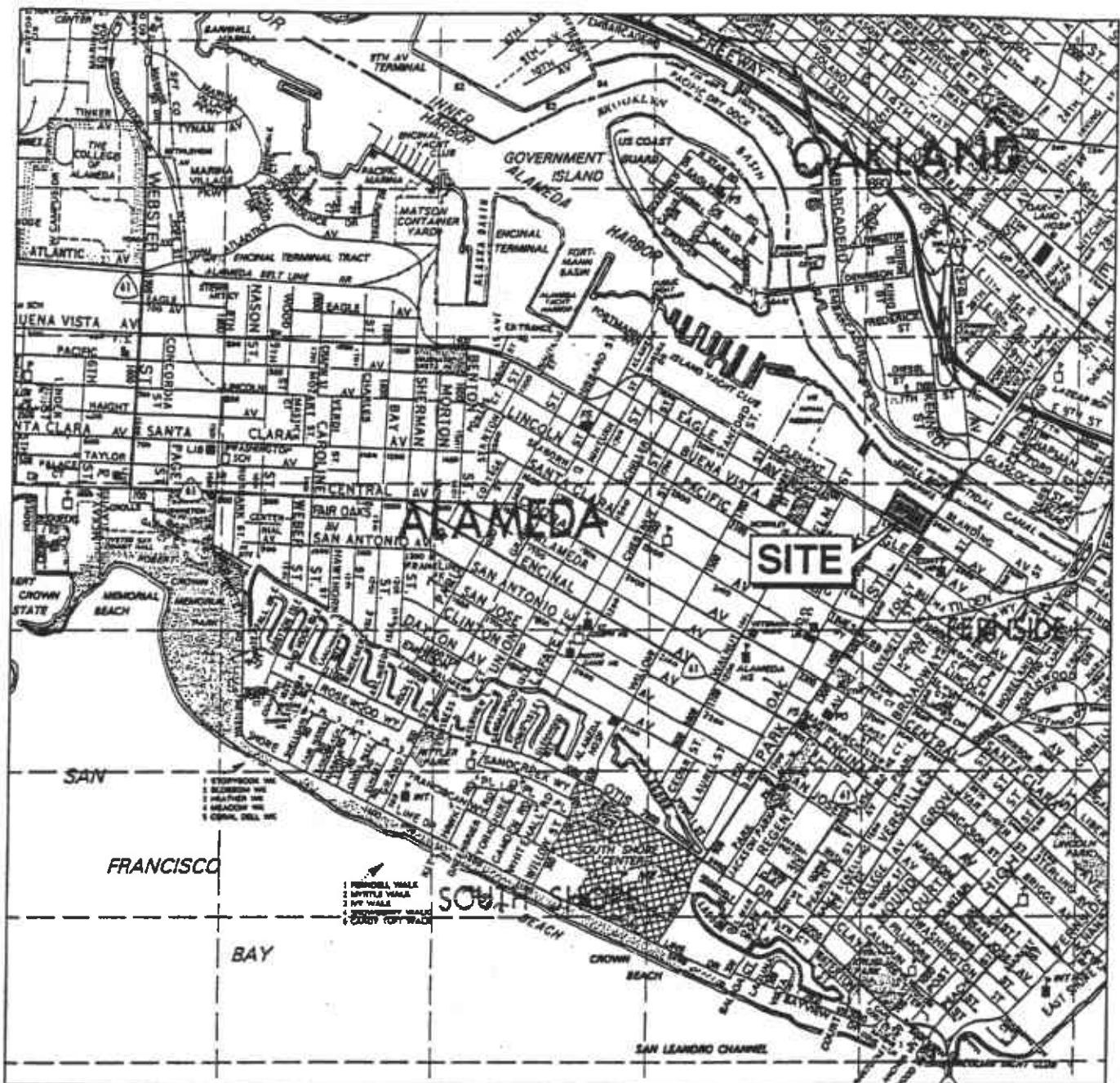
GEOMATRIX CONSULTANTS, INC.

Stacy L. Anich
Project Engineer

Thomas E. Graf, P.E.
Vice President

SLA/TEG/lam
CONTR\2436PLN2.LTI

Attachments

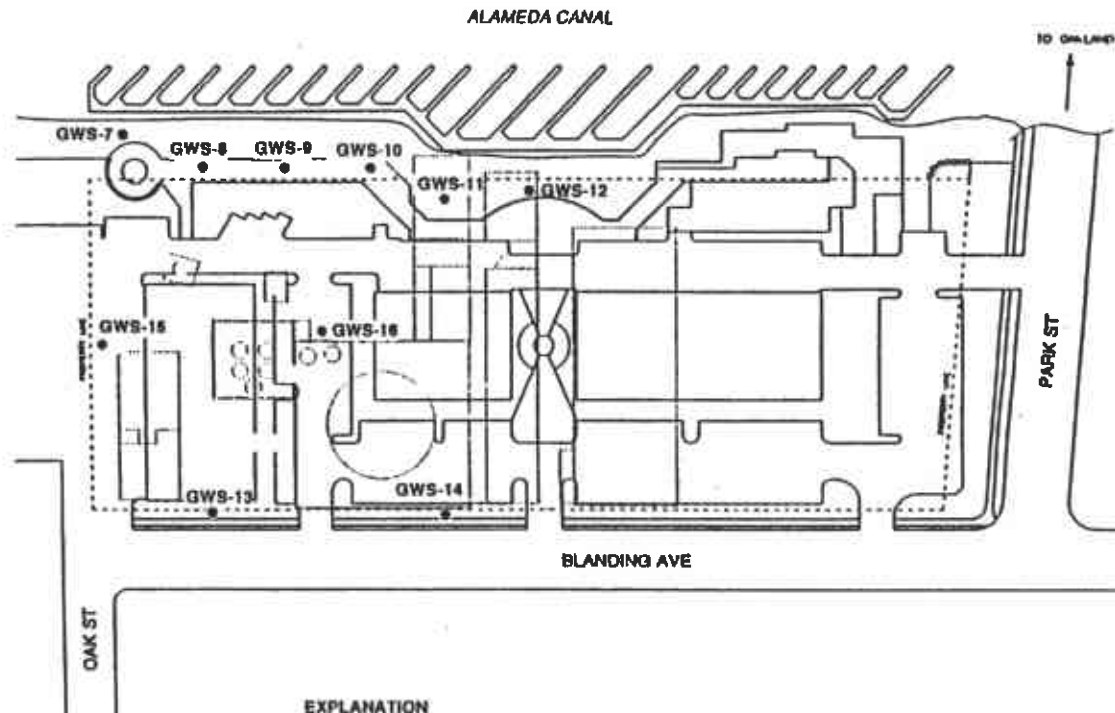


Map taken from "The Thomas Guide: San Francisco, Alameda, and Contra Costa Counties." 1990 edition.

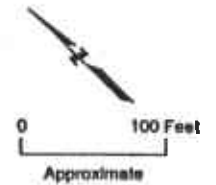


SITE LOCATION MAP
 Park Street Landing Site
 Alameda, California

Figure
 1
 Project No.
 2436



EXPLANATION
 GWS-7 • Proposed shallow groundwater survey point



PROPOSED LOCATIONS OF SHALLOW GROUNDWATER SURVEY POINTS
 Park Street Landing Site
 Alameda, California



Project No.
2436.02

Figure
2

2008.02.01

APPENDIX E

**CHAIN-OF-CUSTODY RECORDS AND LABORATORY ANALYTICAL RESULTS
FROM SHALLOW GROUNDWATER SURVEY SAMPLES**

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

3012 16th Avenue West
Seattle, WA 98119-2029
FAX: (206) 283-5044

May 8, 1995

Stacy Anich, Project Leader
Geomatrix Consultants, Inc.
100 Pine Street, Suite 1000
San Francisco, CA 94111-5112

Dear Ms. Anich:

Enclosed are the results from the testing of material submitted on April 27, 1995 from your 2436.02 project.

The water samples analyzed for diesel by EPA Method 8015 were filtered before extraction. A silica gel clean-up was done on the extracts before analysis.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Beth Albertson

Beth Albertson
Chemist

sao
Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: May 8, 1995

Date Received: April 27, 1995

Project: 2436.02

Date Samples Extracted: May 1 and 2, 1995

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL
BY GC/FID (Modified 8015)
per California LUFT Guidelines
Results Reported as µg/L (ppb)**

<u>Sample ID</u>	<u>Diesel</u>	<u>Surrogate Standard</u> (% Recovery)
GWS-7	<50	84%
GWS-8	60 ^a	73%
GWS-9	1,200 ^a	89%
GWS-10	240 ^a	73%
GWS-11	70 ^a	73%
GWS-12	<50	71%
GWS-13	<50	75%
GWS-14	<50	72%
GWS-15	<50	74%
GWS-16	<50	84%
<u>Quality Assurance</u>		
Blank	<50	73%
GWS-7 (Duplicate)	<50	73%
Spike Blank % Recovery	118%	116%
Spike Blank Duplicate % Recovery	110%	112%
Spike Level	2,500	

^a The material present may be a product lighter than diesel #2.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: May 8, 1995

Date Received: April 27, 1995

Project: 2436.02

Date Samples Extracted: April 28, 1995

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES AND GASOLINE
USING EPA METHODS 8020 AND 8015
Results Reported as µg/L (ppb)**

<u>Sample ID</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl- benzene</u>	<u>Total Xylenes</u>	<u>Gasoline</u>	<u>Surrogate Standard % Recovery</u>
GWS-7	<0.5	<0.5	<0.5	<0.5	<50	110%
GWS-8	36	6.9	27	11	3,700	97%
GWS-9	6,200	140	1,100	1,200	22,000	100%
GWS-10	880	40	100	50	11,000	104%
GWS-11	<0.5	1.0	1.4	8.4	1,400	113%
GWS-12	<0.5	0.6	<0.5	<0.5	<50	105%
GWS-13	<0.5	<0.5	<0.5	<0.5	<50	112%
GWS-14	<0.5	<0.5	<0.5	<0.5	<50	114%
GWS-15	<0.5	<0.5	<0.5	<0.5	<50	116%
GWS-16	<0.5	<0.5	2.0	1.1	70	112%
<u>Quality Assurance</u>						
Blank	<0.5	<0.5	<0.5	<0.5	<50	99%
GWS-7 (Duplicate)	<0.5	<0.5	<0.5	<0.5	<50	110%
Spike Blank % Recovery	110%	90%	90%	94%	113%	101%
Spike Blank Duplicate % Recovery	109%	94%	90%	93%	121%	101%
Spike Level	100	100	100	300	1,000	

BA CO
04.27.95
2:02

Chain-of-Custody Record No 574 Date 4/26/95 Page 1 of 1

Project No 2456.02			ANALYSIS										REMARKS						
Samplers (Signatures) Stacy Anich			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX										Additional comments
Date	Time	Sample Number																	
4/24	1120	GWS-7					X	X	X										* phase fitted down sample prior to analysis
4/24	1430	GWS-8					X	X	X										* low character sample will
4/25	1310	GWS-9					X	X	X										* sent down by hand will
4/25	1400	GWS-10					X	X	X										
4/25	1430	GWS-11					X	X	X										" #58732 sm. Bubble
4/25	1450	GWS-12					X	X	X										" #58736, 37, 38 - have sm. Bubble
4/25	1545	GWS-13					X	X	X										
4/25	1600	GWS-14					X	X	X										VOC #58747+ -48 - have small Bubble
4/25	1615	GWS-15					X	X	X										
4/25	1645	GWS-16					X	X	X										

Turnaround time: **STANDARD** Results to: **STACY ANICH** Total No. of containers: **3**

Relinquished by <i>Stacy Anich</i> Signature: <i>Stacy Anich</i> Printed name: STACY ANICH Company: <i>Siromatics</i>	Date: <i>4/26/95</i>	Relinquished by	Date	Relinquished by	Date	Method of shipment: FED EX
Received by <i>Cathy Riggs</i> Signature: <i>Cathy Riggs</i> Printed name: CATHY RIGGS	Time: <i>10:15</i>	Received by	Time	Received by	Time	Laboratory comments and Log No

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

GEOMATRIX CONSULTANTS
100 PINE ST., SUITE 1000
SAN FRANCISCO, CA 94111

ATTN: STACY ANICH
CLIENT PROJ. ID: 2436.02

C.O.C. NUMBER: 0652

REPORT DATE: 05/11/95

DATE(S) SAMPLED: 04/24/95

DATE RECEIVED: 04/26/95

AEN WORK ORDER: 9504309


PROJECT SUMMARY:

On April 26, 1995, this laboratory received 1 soil sample(s).

Client requested sample(s) be analyzed for inorganic and organic parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.


Larry Klein
Laboratory Director

GEOMATRIX CONSULTANTS

SAMPLE ID: GWS-7-5'
 AEN LAB NO: 9504309-01
 AEN WORK ORDER: 9504309
 CLIENT PROJ. ID: 2436.02

DATE SAMPLED: 04/24/95
 DATE RECEIVED: 04/26/95
 REPORT DATE: 05/11/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3550	-		Extrn Date	04/28/95
TPH as Diesel	GC-FID	ND	1	mg/kg	05/05/95
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	04/26/95
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	04/26/95
VOCs in Soil by 8240	EPA 8240				
Acetone	67-64-1	ND	100	ug/kg	05/03/95
Benzene	71-43-2	ND	5	ug/kg	05/03/95
Bromodichloromethane	75-27-4	ND	5	ug/kg	05/03/95
Bromoform	75-25-2	ND	5	ug/kg	05/03/95
Bromomethane	74-83-9	ND	10	ug/kg	05/03/95
2-Butanone	78-93-3	ND	100	ug/kg	05/03/95
Carbon Disulfide	75-15-0	ND	10	ug/kg	05/03/95
Carbon Tetrachloride	56-23-5	ND	5	ug/kg	05/03/95
Chlorobenzene	108-90-7	ND	5	ug/kg	05/03/95
Chloroethane	75-00-3	ND	10	ug/kg	05/03/95
2-Chloroethyl Vinyl Ether	110-75-8	ND	10	ug/kg	05/03/95
Chloroform	67-66-3	ND	5	ug/kg	05/03/95
Chloromethane	74-87-3	ND	10	ug/kg	05/03/95
Dibromochloromethane	124-48-1	ND	5	ug/kg	05/03/95
1,1-Dichloroethane	75-43-3	ND	5	ug/kg	05/03/95
1,2-Dichloroethane	107-06-2	ND	5	ug/kg	05/03/95
1,1-Dichloroethene	75-35-4	ND	5	ug/kg	05/03/95
cis-1,2-Dichloroethene	156-59-2	ND	5	ug/kg	05/03/95
trans-1,2-Dichloroethene	156-60-5	ND	5	ug/kg	05/03/95
1,2-Dichloropropane	78-87-5	ND	5	ug/kg	05/03/95
cis-1,3-Dichloropropene	10061-01-5	ND	5	ug/kg	05/03/95
trans-1,3-Dichloropropene	10061-02-6	ND	5	ug/kg	05/03/95
Ethylbenzene	100-41-4	ND	5	ug/kg	05/03/95
2-Hexanone	591-78-6	ND	50	ug/kg	05/03/95
Methylene Chloride	75-09-2	ND	20	ug/kg	05/03/95
4-Methyl-2-pentanone	108-10-1	ND	50	ug/kg	05/03/95
Styrene	100-42-5	ND	5	ug/kg	05/03/95
1,1,2,2-Tetrachloroethane	79-34-5	ND	5	ug/kg	05/03/95
Tetrachloroethene	127-18-4	ND	5	ug/kg	05/03/95
Toluene	108-88-3	ND	5	ug/kg	05/03/95
1,1,1-Trichloroethane	71-55-6	ND	5	ug/kg	05/03/95
1,1,2-Trichloroethane	79-00-5	ND	5	ug/kg	05/03/95
Trichloroethene	79-01-6	ND	5	ug/kg	05/03/95

GEOMATRIX CONSULTANTS

SAMPLE ID: GWS-7-5'
 AEN LAB NO: 9504309-01
 AEN WORK ORDER: 9504309
 CLIENT PROJ. ID: 2436.02

DATE SAMPLED: 04/24/95
 DATE RECEIVED: 04/26/95
 REPORT DATE: 05/11/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Vinyl Acetate	108-05-4	ND	50	ug/kg	05/03/95
Vinyl Chloride	75-01-4	ND	10	ug/kg	05/03/95
Xylenes Total	1330-20-7	ND	10	ug/kg	05/03/95
CCR 17 Metals					
Ag Silver	EPA 6010	2 *	1	mg/kg	04/27/95
As Arsenic	EPA 7060	25 *	0.5	mg/kg	04/27/95
Ba Barium	EPA 6010	340 *	1	mg/kg	04/27/95
Be Beryllium	EPA 6010	1 *	1	mg/kg	04/27/95
Cd Cadmium	EPA 6010	ND	2	mg/kg	04/27/95
Co Cobalt	EPA 6010	40 *	2	mg/kg	04/27/95
Cr Chromium	EPA 6010	64 *	5	mg/kg	04/27/95
Cu Copper	EPA 6010	1,700 *	5	mg/kg	04/27/95
Hg Mercury	EPA 7471	ND	0.06	mg/kg	05/02/95
Mo Molybdenum	EPA 6010	ND	2	mg/kg	04/27/95
Ni Nickel	EPA 6010	38 *	10	mg/kg	04/27/95
Pb Lead	EPA 6010	71 *	10	mg/kg	04/27/95
Sb Antimony	EPA 6010	ND	10	mg/kg	04/27/95
Se Selenium	EPA 7740	ND	1	mg/kg	04/27/95
Tl Thallium	EPA 6010	ND	10	mg/kg	04/27/95
V Vanadium	EPA 6010	120 *	5	mg/kg	04/27/95
Zn Zinc	EPA 6010	590 *	10	mg/kg	04/27/95
#Extraction for BNAs	EPA 3550	-		Extrn Date	05/03/95
Semi-Volatile Organics					
Acenaphthene	EPA 8270 83-32-9	ND	330	ug/kg	05/04/95
Acenaphthylene	208-96-8	ND	330	ug/kg	05/04/95
Anthracene	120-12-7	ND	330	ug/kg	05/04/95
Benzidine	92-87-5	ND	1600	ug/kg	05/04/95
Benzoic Acid	65-85-0	ND	1600	ug/kg	05/04/95
Benzo(a)anthracene	56-55-3	ND	330	ug/kg	05/04/95
Benzo(b)fluoranthene	205-99-2	ND	330	ug/kg	05/04/95
Benzo(k)fluoranthene	207-08-9	ND	330	ug/kg	05/04/95
Benzo(g,h,i)perylene	191-24-2	ND	330	ug/kg	05/04/95
Benzo(a)pyrene	50-32-8	ND	330	ug/kg	05/04/95
Benzyl Alcohol	100-51-6	ND	660	ug/kg	05/04/95
Bis(2-chloroethoxy)methane	111-91-1	ND	330	ug/kg	05/04/95
Bis(2-chloroethyl) Ether	111-44-4	ND	330	ug/kg	05/04/95
Bis(2-chloroisopropyl) Ether	108-60-1	ND	330	ug/kg	05/04/95
Bis(2-ethylhexyl) Phthalate	117-81-7	ND	330	ug/kg	05/04/95
4-Bromophenyl Phenyl Ether	101-55-3	ND	330	ug/kg	05/04/95
Butylbenzyl Phthalate	85-68-7	ND	330	ug/kg	05/04/95

GEOMATRIX CONSULTANTS

SAMPLE ID: GWS-7-5'
 AEN LAB NO: 9504309-01
 AEN WORK ORDER: 9504309
 CLIENT PROJ. ID: 2436.02

DATE SAMPLED: 04/24/95
 DATE RECEIVED: 04/26/95
 REPORT DATE: 05/11/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
4-Chloroaniline	106-47-8	ND	660	ug/kg	05/04/95
2-Chloronaphthalene	91-58-7	ND	330	ug/kg	05/04/95
4-Chlorophenyl Phenyl Ether	7005-72-3	ND	330	ug/kg	05/04/95
Chrysene	218-01-9	ND	330	ug/kg	05/04/95
Dibenzo(a,h)anthracene	53-70-3	ND	330	ug/kg	05/04/95
Dibenzofuran	132-64-9	ND	330	ug/kg	05/04/95
Di-n-butyl Phthalate	84-74-2	ND	330	ug/kg	05/04/95
1,2-Dichlorobenzene	95-50-1	ND	330	ug/kg	05/04/95
1,3-Dichlorobenzene	541-73-1	ND	330	ug/kg	05/04/95
1,4-Dichlorobenzene	106-46-7	ND	330	ug/kg	05/04/95
3,3'-Dichlorobenzidine	91-94-1	ND	660	ug/kg	05/04/95
Diethyl Phthalate	84-66-2	ND	330	ug/kg	05/04/95
Dimethyl Phthalate	131-11-3	ND	330	ug/kg	05/04/95
2,4-Dinitrotoluene	121-14-2	ND	330	ug/kg	05/04/95
2,6-Dinitrotoluene	606-20-2	ND	330	ug/kg	05/04/95
Di-n-octyl Phthalate	117-84-0	ND	330	ug/kg	05/04/95
Fluoranthene	206-44-0	ND	330	ug/kg	05/04/95
Fluorene	86-73-7	ND	330	ug/kg	05/04/95
Hexachlorobenzene	118-74-1	ND	330	ug/kg	05/04/95
Hexachlorobutadiene	87-68-3	ND	330	ug/kg	05/04/95
Hexachlorocyclopentadiene	77-47-4	ND	330	ug/kg	05/04/95
Hexachloroethane	67-72-1	ND	330	ug/kg	05/04/95
Indeno(1,2,3-cd)pyrene	193-39-5	ND	330	ug/kg	05/04/95
Isophorone	78-59-1	ND	330	ug/kg	05/04/95
2-Methylnaphthalene	91-57-6	ND	330	ug/kg	05/04/95
Naphthalene	91-20-3	ND	330	ug/kg	05/04/95
2-Nitroaniline	88-74-4	ND	1600	ug/kg	05/04/95
3-Nitroaniline	99-09-2	ND	1600	ug/kg	05/04/95
4-Nitroaniline	100-01-6	ND	1600	ug/kg	05/04/95
Nitrobenzene	98-95-3	ND	330	ug/kg	05/04/95
N-Nitrosodiphenylamine	86-30-6	ND	330	ug/kg	05/04/95
N-Nitrosodi-n-propylamine	621-64-7	ND	330	ug/kg	05/04/95
Phenanthrene	85-01-8	ND	330	ug/kg	05/04/95
Pyrene	129-00-0	ND	330	ug/kg	05/04/95
1,2,4-Trichlorobenzene	120-82-1	ND	330	ug/kg	05/04/95
4-Chloro-3-methylphenol	59-50-7	ND	330	ug/kg	05/04/95
2-Chlorophenol	95-57-8	ND	330	ug/kg	05/04/95
2,4-Dichlorophenol	120-83-2	ND	330	ug/kg	05/04/95
2,4-Dimethylphenol	105-67-9	ND	330	ug/kg	05/04/95
4,6-Dinitro-2-methylphenol	534-52-1	ND	1600	ug/kg	05/04/95
2,4-Dinitrophenol	51-28-5	ND	1600	ug/kg	05/04/95
2-Methylphenol	95-48-7	ND	330	ug/kg	05/04/95
4-Methylphenol	106-44-5	ND	330	ug/kg	05/04/95

GEOMATRIX CONSULTANTS

SAMPLE ID: GWS-7-5'
AEN LAB NO: 9504309-01
AEN WORK ORDER: 9504309
CLIENT PROJ. ID: 2436.02

DATE SAMPLED: 04/24/95
DATE RECEIVED: 04/26/95
REPORT DATE: 05/11/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
2-Nitrophenol	88-75-5	ND	330	ug/kg	05/04/95
4-Nitrophenol	100-02-7	ND	1600	ug/kg	05/04/95
Pentachlorophenol	87-86-5	ND	1600	ug/kg	05/04/95
Phenol	108-95-2	ND	330	ug/kg	05/04/95
2,4,5-Trichlorophenol	95-95-4	ND	330	ug/kg	05/04/95
2,4,6-Trichlorophenol	88-06-2	ND	330	ug/kg	05/04/95

Reporting limits for metals elevated due to matrix interference.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9504309

CLIENT PROJECT ID: 2436.02

Quality Control Summary

1,1-Dichloroethene recovery was high for EPA 8240 LCS on 05/02/95; however, client matrix spike recoveries were all within control and sample results were ND. Results were validated and released.

All other laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 3550 GCFID

AEN JOB NO: 9504309
 DATE EXTRACTED: 04/28/95
 INSTRUMENT: D
 MATRIX: SOIL

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery n-Pentacosane
05/05/95	GWS-7-5'	01	88
QC Limits:			45-110

DATE EXTRACTED: 04/28/95
 DATE ANALYZED: 05/05/95
 SAMPLE SPIKED: LCS
 INSTRUMENT: C

Laboratory Control Sample

Analyte	Spike Added (mg/kg)	LCS Result (mg/kg)	Percent Recovery	QC Limits
				Percent Recovery
Diesel	36.3	31.4	87	53-103

AEN LAB NO: 0428-BLANK
 DATE EXTRACTED: 04/28/95
 DATE ANALYZED: 05/05/95

Method Blank

	Result (mg/kg)	Reporting Limit (mg/kg)
Diesel	ND	1

QUALITY CONTROL DATA

METHOD: EPA 8240

AEN JOB NO: 9504309
 AEN LAB NO: 0503-BLANK
 DATE ANALYZED: 05/03/95
 INSTRUMENT: 12
 MATRIX: SOIL

Method Blank

Analyte	CAS #	Result (ug/kg)	Reporting Limit (ug/kg)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,2-Dichlorobenzene	95-50-1	ND	5
1,3-Dichlorobenzene	541-73-1	ND	5
1,4-Dichlorobenzene	106-46-7	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1,2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
cis-1,2-Dichloroethene	156-59-2	ND	5
trans-1,2-Dichloroethene	156-60-5	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	20
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	5
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	ND	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	1330-20-7	ND	10

QUALITY CONTROL DATA

METHOD: EPA 8240

AEN JOB NO: 9504309
 INSTRUMENT: 12
 MATRIX: SOIL

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery		
			1,2-Dichloroethane-d ₄	Toluene-d ₈	p-Bromofluorobenzene
05/03/95	GWS-7-5'	01	96	102	91
QC Limits:			46-138	81-124	70-111

DATE ANALYZED: 05/02/95
 SAMPLE SPIKED: LCS
 INSTRUMENT: 12

Laboratory Control Sample

Analyte	Spike Added (ug/kg)	LCS Result (ug/kg)	Percent Recovery	QC Limits
				Percent Recovery
1,1-Dichloroethene	50.0	89.3	179 #	75-151
Trichloroethene	50.0	51.3	103	82-125
Benzene	50.0	53.0	106	87-131
Toluene	50.0	53.9	108	81-122
Chlorobenzene	50.0	49.1	98	91-113

#: Outside laboratory quality control limits

QUALITY CONTROL DATA

METHOD: EPA 8240

AEN JOB NO: 9504309
 DATE ANALYZED: 05/02/95
 SAMPLE SPIKED: 9504216-37
 INSTRUMENT: 12
 MATRIX: SOIL

Matrix Spike Recovery Summary

Analyte	Spike Conc. (ug/kg)	Sample Result (ug/kg)	MS Result (ug/kg)	MSD Result (ug/kg)	Average Percent Recovery	RPD	QC Limits	
							Percent Recovery	RPD
1,1-Dichloroethene	50.0	ND	75.5	73.3	149	3	76-161	15
Trichloroethene	50.0	ND	50.6	49.6	100	2	71-130	11
Benzene	50.0	ND	55.1	55.1	110	<1	90-128	11
Toluene	50.0	ND	50.0	47.4	97	5	64-129	13
Chlorobenzene	50.0	ND	45.5	44.8	90	2	89-115	13

R-7,8-M

9504309

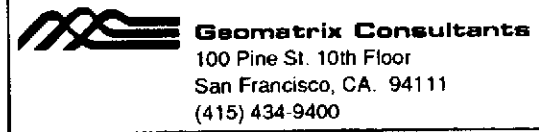
Chain-of-Custody Record No. **0652** Date: **4/26/95** Page **1** of **1**

Project No.: 2436.02			ANALYSES										REMARKS				
Samplers (Signatures): <i>Stacy Anich</i>			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	COC 17 METALS			Cooled	Soil (S) or water (W)	Acidified	Number of containers	Additional comments
Date	Time	Sample Number															
4/24	8:50	6WS-7-5'			X	X		X		X			X	S		1	Please fax results when available

OIA

Turnaround time: **STANDARD** Results to: **STACY ANICH** Total No. of containers: **1**

Relinquished by: <i>Stacy Anich</i> Signature: <i>Stacy Anich</i> Printed name: STACY ANICH Company: Geomatrix	Date: 4/26 1995	Relinquished by: <i>Diana Ruskfeldt</i> Signature: <i>Diana Ruskfeldt</i> Printed name: Diana Ruskfeldt Company: Geomatrix	Date: 4/26 1995	Relinquished by: <i>Neil Herrick</i> Signature: <i>Neil Herrick</i> Printed name: NEIL HERRICK Company: AEN	Date: 4/26 1995	Method of shipment: pickup
Received by: <i>Marianne Lepumau</i> Signature: <i>Marianne Lepumau</i> Printed name: MARIANNE LEPUMAU Company: Geomatrix	Time: 11:10	Received by: <i>Neil Herrick</i> Signature: <i>Neil Herrick</i> Printed name: NEIL HERRICK Company: AEN	Time: 11:55	Received by: <i>Lori L. Pruitt</i> Signature: <i>Lori L. Pruitt</i> Printed name: LORI L. PRUITT Company: AEN	Time: 1:25	Laboratory comments and Log No.:



American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

GEOMATRIX CONSULTANTS
100 PINE ST., SUITE 1000
SAN FRANCISCO, CA 94111

ATTN: STACY ANICH
CLIENT PROJ. ID: 2436.02

C.O.C. NUMBER: 0652

REPORT DATE: 06/29/95

DATE(S) SAMPLED: 04/24/95

DATE RECEIVED: 04/26/95

AEN WORK ORDER: 9506239

PROJECT SUMMARY:

On April 26, 1995, this laboratory received 1 soil sample(s).

On June 16, 1995, client requested sample(s) be analyzed for additional inorganic parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.


Larry Klein
Laboratory Director

GEOMATRIX CONSULTANTS

SAMPLE ID: GWS-7-5'
AEN LAB NO: 9506239-01
AEN WORK ORDER: 9506239
CLIENT PROJ. ID: 2436.02

DATE SAMPLED: 04/24/95
DATE RECEIVED: 04/26/95
REPORT DATE: 06/29/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion for ICP - TCLP	EPA 3010	-		Prep Date	06/27/95
Copper in TCLP Extract	EPA 6010	0.04 *	0.01	mg/L	06/28/95
#TCLP Extraction	EPA 1312	-		Extrn Date	06/22/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9506239

CLIENT PROJECT ID: 2436.02

Quality Control Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

AEN JOB NO: 9506239
 SAMPLE SPIKED: DI WATER
 DATE(S) ANALYZED: 06/28/95
 MATRIX: WATER

Method Blank and Spike Recovery Summary

Analyte	Inst./ Method	Spike Conc. (mg/L)	Blank Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD	QC Limits	
								Percent Recovery	RPD
Cu, Copper	ICP/6010	0.125	ND	0.1326	0.1362	108	3	83-114	5

SAMPLE SPIKED: 9506239-01
 DATE EXTRACTED: 06/22/95
 DATE(S) ANALYZED: 06/28/95
 MATRIX: TCLP

Matrix Spike Recovery Summary

Analyte	Inst./ Method	Sample Result (mg/L)	Spike Added (mg/L)	MS Result (mg/L)	Percent Recovery
Cu, Copper	ICP/6010	0.041	0.125	0.1767	109

*** END OF REPORT ***

1500254
 R-7,8-M
 9504309 RB

Chain-of-Custody Record			No. 0652										Date: 4/26/95		Page 1 of 1		
Project No.: 2436.02			ANALYSES										REMARKS				
Samplers (Signatures): <i>Stacy Anich</i>			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	COE 17-METALS	EPA 1312 for Cu	Standard TAT	Cooled	Soil (S) or water (W)	Acidified	Number of containers	Additional comments
Date	Time	Sample Number															
4/24	8:50	6WS-7-5'			X	X		X	X			X	S				<p>Please fax results when available</p> <p>INVOICE TO MONROE Wingate</p>
			Turnaround time: STANDARD				Results to: STACY ANICH				Total No. of containers: 1						
Relinquished by:			Date: 4/26/95			Relinquished by:			Date: 4/26/95			Date: 4/26/95			Method of shipment: pickup		
Signature: <i>Stacy Anich</i>			Signature: <i>Diana Ruskfeldt</i>			Signature: <i>Neil Herrick</i>			Signature: <i>Lori L. Pruitt</i>			Signature: <i>Lori L. Pruitt</i>			Laboratory comments and Log No.: 6/16/95 additional analysis requested per Stacy Anich R Byers		
Printed name: STACY ANICH			Printed name: Diana Ruskfeldt			Printed name: NEIL HERRICK			Printed name: Lori L. Pruitt			Printed name: AEN					
Company: Geomatrix			Company: Geomatrix			Company: Geomatrix			Company: AEN			Company: AEN					
Received by:			Time: 11:55			Received by:			Time: 11:55			Time: 12:45					
Signature: <i>Marianne Leporeau</i>			Signature: <i>Neil Herrick</i>			Signature: <i>Neil Herrick</i>			Signature: <i>Lori L. Pruitt</i>			Signature: <i>Lori L. Pruitt</i>					
Printed name: MARIANNE Leporeau			Printed name: NEIL HERRICK			Printed name: NEIL HERRICK			Printed name: Lori L. Pruitt			Printed name: AEN					
Company: Geomatrix			Company: Geomatrix			Company: Geomatrix			Company: AEN			Company: AEN					

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 (415) 434-9400