SITE CHARACTERIZATION
BP OIL COMPANY SERVICE STATION NO. 11060
SEATTLE, WASHINGTON

PROJECT NO. WA209.10

December 23, 1992

Prepared for

BP Oil Company - Northwest Division
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Prepared by

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BP OIL COMPANY SERVICE STATION NO. 11060
SEATTLE, WASHINGTON

December 23, 1992

Geraghty & Miller, Inc. is submitting this report to BP Oil Company for work performed at BP Service Station No. 11060. The report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

Respectfully submitted,

GERAGHTY & MILLER, INC.

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SR 2/23/93 OW
DEPARTMENT OF ECOLOGY
NWRO/TCP TANK UNIT

INTERIM CLEANUP REPORT	☒
SITE CHARACTERIZATION	☐
FINAL CLEANUP REPORT	☐
OTHER _____	☐
AFFECTED MEDIA: SOIL	☒
OTHER _____ GW	☒
INSPECTOR (INIT.) DATE 2-11-93	

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SITE CHARACTERIZATION
BP OIL COMPANY SERVICE STATION NO. 11060
SEATTLE, WASHINGTON

INTRODUCTION

At the request of BP Oil Company (BP), Geraghty & Miller, Inc. (Geraghty & Miller) has performed site characterization activities at BP Service Station No. 11060 (the site) located at 4580 Fauntleroy Way Southwest in Seattle, Washington (Figure 1). The scope of work for this investigation was presented to BP in a letter from Geraghty & Miller dated December 5, 1991. The purpose of this work is to comply with the Washington State Model Toxics Control Act (MTCA) site characterization reporting requirements as delineated in Washington Administration Code (WAC) 173-340-450(4)(b).

The objectives of the site characterization at the above-referenced site were to accomplish the following:

- Investigate the on-site subsurface soil and ground-water conditions.
- Evaluate the extent of residual hydrocarbons in soil and dissolved hydrocarbons in ground water, if encountered.
- Determine the flow direction and gradient of shallow ground water beneath the site.
- Identify the number and location of municipal and domestic water supply wells and sensitive land-use areas within a 1/2-mile radius of the site.
- Identify surrounding populations and sensitive areas that may be potentially affected by released hydrocarbons.

SITE AND SURROUNDING AREA DESCRIPTION

BP Service Station No. 11060 is an operating service station located northeast of and adjacent to the intersection of Fauntleroy Way Southwest and Southwest Alaska Street in Seattle, Washington. The site is bounded by Fauntleroy Way Southwest to the northwest, Southwest Alaska Street to the south, and an alley to the east. Site improvements include a station building/convenience store, three pump islands covered by two canopies, and a UST complex located west and southwest of the station building (Figure 2). The ground surface of the site is relatively flat and is paved with asphalt or concrete, except in areas occupied by landscaping planters.

The site and the immediate area around the site are zoned for commercial use (Gergich, pers. comm. 1992). Nearby properties are used for commercial purposes, including several auto dealerships and a service station (Figure 3).

Drinking water is supplied to the site by pipeline from the City of Seattle's Cedar River reservoir (Tonkin, pers. comm. 1992). A review of Washington State Department of Ecology (Ecology) well records indicates that no water-supply wells are located within a 1/2-mile radius of the site (Ecology 1992). No sensitive land-use areas are located within a 1/2-mile radius of the site (Seattle no date). The nearest body of surface water to the site is Puget Sound, which is located approximately 1 mile to the west. A completed copy of the BP Sensitive Receptors Survey form is included as Appendix A.

FIELD ACTIVITIES

In March 1992, Geraghty & Miller subcontracted Holt Testing, Inc. of Puyallup, Washington to drill soil borings, collect soil samples, and install ground-water monitoring wells. The locations of these wells are shown in Figure 2. The objectives of the investigation were to characterize the on-site near-surface-soil and ground-water conditions.

DRILLING AND SOIL SAMPLING METHODS

Prior to initiating the subsurface investigation, on-site underground utilities and product distribution lines were located. As an additional precaution, the uppermost 4 feet of the borehole was dug by hand to verify that no buried utilities were present. Three soil borings were attempted at the site on March 23, 1992 for the purposes of logging soils, collecting soil samples for laboratory analysis, and installing monitoring wells. Only Boring MW-3 could be completed at this time due to the presence of loose and sloughing pea gravel that inhibited suitable advancement of the auger. Soil descriptions are provided on the boring log in Appendix B.

The completed soil boring was drilled with a Mobile B-57 drill rig using a hollow-stem auger and was advanced to a total depth of approximately 34 feet below land surface (bls). During advancement of the borehole, soil samples were obtained at approximately 5-foot intervals for purposes of describing the encountered soils and collecting soil samples for laboratory analyses. In conformance with BP protocol, three soil samples (including one blind duplicate) from Boring MW-3 were retained for analysis of physical and chemical characteristics.

The soil samples were obtained by driving an 18-inch long, 2.5-inch inside-diameter split-spoon sampler lined with three brass sample tubes into undisturbed sediments with a 300-pound hammer free-falling 30 inches. The number of hammer blows required to drive the sampler every 6 inches was recorded on field logs. Blow counts were recorded for the sole purpose of determining relative density of the subsurface soils. These data should not be construed as appropriate for determining soil parameters to be used in structural design or construction.

The soils collected in the upper two brass sample tubes at each sampling interval were described by a Geraghty & Miller field geologist and placed in a sealed plastic bag for field analysis of volatile organic vapors using a Thermo Environmental Instruments,

Inc. Model 580s OVM™ (organic vapor meter) photoionization detector (PID) with a lamp energy of 10.6 electron volts. The PID was calibrated each day using 100 parts per million (ppm) isobutylene gas. The PID has a programmed response factor which allows it to measure air quality in terms of ppm of benzene.

The soils collected inside the bottom brass sample tube were retained for possible laboratory analysis. The results of the PID screening were used to help determine which soil samples would be sent to the laboratory for chemical analysis. All reusable sampling equipment was decontaminated between each use by washing with a laboratory-grade detergent and rinsing with distilled water.

As each soil sample was retained for laboratory analysis, the ends of the brass sample tube were covered with aluminum foil, capped with plastic covers, and sealed with self-bonding, adhesiveless tape. The sealed sample was labeled, placed in a water-tight bag, and stored in a portable cooler with ice. A chain-of-custody record was prepared and accompanied the soil samples to the laboratory to document sample identities, requested analyses, sample handling, and receipt by the laboratory.

MONITORING WELL CONSTRUCTION AND DEVELOPMENT

On March 23, 1992 the newly drilled soil boring was converted into Monitoring Well MW-3. The monitoring well was constructed using 4-inch diameter Schedule 40 PVC casing and 0.02-inch machine-slotted screen. A sand pack was installed within the annular space of the well from the bottom of the well screen to an elevation approximately 4 feet above the top of the well screen. A bentonite seal was then installed in the annular space above the sand to an elevation about 12 inches below the ground surface. The well was completed by filling the remaining portion of the annular space with concrete, then placing a flush-to-grade, traffic-rated monument cover over the wellhead. A locking well cap was installed on the wellhead to prevent unauthorized

access. Well construction details are shown on the boring log in Appendix B and are summarized in Table 1.

Monitoring Well MW-3 was developed shortly after installation to improve the hydraulic connection between the well screen and the surrounding soils. Well development consisted of surging the ground water column in each well with a decontaminated hand bailer. Ground water was then purged with a bailer until the water was free of appreciable sediment. All development water was temporarily stored on-site in 55-gallon drums pending treatment and proper disposal. The purged water was treated using an air-sparging unit to remove the dissolved hydrocarbons from the water. Samples of the treated water were collected and analyzed to confirm that concentrations of dissolved hydrocarbons were below Metro discharge limits. Upon Metro's approval, the treated water was discharged to the sanitary sewer.

Interior and exterior surfaces of the bailer and other reusable development equipment were decontaminated between use at each well. Decontamination procedures consisted of washing with a laboratory-grade, nonphosphate detergent solution, rinsing with potable water, then rinsing with deionized water.

GROUND-WATER SAMPLING

Ground-water samples were collected from the new monitoring well on April 8, 1992 for laboratory analyses. Depth-to-water and liquid-phase-hydrocarbon measurements were collected from the well in preparation for ground-water sampling. No liquid-phase hydrocarbons were found in the well; therefore the well was sampled. Prior to sampling, a minimum of three well volumes of ground water was purged from each well using a 3-inch diameter PVC bailer. Purge water was temporarily stored on-site in 55-gallon drums pending proper disposal. Equipment decontamination procedures were as described in the previous section.

Ground-water samples were collected with disposable polyethylene bailers and transferred into sample containers provided by the laboratory. Field measurements for pH, specific conductance, and temperature were performed on each ground-water sample at the time each sample was obtained. In addition, each sample of ground water was visually inspected for the presence of a hydrocarbon-sheen while contained within the bailer. Sample containers were sealed, labeled, and placed in a portable cooler with ice. Chain-of-custody documentation was prepared and accompanied the samples to the laboratory.

WATER-LEVEL MEASUREMENTS

Static ground-water elevations were measured in Monitoring Well MW-3 on April 8, May 29, and June 25, 1992. The depth-to-water level was measured using a Slope Indicator™ electric water-level meter. The elevations of the top of the well casing and the adjacent ground surface have not been surveyed; therefore, water levels are referenced to the northern rim of the PVC well casing. Elevation measurements were recorded to within an accuracy of ±0.01 foot and are summarized in Table 2. Decontamination procedures used during the measurement of ground-water levels were as described in the Monitoring Well Construction and Development section of this report.

RESULTS OF SITE CHARACTERIZATION

The following section summarizes the findings of the subsurface investigation and presents results of the laboratory analyses.

GEOLOGIC CONDITIONS

The on-site soils encountered in the boring consisted of approximately 5 to 6 feet of well-graded gravelly sand fill overlying native sands, silts, and clay (Appendix B). The

native soils were very loose/very soft to a depth of approximately 15 feet bls, then became increasingly dense/stiff to the boring termination depth of 34 feet bls. The soils were generally moist to a depth of about 14 feet. Below 14 feet, the soils were generally wet.

The on-site soils have been geologically mapped as glacial advance outwash sand and silt belonging to the Esperance Sand Member of the Vashon Glacial Drift (Galster and Laprade 1991). The native soils encountered in the boring appear to be consistent to this classification.

HYDROLOGIC CONDITIONS

Glacial advance outwash deposits are generally quite permeable and laterally extensive and, therefore, are a major source of ground water in the Puget Sound region. Static ground water was encountered in Boring MW-3 during drilling at a depth of approximately 14 feet bls (Appendix B). Subsequent measurements of the ground-water level in Monitoring Well MW-3 showed the static water level to be between approximately 21 and 22 feet bls. Since only one monitoring well has been installed, the ground-water gradient and flow direction across the site cannot be determined.

The site is situated in the Longfellow Creek Sub-Basin of the Cedar River Drainage Basin (King County 1990). Surface-water runoff from the site is collected in a catch basin and routed into an on-site buried detention system. The storm water is released from the detention system at a constant rate into the sanitary sewer system along Fauntleroy Way Southwest (Seattle 1992). The nearest surface-water body to the site is Puget Sound, located approximately 1 mile west of the site.

SOIL ANALYTICAL RESULTS

The following section summarizes the laboratory analyses performed on soil samples obtained from on-site soil boring and presents the results of those analyses.

Chemical Analyses

The three soil samples collected from Boring MW-3 were submitted to Pacific Northwest Environmental Laboratory (PNEL) in Redmond, Washington for chemical analyses. The soil samples were analyzed for benzene, toluene, ethylbenzene and total xylenes (BTEX) using U.S. Environmental Protection Agency (EPA) Method 8020; for total petroleum hydrocarbons (TPH) as gasoline using Washington State Method WTPH-G; for TPH as diesel using Washington State Method WTPH-D; for TPH as motor oil using Washington State Method WTPH-D extended to include heavier oils and quantitated against motor oil; and for total lead using EPA Method 7421. Analytical results were compared to MTCA Method A cleanup levels for soil. MTCA Method A cleanup levels are used only as a reference and are not necessarily appropriate for use as cleanup action levels for this site. A summary of laboratory analytical results and MTCA Method A cleanup levels for soil are provided in Table 3. A copy of the PNEL report is presented in Appendix C.

Residual hydrocarbon concentrations of TPH as gasoline (140 ppm) and benzene (0.94 ppm) exceeded the MTCA Method A cleanup levels for soil (100 ppm and 0.5 ppm, respectively) in the soil sample obtained from Boring MW-3 at 18.5 to 19 feet bls. Analyses for all other hydrocarbons in soil samples collected from either did not detect concentrations at the laboratory detection limits, or the detected concentrations were below MTCA Method A cleanup levels. Concentrations of total lead were detected in all samples at levels below the MTCA Method A cleanup level for soil.

Physical Characteristics Analyses

A soil sample obtained at 8 feet bls in Boring MW-3 was submitted to Cascade Testing Laboratory (CTL) in Kirkland, Washington for analyses of soil characteristics, including grain-size distribution and permeability rate. The analyses indicate a sandy silt with a permeability rate of 4.06×10^{-6} centimeters per second. A copy of the CTL report is presented in Appendix D.

GROUND-WATER ANALYTICAL RESULTS

One ground-water sample was collected from Monitoring Well MW-3 on April 8, 1992 and submitted to PNEL for analyses of BTEX using EPA Method 8020, TPH as gasoline using Washington State Method WTPH-G, TPH as diesel using Washington State Method WTPH-D, TPH as motor oil using Washington State Method WTPH-D extended to include heavier oils and quantitated against motor oil, and total lead using EPA Method 7421. Analytical results were compared to MTCA Method A cleanup levels for ground water. MTCA Method A cleanup levels are used only as a reference and are not necessarily appropriate for use as cleanup action levels for this site. A summary of the laboratory analytical data for the ground-water samples and MTCA Method A cleanup levels are presented in Table 4. A copy of the PNEL report is presented in Appendix E.

Hydrocarbon constituents at levels exceeding MTCA Method A cleanup levels for ground water were detected in ground-water samples collected from Monitoring Well MW-3. Benzene [11 parts per billion (ppb)] and total TPH (1,140 ppb) were detected in the ground-water sample at concentrations exceeding MTCA Method A cleanup levels for ground water (5 ppb and 1,000 ppb, respectively). TPH as motor oil was not detected at or above the laboratory detection limit. Analyses for all other dissolved hydrocarbon constituents detected concentrations below MTCA Method A cleanup

levels. Total lead was detected at a concentration below the MTCA Method A cleanup level.

SUMMARY AND CONCLUSIONS

The primary objectives of the investigative activities at the site have been to investigate the subsurface soil and ground-water conditions, to evaluate the extent of residual hydrocarbons in soil and dissolved hydrocarbons in ground water, and to identify surrounding populations and sensitive areas which may be affected by a hydrocarbon release. The findings summarized below are based on data obtained by Geraghty & Miller from March 1992 through June 1992.

- The subsurface soil conditions and the extent of residual hydrocarbons in the on-site soils were investigated by drilling one soil boring to a depth of approximately 34 feet bls. Three borings were planned for this site; however, two of the borings were terminated due to the presence of loose, sloughing gravel which inhibited suitable advancement of the auger.

- One ground-water monitoring well was installed in the completed borehole in March 1992. Three ground-water monitoring wells were to have been installed at the site to measure static ground-water levels, determine the ground-water flow direction and gradient across the site, and to investigate the extent of dissolved hydrocarbons in the ground water. Since only one monitoring well was installed, however, ground-water flow direction and gradient could not be determined.

- The on-site soils encountered in the boring consisted of approximately 5 to 6 feet of fill overlying native sands, silts, and clay. The fill consisted of brown, well-graded sand with gravel, and poorly graded gravel. The native soils were very loose/very soft to a depth of approximately 15 feet bls,

then became increasingly dense/stiff to the boring termination depth of 34 feet bls. The native soils in the area of the site have been geologically mapped as glacial advance outwash. The native soils encountered in the borings appear to conform with this classification.

- Ground water was encountered in the borehole during drilling at approximately 14 feet bls. Subsequent measurements of the static ground-water level in Monitoring Well MW-3 indicated a static water level between approximately 21 and 22 feet bls.

- The laboratory analyses of the soil samples detected concentrations of benzene (0.94 ppm) and TPH as gasoline (140 ppm) exceeding MTCA Method A cleanup levels for soil. Analyses for all other residual hydrocarbons either were not detected at or above the laboratory detection limit, or the detected concentrations were below MTCA Method A cleanup levels. Total lead was detected at concentrations below the MTCA Method A cleanup level for soil in all soil samples analyzed.

- Benzene (11 ppb) and total TPH (1,140 ppb) were detected in the ground-water sample from Monitoring Well MW-3 at concentrations exceeding MTCA Method A cleanup levels for ground water (5 ppb and 1,000 ppb respectively). Concentrations of all other dissolved hydrocarbons were detected at levels below MTCA Method A cleanup levels except for TPH as motor oil, which was not detected at or above the laboratory detection limit. No liquid-phase hydrocarbons were encountered in the monitoring well. Total lead was detected at a concentration below the MTCA Method A cleanup level.

- The site and surrounding areas are zoned for commercial use. Neighboring businesses include automobile dealerships and a service station.

- Drinking water is supplied to the site and surrounding areas by pipeline from the City of Seattle's Cedar River reservoir. No water supply wells were located within a 1/2-mile radius of the site.

- No sensitive land-use areas were located within a 1/2-mile radius of the site. The site is situated approximately 1 mile east of Puget Sound, the nearest body of open water.

This report is designed to meet MTCA site characterization reporting requirements. The purpose of the requirements is to address releases from USTs that pose a threat to human health or the environment. During our investigation of this site, residual hydrocarbons in soil samples and dissolved hydrocarbons in ground-water samples were detected at concentrations exceeding the MTCA Method A cleanup levels.

REFERENCES

Galster, R. W., and W. T. Laprade. 1991. Geology of Seattle, Washington, United States of America, Bulletin of the Association of Engineering Geologists, vol. XXVIII, no. 3, pp. 235-302.

Gergich, Joan. 1992. City of Seattle Department of Construction and Land Use. Personal communication with John Sadler, Geraghty & Miller, Inc., June 29, 1992.

King County. 1990. Sensitive Areas Map Folio, December 1990.

Seattle, City of. no date. Department of Construction and Land Use, Critical Areas Map Folio II.

_____. 1992. Department of Engineering and Street Use, Storm sewer system map.

Tonkin, Shawn. 1992. City of Seattle Water Department. Personal communication with John Sadler, Geraghty & Miller, Inc., June 29, 1992.

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TABLES

Table 1. Summary of Well Construction Details
BP Oil Service Station No. 11060, Seattle, Washington
Project No. WA209.10

Well Identification	Installation Date	Total Drilled Depth (ft bls)	Total Well Depth (ft bls)	Screened Interval (ft bls)	Screen Slot Size (inches)
MW-3	23-Mar-92	35	35	10 - 35	0.20

ft bls Feet below land surface

Measuring point on each well is a marked location at the top of the inner PVC well casing.

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Table 2. Summary of Water-Level Measurements
BP Oil Service Station No. 11060 Seattle, Washington
Project No. WA209.10

Well Identification	Measuring Point Elevation (ft)	Measurement Date	Depth to Water (ft bmp)	Water Elevation (ft)
MW-3	*	08-Apr-92	21.21	NA
	*	29-May-92	21.73	NA
	*	25-Jun-92	22.12	NA

ft bmp Feet below measuring point
* Temporary measuring point is northern rim of PVC well casing
NA Not applicable

K:\11060\WA20910\WATERLEV.WQ1

Table 3. Summary of Analytical Data for Soil Samples Collected During Subsurface Investigation, March 1992
BP Oil Service Station No. 11060, Seattle, Washington
Project No. WA209.10

Sample Identification	Date Collected	Sample Depth (ft bls)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl-Benzene mg/kg (ppm)	Total Xylenes mg/kg (ppm)	TPH as Gasoline mg/kg (ppm)	TPH as Diesel mg/kg (ppm)	TPH as Motor Oil mg/kg (ppm)	Total Lead mg/kg (ppm)
MW-3 @ 13-13	23-Mar-92	13 - 13.5	[<0.34] ND	[<0.34] ND	0.11 J	0.24 J	43	[<34] ND	[<100] ND	6.3
MW-3 @ 18.5-	23-Mar-92	18.5 - 19	0.94 J	[<2.9] ND	5.1	8.8	140	[<29] ND	[<88] ND	2.6
MW-4 @ 13.5- [Blind duplicate MW-3 @ 13.5-14']	23-Mar-92	13.5 - 14	[<0.32] ND	[<0.32] ND	[<0.32] ND	[<0.32] ND	16	[<32] ND	[<96] ND	5.1
MTCA Method A Cleanup Levels for Soils (1)			0.5	40	20	20	100	200	200	250

(1) Washington State Department of Ecology, Cleanup Standards Amendments to Model Toxics Control Act Regulation, adopted January 28, 1991, effective Feburary 28, 1991.
ft bls Feet below land surface
TPH Total petroleum hydrocarbons
mg/kg (ppm) Milligrams per kilogram (parts per million)
[<0.28] ND Not detected at [detection limit]
J Laboratory estimated value. Used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a target compound that meets the identification criteria, but the result is less than the sample quantitation limit but greater than zero.

Analyses were performed by Pacific Northwest Environmental Laboratory of Redmond, Washington using the following methods:

BTEX: EPA Method 8020
TPH-Gasoline: Washington State Method WTPH-G for soil
TPH-Diesel: Washington State Method WTPH-D for soil
TPH-Motor Oil: Washington State Method WTPH-D for soil, extended to include motor oil range
Total Lead: EPA Method 7421

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Table 4. Summary of Analytical Data for Ground-Water Samples Collected in April 1992
BP Oil Service Station No. 11060, Seattle, Washington
Project No. WA209.10

Well Identification	Date Sampled	Benzene ug/L (ppb)	Toluene ug/L (ppb)	Ethyl-Benzene ug/L (ppb)	Total Xylenes ug/L (ppb)	TPH as Gasoline ug/L (ppb)	TPH as Diesel ug/L (ppb)	TPH as Motor Oil ug/L (ppb)	Total Lead ug/L (ppb)
MW-3	08-Apr-92	11	2.6	4.9	17	470	670	[<750] ND	3.1
MTCA Method A Cleanup Levels for Ground Water (1)		5	40	30	20	NA	NA	NA	5

(1) Washington State Department of Ecology, Cleanup Standards Amendments to Model Toxics Control Act Regulation, adopted January 28, 1991, effective February 28, 1991.
TPH Total petroleum hydrocarbons
ug/L (ppb) Micrograms per liter (parts per billion)
[<0.75] ND Not detected at [detection limit]

Analyses were performed by Pacific Northwest Environmental Laboratory of Redmond, Washington using the following methods:

BTEX:	EPA Method 8020
TPH as gasoline:	Washington State Method WTPH-G for water
TPH as diesel:	Washington State Method WTPH-D for water
TPH as motor oil:	Washington State Method WTPH-D for water, extended to include motor oil range
Total lead:	EPA Method 7421

K:\11060\WA20910\WATERDAT.WQ1

FIGURES

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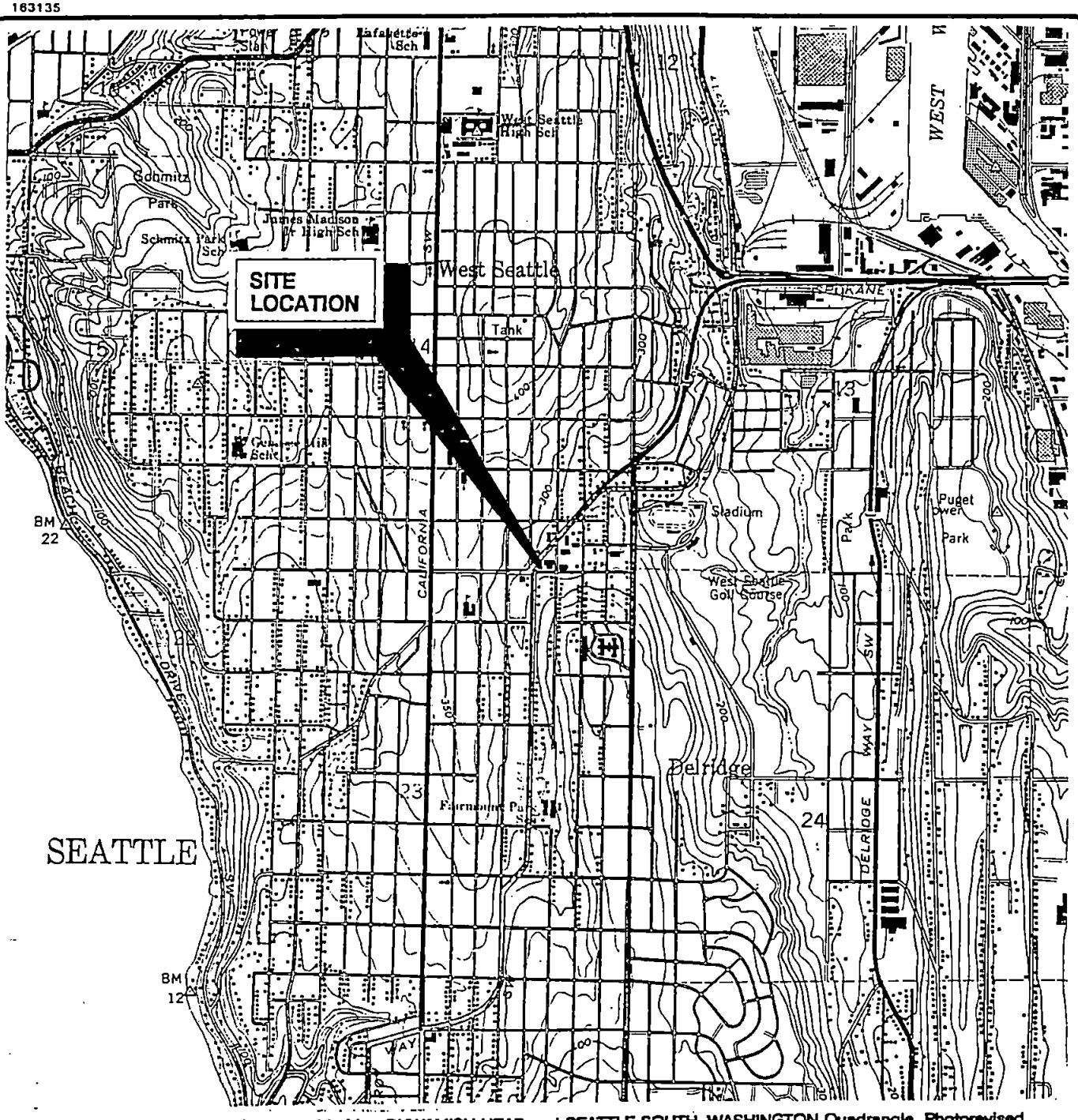


SOURCE: USGS 7.5 Minute Topographic Map DUWAMISH HEAD and SEATTLE SOUTH, WASHINGTON Quadrangle, Photorevised 1968 and 1973.

0 1 MILE

0 1000 2000 3000 4000 5000 6000 7000 FEET

N

QUADRANGLE LOCATION

DRAFTER: SAC | APPROVED: DV | CHECKED: | DRAWING: | FILE NO.: | PRJCT NO.: 50105WA | DWG DATE: DEC. 1991

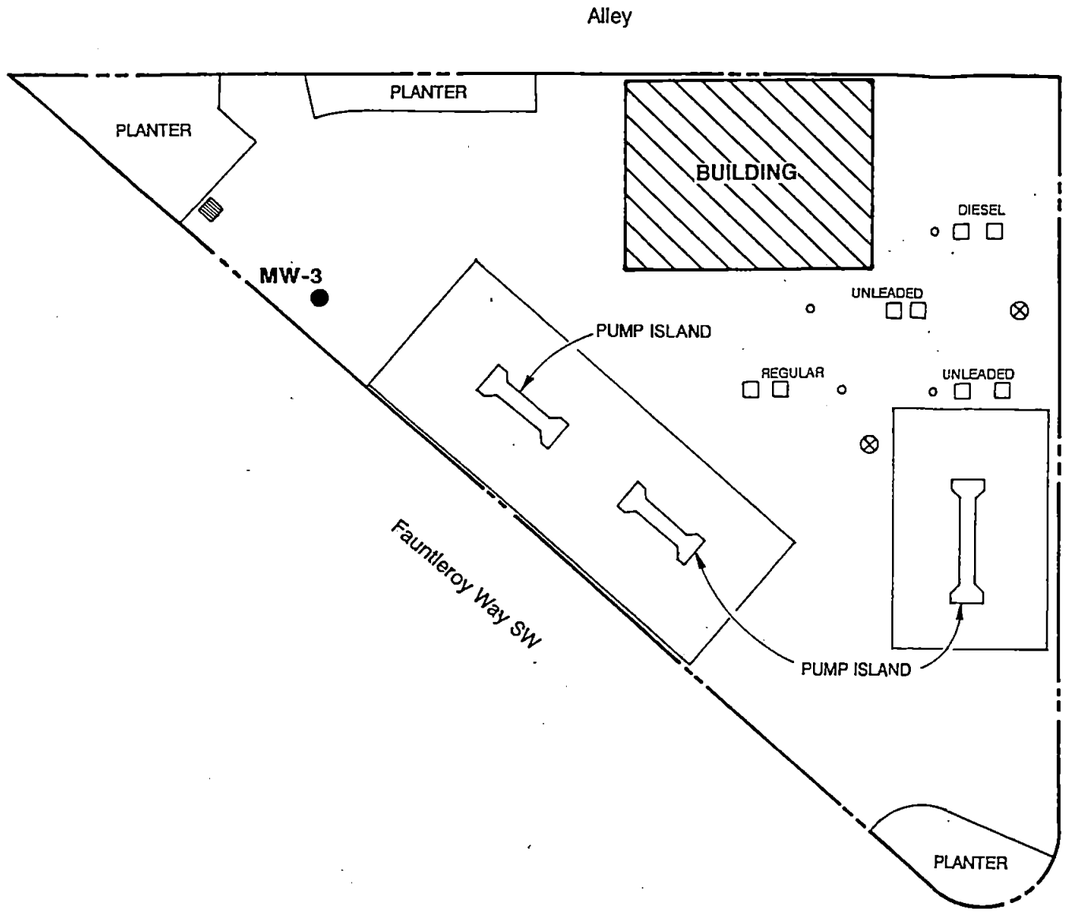
GERAGHTY & MILLER, INC.
Environmental Services

SITE LOCATION MAP

BP Oil Company
Service Station #11060
4580 Fauntleroy Way SW
Seattle, Washington

FIGURE
1

163135



SW Alaska Street

LEGEND

- Property Boundary
- ⊗ Attempted Boring Location
- MW-3 ● Ground Water Monitoring Well Location
- ○ □□ UST Fill Port and Valve Boxes
- ▤ Catch Basin

N

0 10 20 30 40

Approximate Scale In Feet

GERAGHTY & MILLER, INC.
Environmental Services

SITE PLAN
BP Oil Company
Service Station #11060
4580 Fauntleroy Way SW
Seattle, Washington

FIGURE
2

DRAFTER: SAC | APPROVED: DV | CHECKED: | DRAWING: | FILE NO.: | PRJCT NO.: WA209.10 | DWG DATE: DEC. 1991

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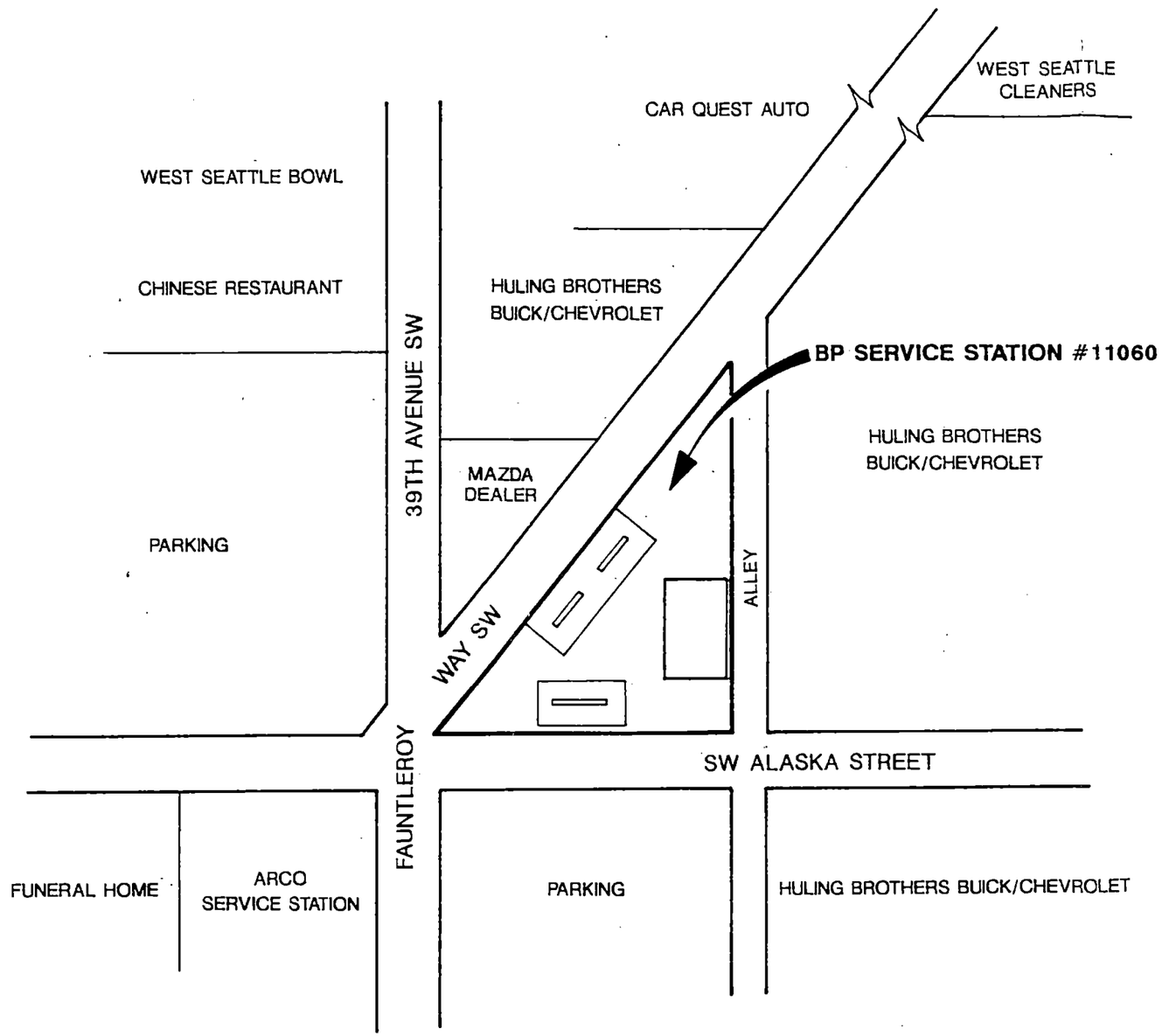
DRAFTER: SAC | APPROVED: JS | CHECKED: | DRAWING: | FILE NO.: | PRJCT NO.: WA209.10 | DWG DATE: AUG 1992



N

NO SCALE

GERAGHTY & MILLER, INC.
Environmental Services

LOCAL LAND USE
BP Oil Company
Service Station #11060
5480 Fauntleroy Way SW
Seattle, Washington

FIGURE
3

APPENDIX A

SENSITIVE RECEPTORS SURVEY FORM

SENSITIVE RECEPTORS SURVEY
Site Survey and Literature Research

Store No.: 11060
Location: 4580 Fauntleroy Way Southwest
City/State: Seattle, Washington

I. Provide answers to the following questions:

A. Is there a public water supply well within 2,500 feet? (Y/(N))
If yes, distance (feet) _____

B. Is there a private water supply well within 1,000 feet? (Y/(N))
If yes, distance (feet) _____

C. Is there a subway within 1,000 feet? (Y/(N))
If yes, distance (feet) _____

D. Is there a basement within 1,000 feet? (Y/N)
If yes, distance (feet) _____

E. Is there a school within 1,000 feet? ((Y)/N)
If yes, distance (feet) Approx. 500 feet

F. Is there a surface water body within 1,000 feet? (Y/(N))
If yes, distance (feet) _____

II. Describe type of local water supply:

Public: Pipeline

- Supplier's name: Seattle Water Department
- Supplier's source: Cedar River Reservoir
- Distance to site: Approx. 25 miles

Private:

III. Aquifer classification, if available:

_____ Class I: Special ground water
Irreplaceable drinking water source
Ecologically vital

_____ Class II: Current and potential drinking water source

__X__ Class III: Not potential source of drinking water

IV. Describe observation wells, if any: Number __1__ (Geraghty & Miller)
Free product __N__ (Y/N)

V. Signature of preparer John Sadler Date 8/13/92

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APPENDIX B

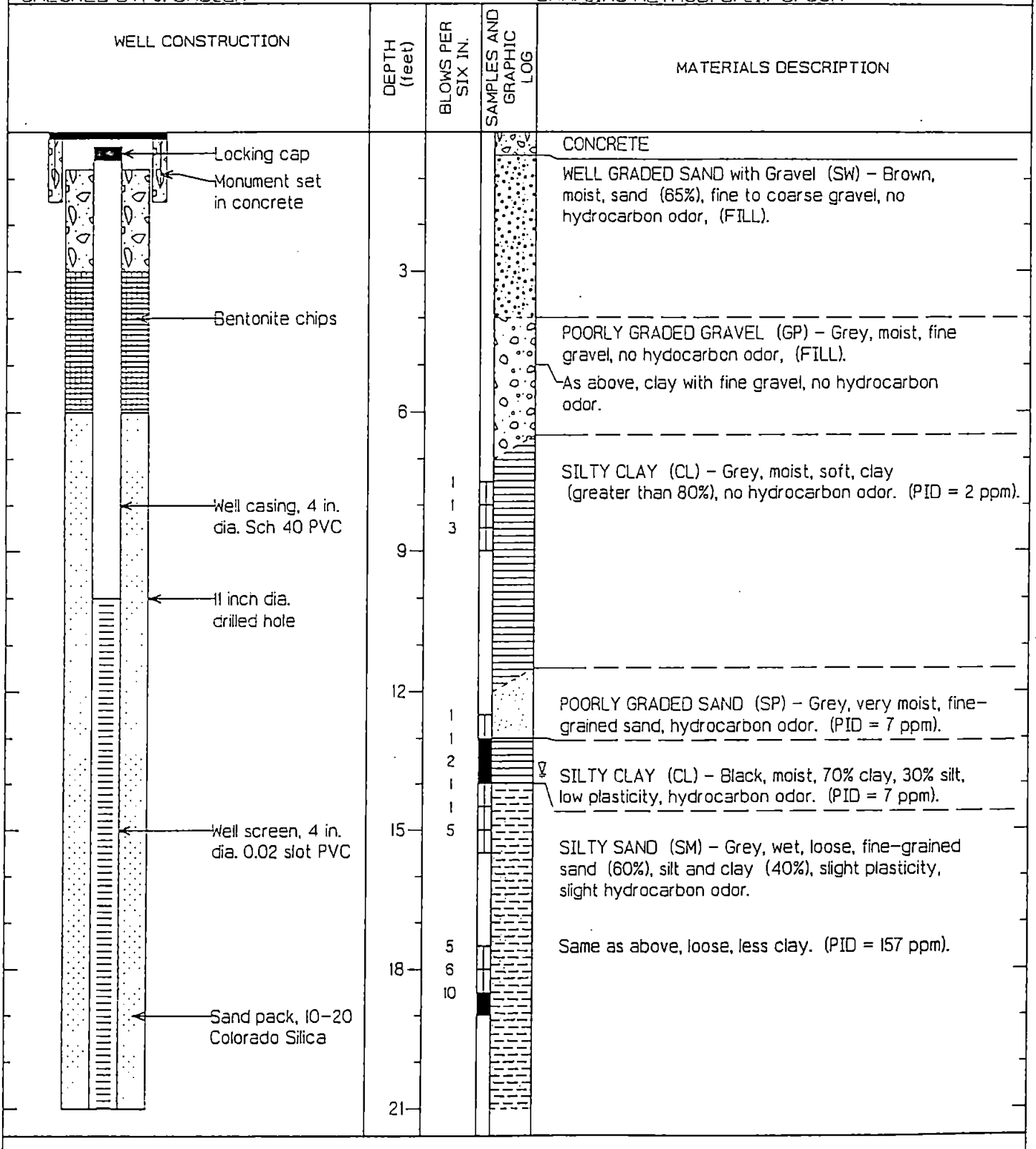
BOREHOLE AND WELL CONSTRUCTION LOG

PROJECT NAME: BP OIL SERVICE STATION NO. 11060
PROJECT NO: WA209.10

LOG OF MW-3
Page 1 of 2

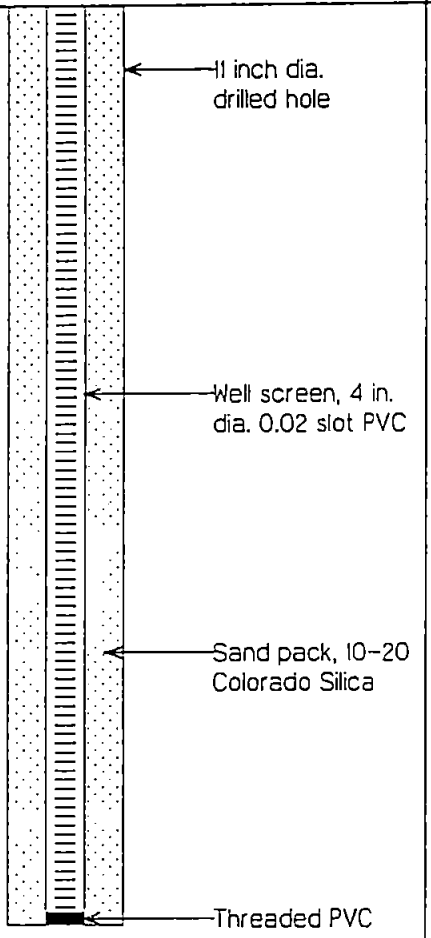
CLIENT NAME: BP OIL COMPANY
PROJECT LOCATION: SEATTLE, WASHINGTON
DATE STARTED: 23-MARCH-92
DATE COMPLETED: 23-MARCH-92
LOGGED BY: M.L. MESCHKE
CHECKED BY: J. SADLER

SURFACE ELEV: NA
TOP OF CASING ELEV: NA
DRILL COMPANY: HOLT TESTING
DRILLER: CLYDE
DRILL METHOD: HOLLOW STEM AUGER
SAMPLING METHOD: SPLIT SPOON



PROJECT NAME: BP OIL SERVICE STATION NO. 11060
PROJECT NO: WA209.10

LOG OF MW-3



DEPTH (feet)	BLOWS PER SIX IN.	MATERIALS DESCRIPTION
	5 7 12	SILTY SAND (SM) – Grey, very moist, medium dense, fine-grained sand (60%), silt and clay (40%), slight plasticity, hydrocarbon odor. (PID = 19 ppm).
24		
27	15 17 20 13 15	SILT (ML) – Grey-green, very moist, very stiff, silt, occassional sand, no hydrocarbon odor. (PID = 30 ppm). Same as above, wet, no hydrocarbon odor. (PID = 12 ppm).
30	19	
	11 16 20	Same as above, very moist. (PID = 2 ppm).
33		
36		Borehole terminated at 32.5 feet below land surface (bls). Sampling terminated at 34 feet bls. Drilled out bridging sand to 35 feet bls. Ground water encountered during drilling at 13.8 feet bls. Note: Blow counts taken using a 2.5 inch diameter split-spoon sampler driven with 300-pound hammer free falling 30 inches. Blow counts are recorded for evaluating relative soil density only, and should not be construed as appropriate for construction or structural design purposes.
39		
42		
45		

APPENDIX C

LABORATORY RESULTS FOR CHEMICAL ANALYSES OF SOIL SAMPLES

NATIONAL EXPRESS LABORATORIES, INC.

NATEX

Pacific Northwest Environmental Laboratory, Inc.
6645 185th Avenue NE, Suite 100
Redmond, WA 98052
(206) 885-0083
FAX (206) 883-8528

April 9, 1992

Kelly Kline
Geraghty and Miller
8330 154th Ave. N.E.
Redmond, WA 98052

NARRATIVE FOR PNELI 3953

Enclosed are data summary sheets and supporting documentation for the samples received on March 26, 1992 of the BP 11060 project. The samples were received as follows:

CLIENT ID	PNELI ID	DATE COLLECTED
MW3 @ 13-13.5'	3953-01	03-23-92
MW3 @ 18.5-19'	3953-02	03-23-92
MW4 @ 13.5-14'	3953-03	03-23-92
Trip Blank	3953-04	03-23-92

Listed below are anomalies and narratives associated with the receipt and/or analysis of these samples.

Sample Receiving

There were no anomalies associated with the receipt of these samples.

Purgeable Aromatics by GC Method 8020, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.

Total Petroleum Hydrocarbons as Gasoline by GC Washington State Department of Ecology Method WTPH-G.

While the samples were quantitated against the range of gasoline, from Toluene to Dodecane, they exhibit a pattern which is inconsistent with that of gasoline.

Surrogate recovery for sample 3953-02 could not be calculated due to sample dilution.

Analytical results are reported on a dry-weight basis.

Total Petroleum Hydrocarbons as Diesel and Other Extractable Products by GC Washington State Department of Ecology Method WTPH-D.

There were no anomalies associated with the analysis of these samples and their associated QC.

Analytical results are reported on a dry-weight basis.

Total Metals Digestion Procedure	Acid Digestion of Sediments, Sludges and Solids by Method 3050, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.
Lead	Graphite Furnace Method 7421, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.

There were no anomalies associated with the preparation and/or analysis of these samples.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Sincerely,

Enclosures

DATA REPORTING QUALIFIERS

Some of these qualifiers may appear in this analytical data report. Soil samples are analyzed and reported on a dry weight basis unless otherwise noted.

Organics Data Qualifiers

A - This flag indicates that a TIC is a suspected aldol-condensation product.
B - Indicates compound was found in the associated blank as well as in the sample.
C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.
D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.
J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a target compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
M - Indicates value is taken from a medium level analysis.
N - Indicates that the identity of the compound is based upon a mass spectral library search (applies to tentatively identified compounds only).
ND- Not detected. Detection limit shown in parentheses.
NQ- Not quantitated as...
U - Indicates compound was analyzed for but not detected at the given detection limit. The sample quantitation limit was corrected for dilution and for percent moisture, when applicable.
X - Other specific flags and footnotes may be required to properly define the results. If more than two qualifiers are required for a sample result, the "X" flag combines several flags, as needed. For instance, the "X" flag might combine the "A," "B," and "D" flags for some sample.
* - Indicates spiked compounds used for MS/MSD analysis.

Inorganics Data Qualifiers

NA- Relative percent difference calculation is not applicable to analytes when not detected.
NC- Not calculated when analyte is not detected.
NS- Not calculated when sample concentration of analyte exceeds spike level by a factor of four or more.
U - Indicates that analyte was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.
B - Indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the Cover Page (if the problem applies to all samples) or on the specific FORM-I (if it is an isolated problem).
M - Duplicate injection precision not met.
N - Spike sample recovery not within control limits.
S - The reported value was determined by the Method of Standard Additions (MSA).
W - Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance. (See Exhibit E.)
* - Duplicate analysis not within control limits.
+ - Correlation coefficient for the MSA is less than 0.995.

Inorganics Method Qualifiers

CV- Manual Cold Vapor AA
F - FURNACE AA
P - ICP

GERAGHTY & MILLER, INC.
Environmental Services

LABORATORY TASK ORDER

Task Order No.: 2644

Geraghty & Miller Office: Redmond WA Phone: 206-869-6321 Date: March 13, 1992
Address: 5330 154th AVE NE Project Number: WA20910
Redmond WA 98052 Laboratory Reporting Level: ☐ I ☒ II ☐ III ☐ IV
Project Name: BP #11060 Location: Seattle, WA
Laboratory: PACE Phone: 885-0083 Contact: Diane Risk
Lab Provides Sample Containers? ☒ Yes ☐ No Date Required: 3/25 Ship To: As above; Attn Kelly Kline
Estimated Date Of Sample Receipt By Laboratory: 3/24 Report Due: Standard TAT/2 wks verbal/fax
Reports Delivered To: As above; Attn Kelly Kline Number Of Reports: 2
Work Description:
Send Invoice To: As above; Attn Kelly Kline

PHYSICAL PROPERTIES	# Water	Method	Det. Limit	# Soil	Method	Det. Limit	NON-METALLICS	# Water	Method	Det. Limit	# Soil	Method	Det. Limit
pH							Acidity						
Spec. Cond.							Alkalinity (Total)						
Hardness (total)							Carbonate						
TDS							Bicarbonate						
TSS							Bromide						
Temperature							Chloride						
Turbidity							Cyanide						
Ignitability							Fluoride						
Corrosivity							Ammonia						
Reactivity							Nitrate						
E.P. Tox. Extraction							TKN						
TCLP Extraction							Nitrite						
E.P. Tox. Corrosivity							Phosphorus						
TCLP Corrosivity							Silica						
METALS*							Sulfate						
Aluminum							Sulfide						
Antimony							Surfactants (MBAS)						
Arsenic							ORGANICS						
Barium							BOD						
Beryllium							COD						
Cadmium							~~Gross~~ TPH	2	1418.1	MDL	6	W416.1	MDL
Calcium							BTEX-G	4	8020	MDL	10	WTPHG	MDL
Chromium							BTEX-D	2	8020	MDL	6	WTPHD	MDL
Hex Chromium							TPH-Motor Oil	2	8020	MDL	6	WTPHD	MDL
Cobalt							Pest. Herbicides*	4	608	MDL	6	8010	MDL
Iron							Non-Halogenated VOCs*						
Lead	2	7421	MDL	10	7421	MDL	Purgeable Arom.*						
Magnesium							Phenols*						
Manganese							Pesticides/PCBs*						
Mercury							PNAs*						
Nickel							Org. Phos. Pest.*						
Potassium							Dioxins						
Selenium							Chlor. Herb.*						
Silver							Volatile Organics* BTEX	6	1602	MDL	10	8020	MDL
Sodium							Semi Volatile Organics*						
Thallium							APPENDIX IX*						
Tin							RADIONUCLIDES						
Vanadium							Gross Alpha						
Zinc							Gross Beta						
Priority Pollutant Metals*							Radium 226						
TCL (HSL) Metals*							Radium 228						

* Metals are Total Metals Unless Specified as Dissolved Under Special Instructions. * Attach Lists of Elements or Compounds to be Analyzed. * Includes All Organic and Inorganic Compounds.

Special Instructions Or Other: *Please provide sample containers for WATER samples only. Include a TRIP blank for BTEX and 1 for Chlorinated hydrocarbons (601/8010)

G&M Project Manager Signature: _____ Date: _____ G&M QA Officer Signature: [signature] Date: 3/13/92
Laboratory Acceptance: [signature] Date: 3/18/92

LABORATORY TASK ORDER AMENDMENTS

☐ No Changes
Required Change: _____

G&M Representative Signature: _____ Date: _____

RAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. ____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number WA209.10

Project Location BP # 11060, Fauntleroy Site

Laboratory ____

Sampler(s)/Affiliation MLM / G&M, Inc.

	SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	BTEX	Total Pb	TPH-Gasoline	TPH-Diesel	TPH-Waste Oil	Chlorinated Hydrocarbons				TOTAL
01	MW3@13-13.5'	S	3.23.92		X	X	X	X	X	X				1
02	MW3@18.5-19'	S	3.23.92		X	X	X	X	X	X				1
03	MW4@13.5-14'	S	3.23.92		X	X	X	X	X	X				1
04	TRIP	L			X									2

OK

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 5

Relinquished by: [signature]	Organization: G&M / Inc	Date 3/23/92	Time 1900	Seal Intact? (Yes) No N/A
Received by: Kelly A. Adams	Organization: G&M Inc.	Date 3/23/92	Time 1900	
Relinquished by: [signature]	Organization: G&M Inc.	Date 3/26/92	Time 11:30am	Seal Intact? Yes No N/A
Received by: Deb Frank/PACE	Organization: PACE	Date 3/26/92	Time 11:50 am	

Special Instructions/Remarks: ____

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\BTEX

PURGEABLE AROMATICS (BTEX) BY GC
Method 8020

Client Sample ID	MW3 @ 13-13.5'	MW3 @ 18.5-19'	MW4 @ 13.5-14'	Trip Blank
PNELI Sample ID	3953-01	3953-02	3953-03	3953-04
Sample Matrix	Soil	Soil	Soil	Water
Date Sample Received	03-26-92	03-26-92	03-26-92	03-26-92
Date Sample Analyzed	04-03-92	04-02-92	04-02-92	04-06-92
Units of Measure	µg/kg	µg/kg	µg/kg	µg/ℓ
Compounds				
Benzene	340 U	940 J	320 U	2.0 U
Toluene	340 U	2900 U	320 U	2.0 U
Ethylbenzene	110 J	5100	320 U	2.0 U
Total Xylene	240 J	8800	320 U	2.0 U
Surrogate				
% Fluorobenzene	96	129	97	98
% 2-Chlorotoluene	100	100	100	100

PURGEABLE AROMATICS (BTEX) BY GC
Method 8020

Client Sample ID	Extract Blank
PNELI Sample ID	3953-EB01
Sample Matrix	Soil
Date Sample Extracted	03-29-92
Date Sample Analyzed	03-31-92
Units of Measure	µg/kg

Compounds		
Benzene	250	U
Toluene	250	U
Ethylbenzene	250	U
Total Xylene	250	U

Surrogate	
% Fluorobenzene	103
% 2-Chlorotoluene	100

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\BTEX

PURGEABLE AROMATICS (BTEX) BY GC
Method 8020

Client Sample ID	Method Blank	Method Blank	Method Blank
PNELI Sample ID	3953-MB01	3953-MB02	3953-MB03
Sample Matrix	Water	Water	Water
Date Sample Received	NA	NA	NA
Date Sample Analyzed	04-02-92	04-03-92	04-06-92
Units of Measure	µg/ℓ	µg/ℓ	µg/ℓ

Compounds						
Benzene	2.0	U	2.0	U	2.0	U
Toluene	2.0	U	2.0	U	2.0	U
Ethylbenzene	2.0	U	2.0	U	2.0	U
Total Xylene	2.0	U	2.0	U	2.0	U

Surrogate			
% Fluorobenzene	95	96	100
% 2-Chlorotoluene	100	100	100

QC SUMMARY
PURGEABLE AROMATICS (BTEX) BY GC

Client Sample ID:	MW4 @ 13.5-14'	**PNELI Sample ID:**	3953-03
Sample Matrix:	Soil	**Date Sample Received:**	03-26-92
Units of Measure:	µg/kg	**Date Sample Analyzed:**	04-03-92

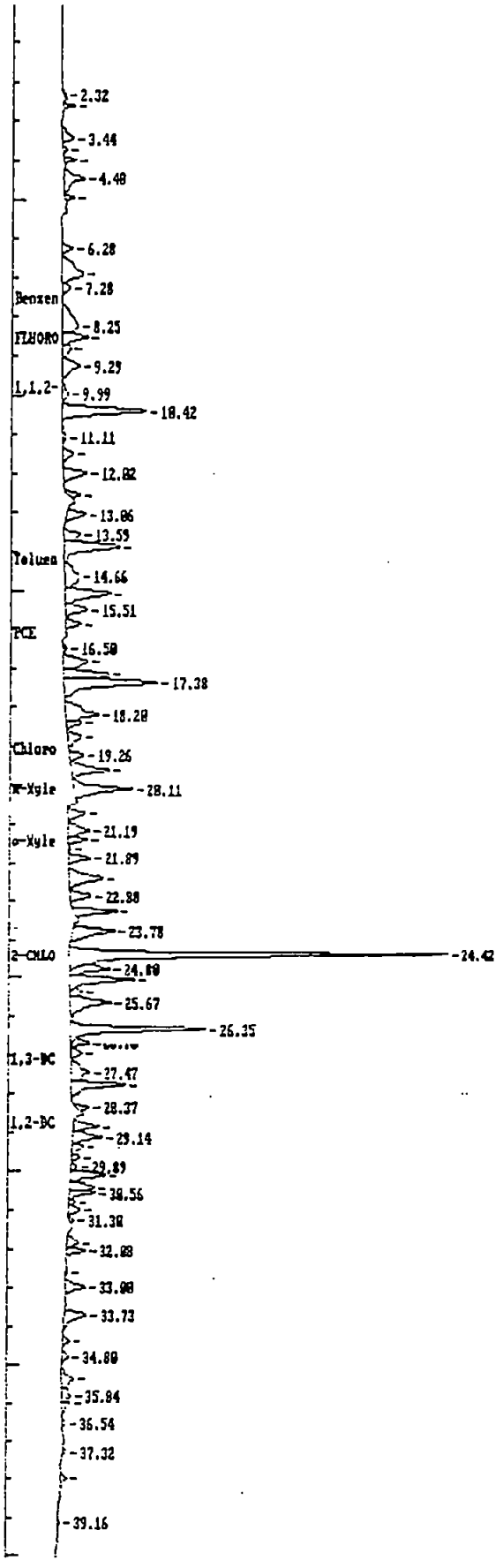
MATRIX SPIKE RESULTS

Compound	Spike Added	Sample Conc.		MS Conc.	MS % Rec.	Water QC Limits Rec.	Soil QC Limits Rec.
Benzene	1300	320	U	1090	84	76-127	66-142
Toluene	1300	320	U	1090	84	76-125	59-139

MATRIX SPIKE DUPLICATE RESULTS

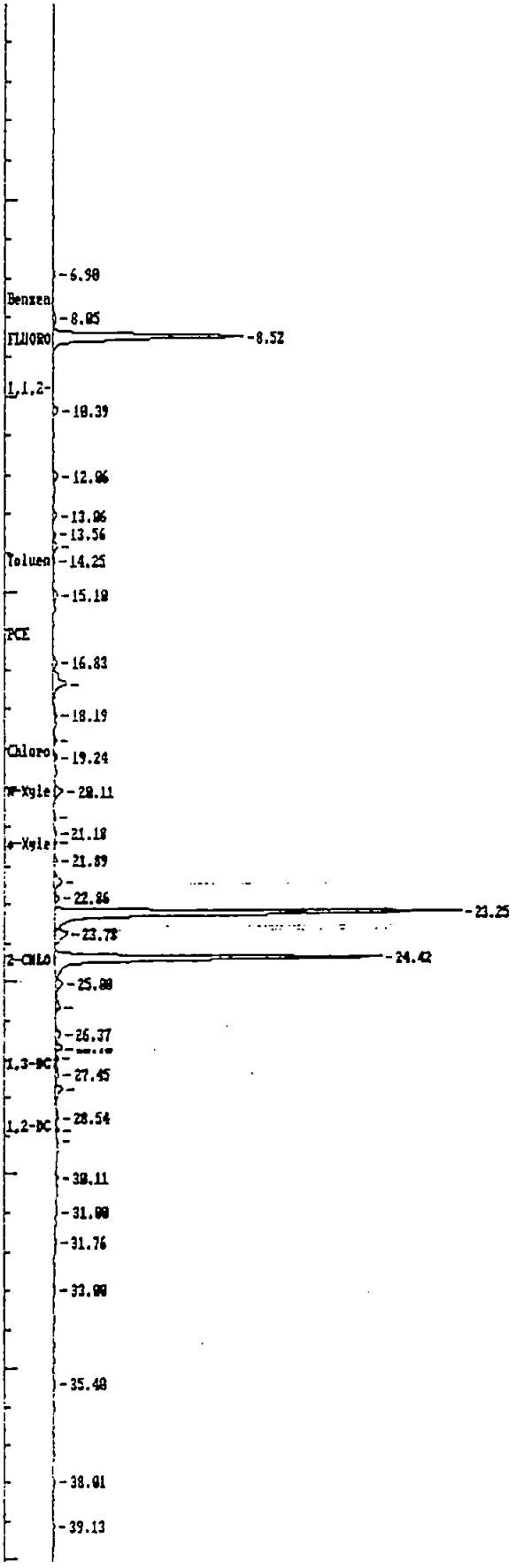
Compound	Spike Added	MSD Conc.	MSD % Rec.	% RPD	Water QC Limits RPD	Water QC Limits Rec.	Soil QC Limits RPD	Soil QC Limits Rec.
Benzene	1300	1190	92	9.1	11	76-127	21	66-142
Toluene	1300	1190	92	9.1	13	76-125	21	59-139

SAMPLE NAME: 3953-02 1:1000 COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-02-1992 20:22:15 INSTRUMENT I.D.: GCKA5890
Full Range: 100 millivolts Data File = K:A093-7.PTS



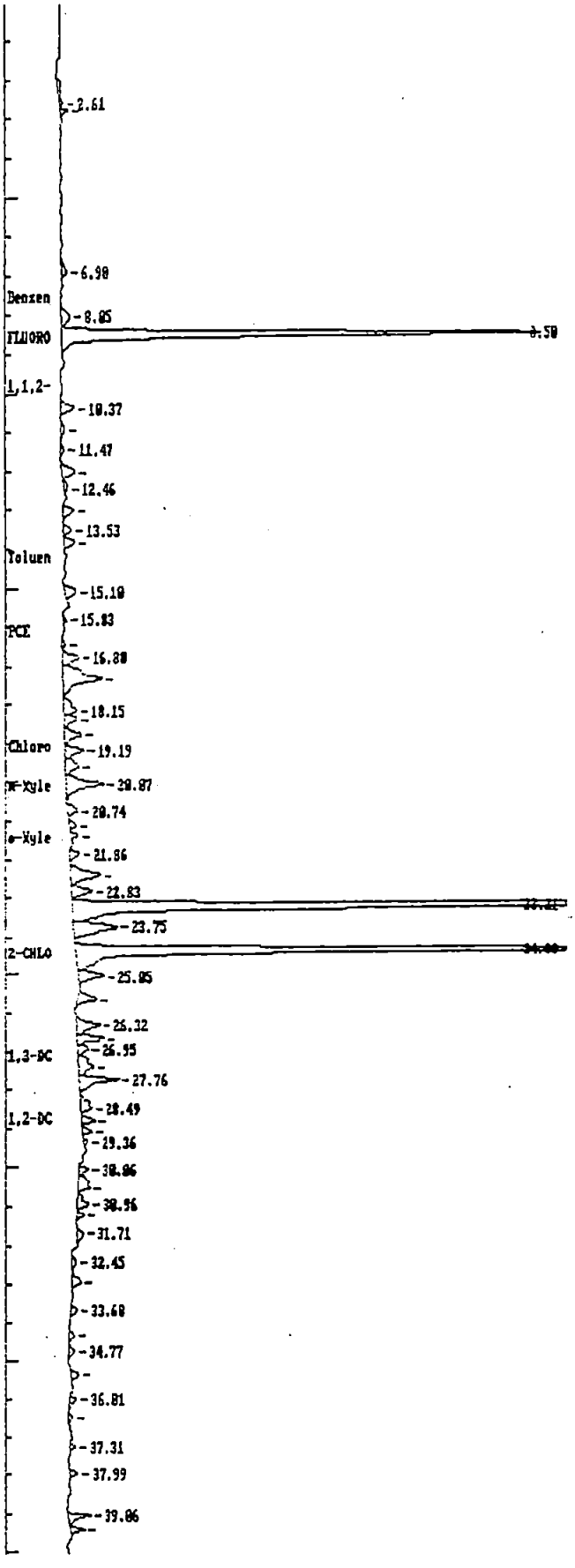
APR 0 3 1992

SAMPLE NAME: 3953-03 COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-02-1992 21:31:50 INSTRUMENT I.D.: GCKA5890
Full Range: 100 millivolts Data File = K:A093-8.PTS



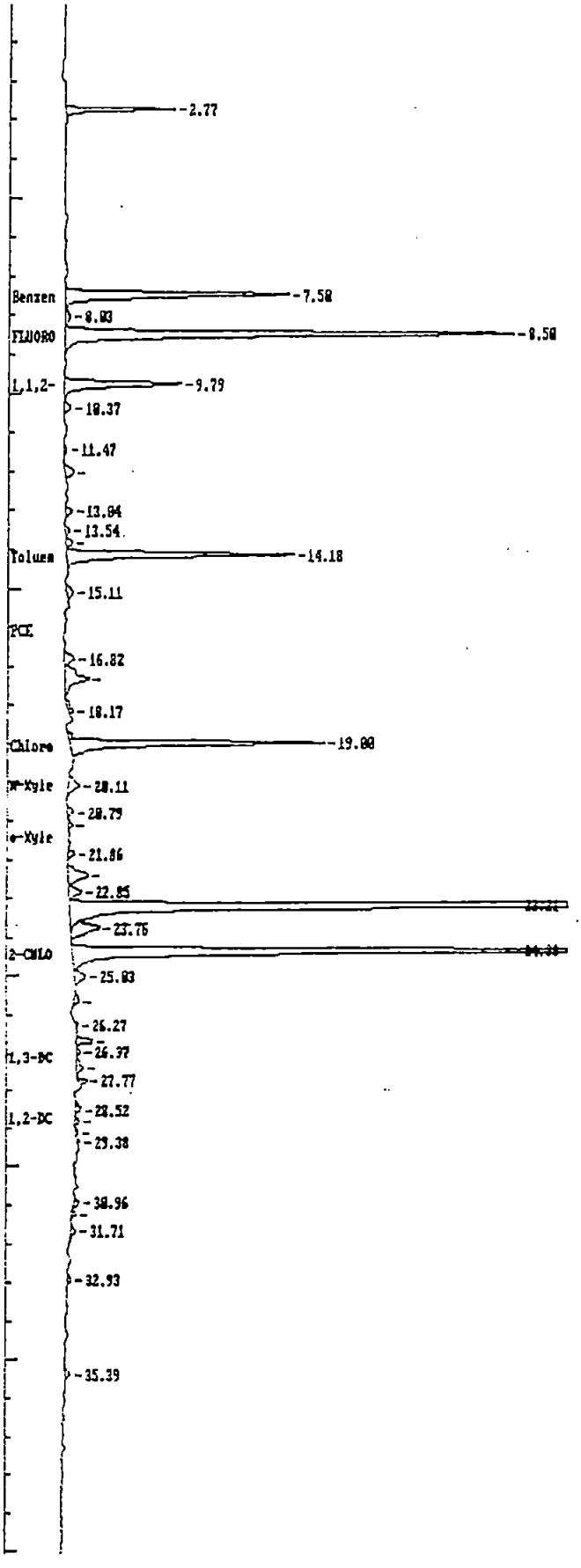
APR 0 3 1992

SAMPLE NAME: 3953-01 COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-03-1992 12:40:55 INSTRUMENT I.D.: GCKA5890
Full Range: 40 millivolts Data File = K:A094-5.PTS



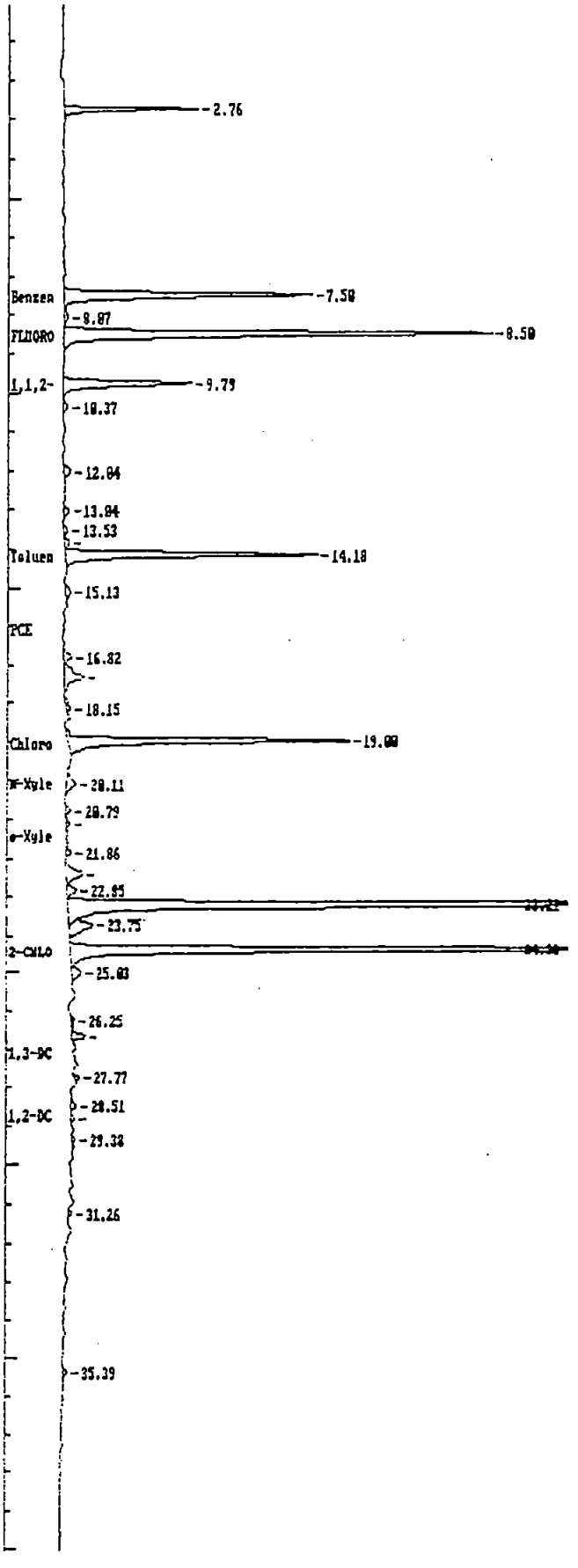
APR 0 5 1992

SAMPLE NAME: 3953-03 MS COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-03-1992 17:34:33 INSTRUMENT I.D.: GCKA5890
Full Range: 40 millivolts Data File = K:A094-7.PTS



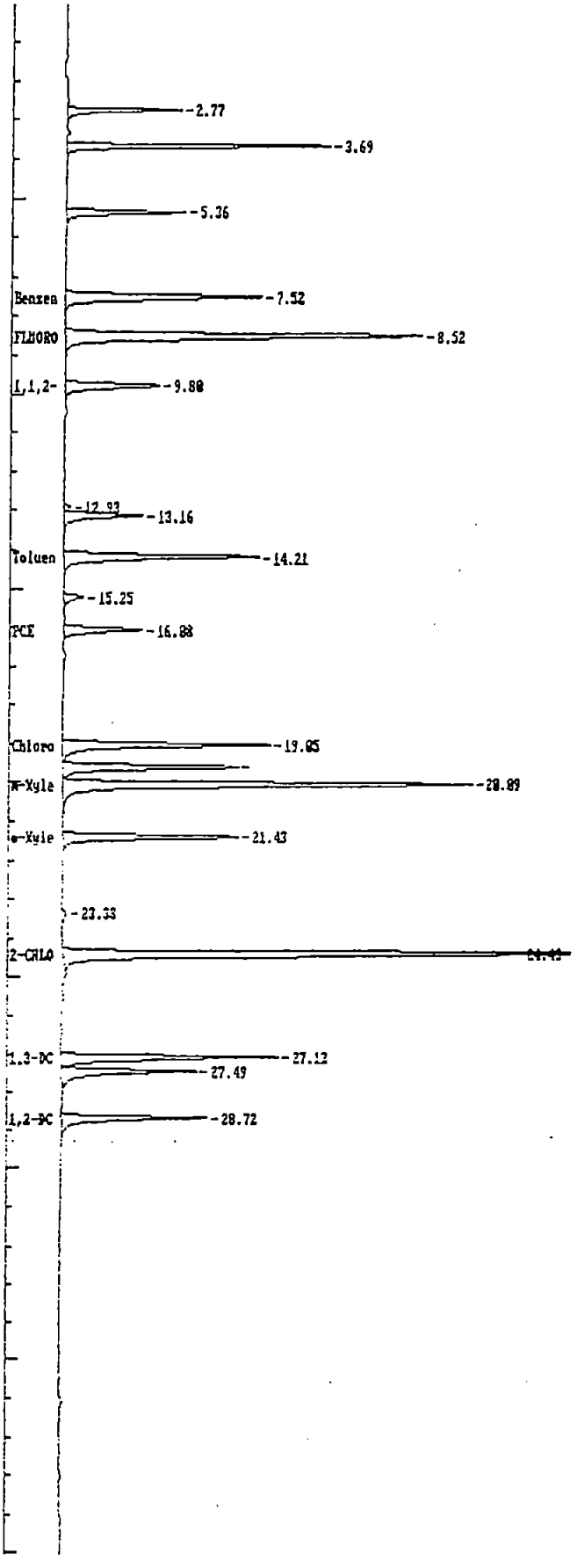
APR 0 5 1992

SAMPLE NAME: 3953-03 MSD COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-03-1992 18:31:47 INSTRUMENT I.D.: GCKA5890
Full Range: 40 millivolts Data File = K:A094-8.PTS



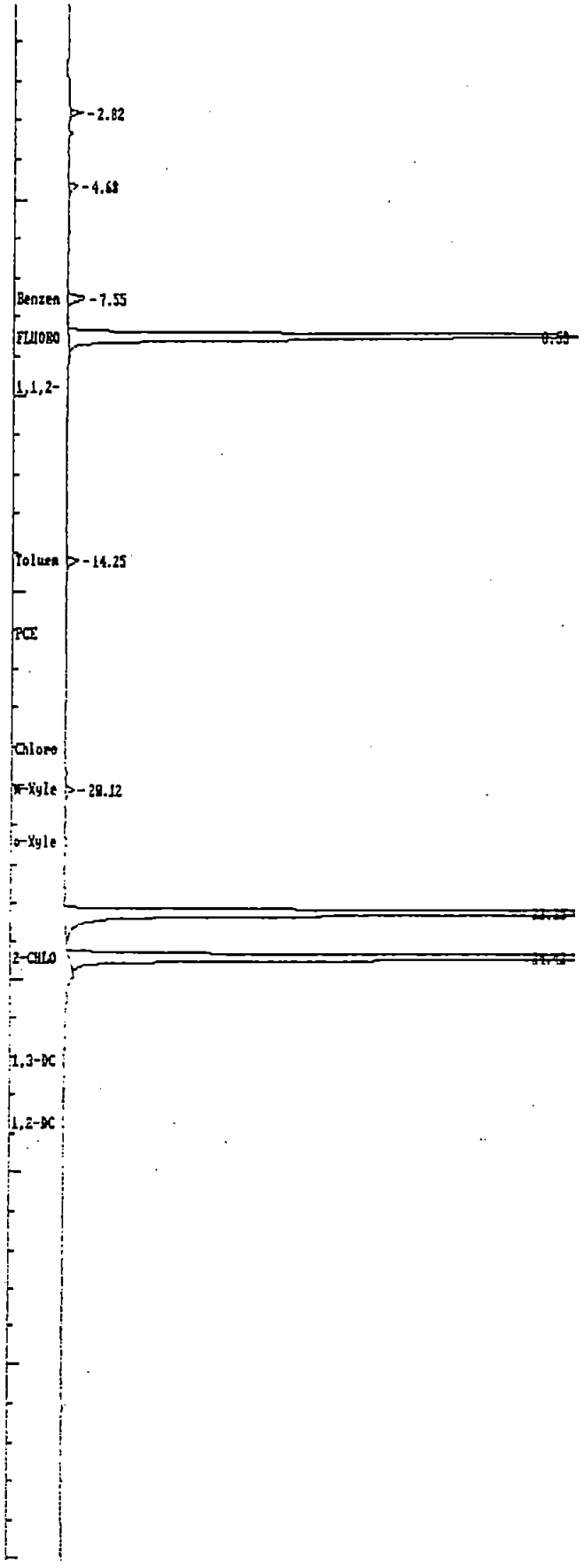
APR 0 5 1992

SAMPLE NAME: BTEX Std 10 ug/L COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-06-1992 05:17:15 INSTRUMENT I.D.: GCKAS890
Full Range: 40 millivolts Data File = K:A097-1.PTS



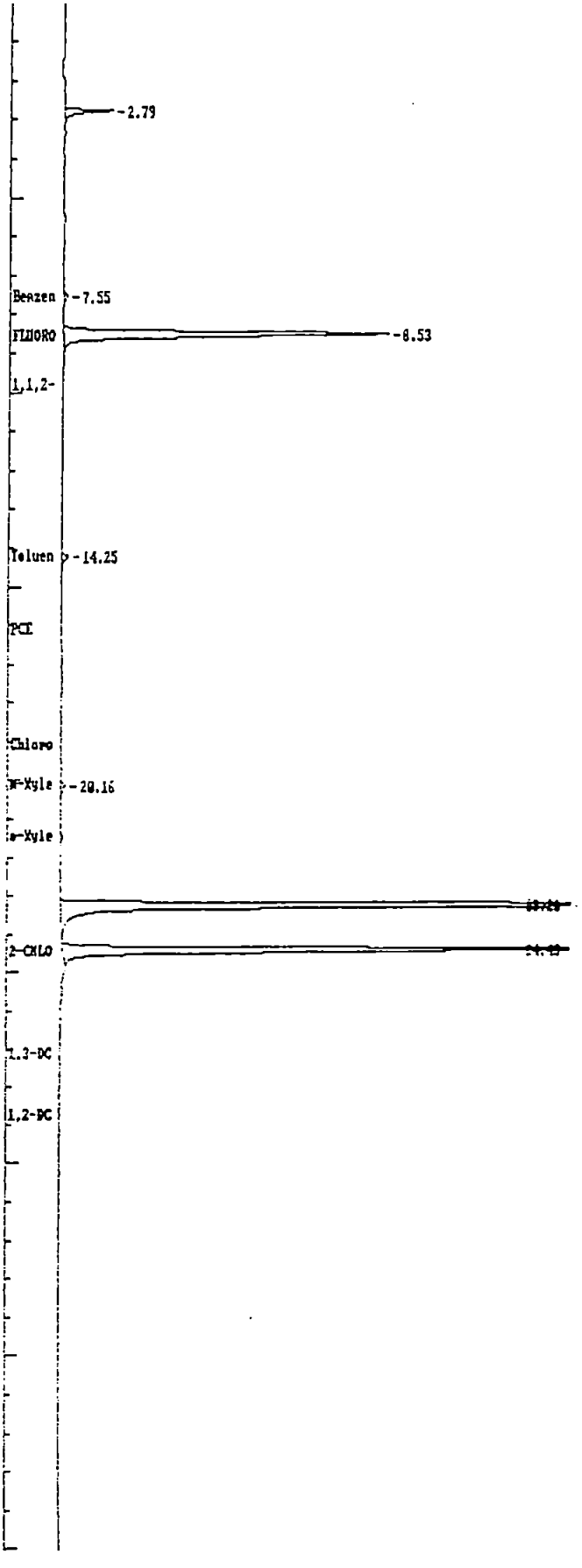
APR 07 1992

SAMPLE NAME: Water Blank COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-06-1992 08:10:41 INSTRUMENT I.D.: GCKA5890
Full Range: 40 millivolts Data File = K:A097-4.PTS



APR 0 7 1992

SAMPLE NAME: 3953-04 COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-06-1992 10:29:53 INSTRUMENT I.D.: GCKAS890
Full Range: 40 millivolts Data File = K:A097-6.PTS



APR 0 7 1992

TPH - GASOLINE RANGE PETROLEUM PRODUCTS BY GC

Client Sample ID	MW3 @ 13-13.5'	MW3 @ 13-13.5'Dup.	MW3 @ 18.5-19'	MW4 @ 13.5-14'
PNELI Sample ID	3953-01	3953-01 Dup.	3953-02	3953-03
Sample Matrix	Soil	Soil	Soil	Soil
Date Sample Received	03-26-92	03-26-92	03-26-92	03-26-92
Date Sample Analyzed	04-03-92	04-03-92	04-02-92	04-02-92
Units of Measure	mg/kg	mg/kg	mg/kg	mg/kg
Compounds				
TPH Quantitated as:				
Gasoline	43	23	140	16
Surrogate				
% 4-Bromofluorobenzene	104	103	D	92

D = Diluted Out

TPH - GASOLINE RANGE PETROLEUM PRODUCTS BY GC

Client Sample ID	Extract Blank	Extract Blank
PNELI Sample ID	3953-EB01	3953-EB02
Sample Matrix	Soil	Soil
Date Sample Extracted	03-29-92	04-02-92
Date Sample Analyzed	03-31-92	04-02-92
Units of Measure	mg/kg	mg/kg

Compounds				
TPH Quantitated as:				
Gasoline	5	U	5	U

Surrogate				
% 4-Bromofluorobenzene	106		82	

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\TVPH

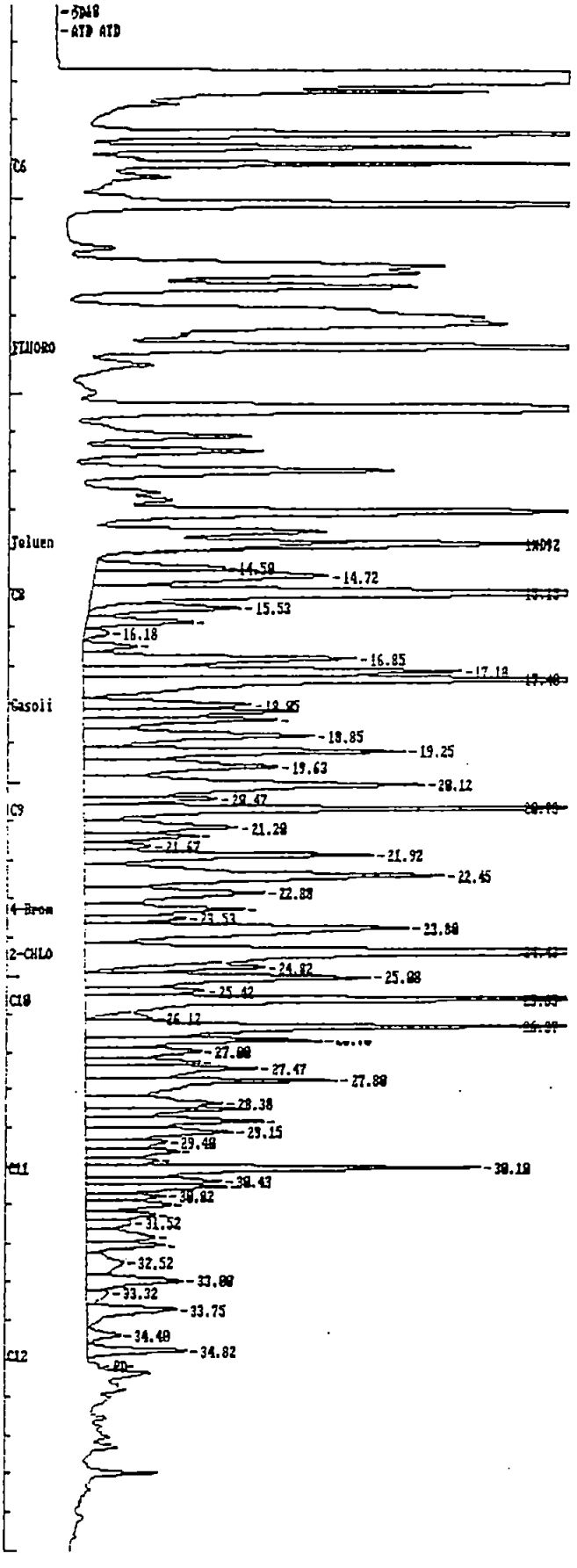
TPH - GASOLINE RANGE PETROLEUM PRODUCTS BY GC

Client Sample ID	Method Blank	Method Blank
PNELI Sample ID	3953-MB01	3953-MB02
Sample Matrix	Water	Water
Date Sample Received	NA	NA
Date Sample Analyzed	04-02-92	04-03-92
Units of Measure	mg/ℓ	mg/ℓ

Compounds		
TPH Quantitated as:		
Gasoline	0.05 U	0.05 U

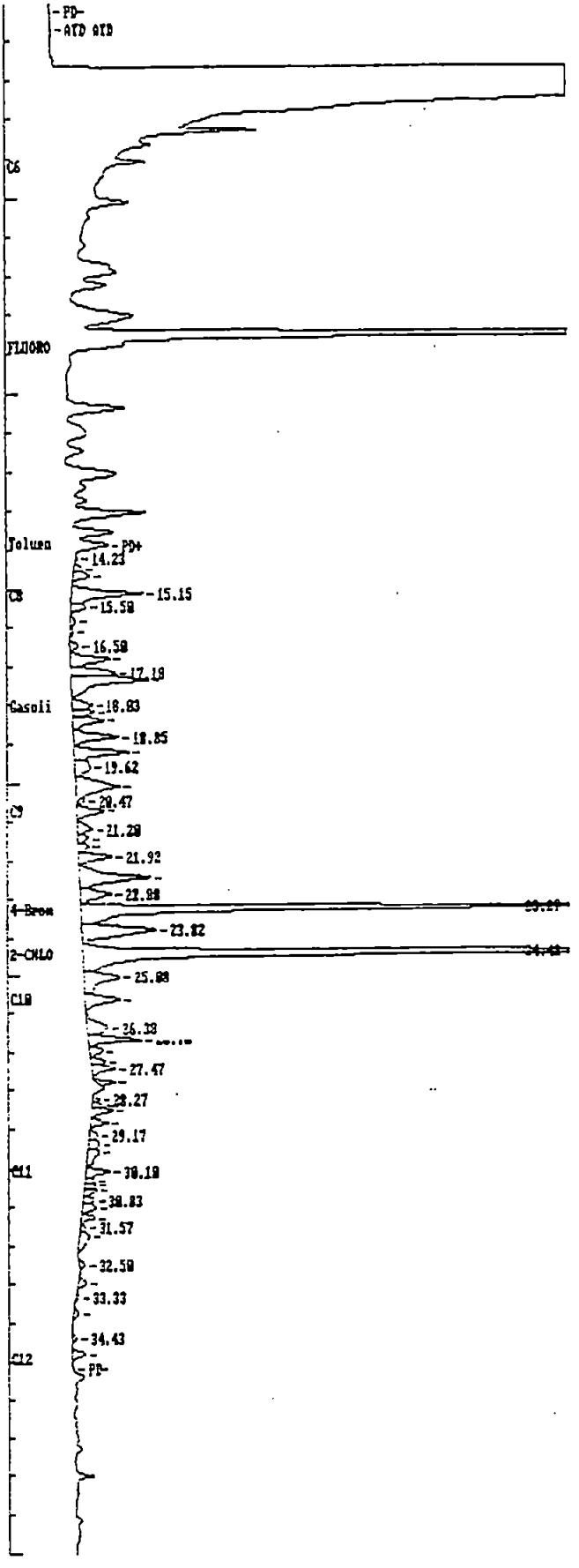
Surrogate		
% 4-Bromofluorobenzene	88	82

SAMPLE NAME: 3953-02 1:1000 COLUMN: 30m x 0.53mm DB-624 : FID
DATE AND TIME INJECTED: 04-02-1992 20:22:20 INSTRUMENT I.D.: GCKC5890
Full Range: 50 millivolts Data File = X:C093-7.PTS



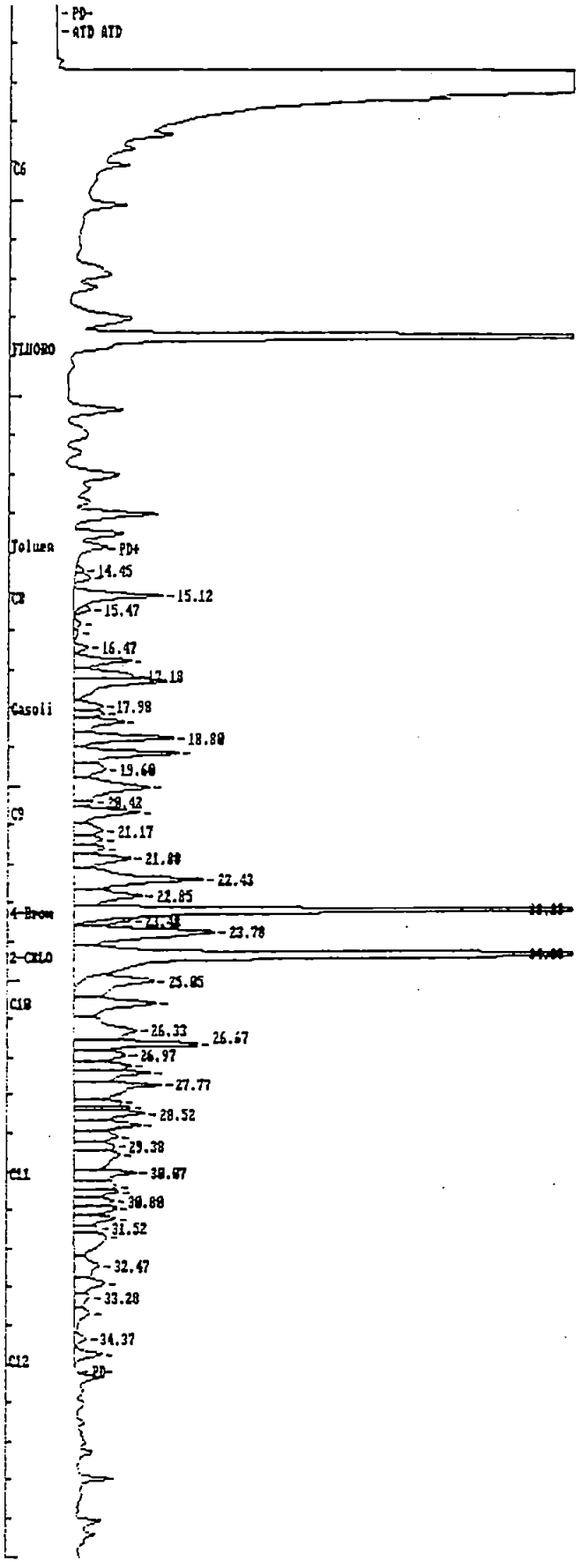
APR 0 3 1992

SAMPLE NAME: 3953-03 COLUMN: 30m x 0.53mm DB-624 : FID
DATE AND TIME INJECTED: 04-02-1992 21:31:56 INSTRUMENT I.D.: GCKC5890
Full Range: 50 millivolts Data File = X:C093-8.PTS



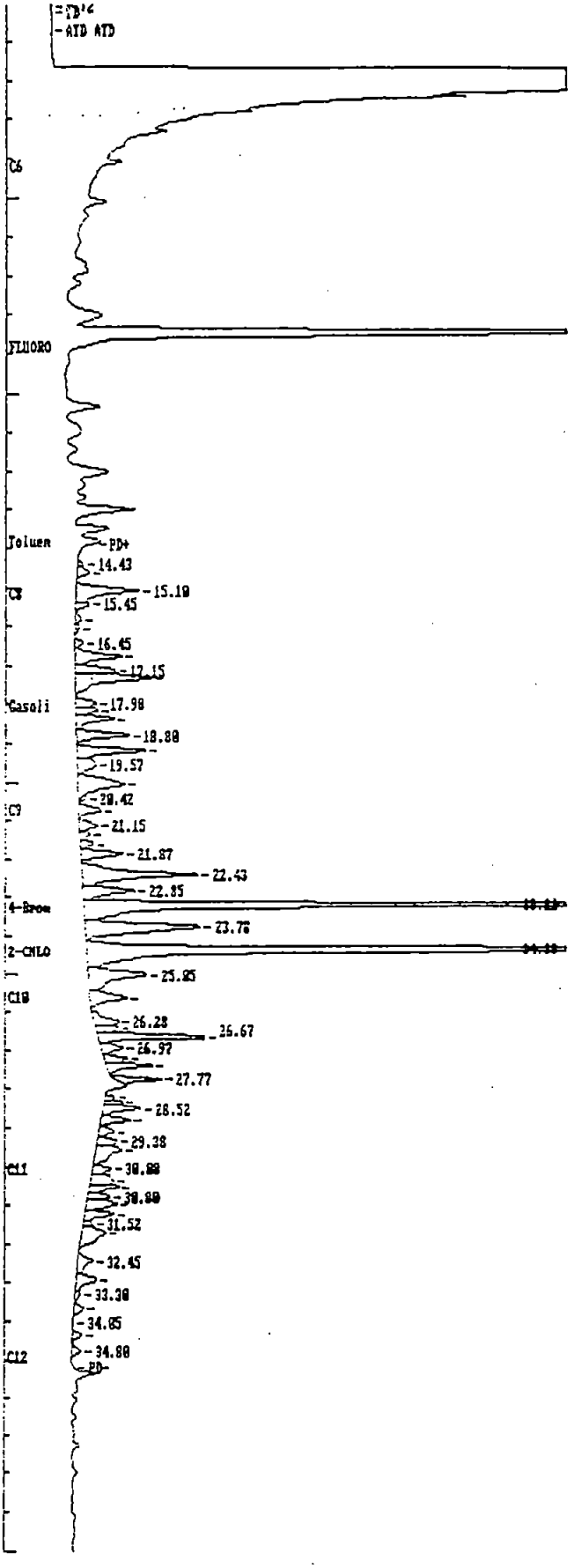
APR 0 3 1992

SAMPLE NAME: 3953-01 COLUMN: 30m x 0.53mm DB-624 : FID
DATE AND TIME INJECTED: 04-03-1992 12:40:55 INSTRUMENT I.D.: GCKCS890
Full Range: 50 millivolts Data File = X:C094-5.PTS



APR 0 5 1992

SAMPLE NAME: 3953-01 DUP COLUMN: 30m x 0.53mm DB-624 : FID
DATE AND TIME INJECTED: 04-03-1992 16:37:15 INSTRUMENT I.D.: GCKC5890
Full Range: 50 millivolts Data File = X:C094-6.PTS



APR 0 5 1992

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\TEPH

TEPH AND OTHER EXTRACTABLE ORGANICS BY GC

Client Sample ID	MW3 @ 13-13.5'	MW3 @ 13-13.5'Dup.	MW3 @ 18.5-19'	MW4 @ 13.5-14'
PNELI Sample ID	3953-01	3953-01 Dup.	3953-02	3953-03
Sample Matrix	Soil	Soil	Soil	Soil
Date Sample Received	03-26-92	03-26-92	03-26-92	03-26-92
Date Extracted	03-30-92	03-30-92	03-30-92	03-30-92
Date Analyzed	03-31-92	03-31-92	03-31-92	03-31-92
Units of Measure	mg/kg	mg/kg	mg/kg	mg/kg
Compound				
Total Extractable Organics:				
C_{10}-C_{24} Quantitated as Diesel:	34 U	34 U	29 U	32 U
C_{24}-C_{40} Quantitated as Motor Oil:	100 U	100 U	88 U	96 U
Surrogate				
Percent O-Terphenyl	81	81	75	79

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\TEPH

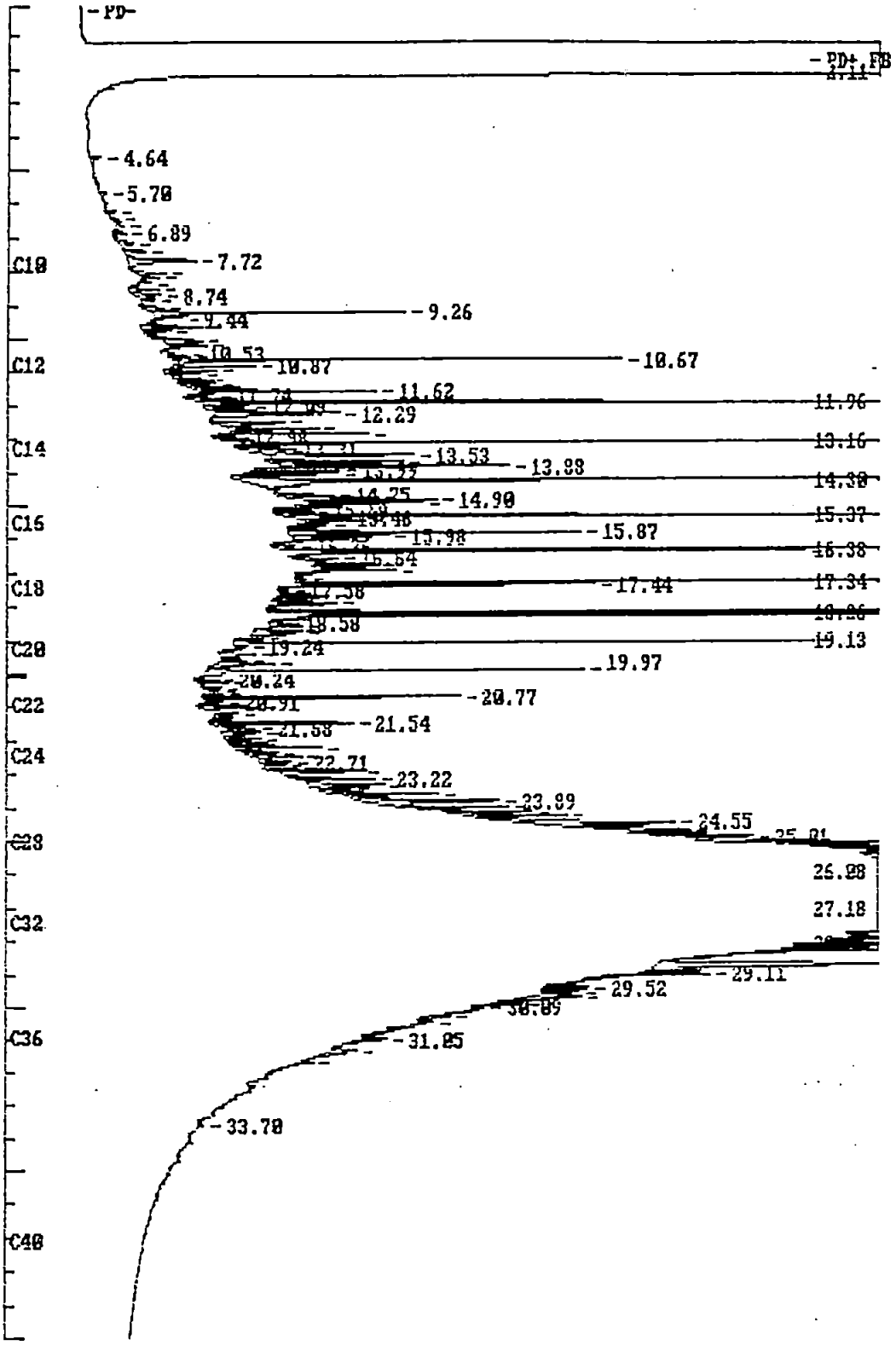
TEPH AND OTHER EXTRACTABLE ORGANICS BY GC

Client Sample ID	Method Blank
PNELI Sample ID	3953-MB
Sample Matrix	Soil
Date Sample Received	NA
Date Extracted	03-30-92
Date Analyzed	03-31-92
Units of Measure	mg/kg

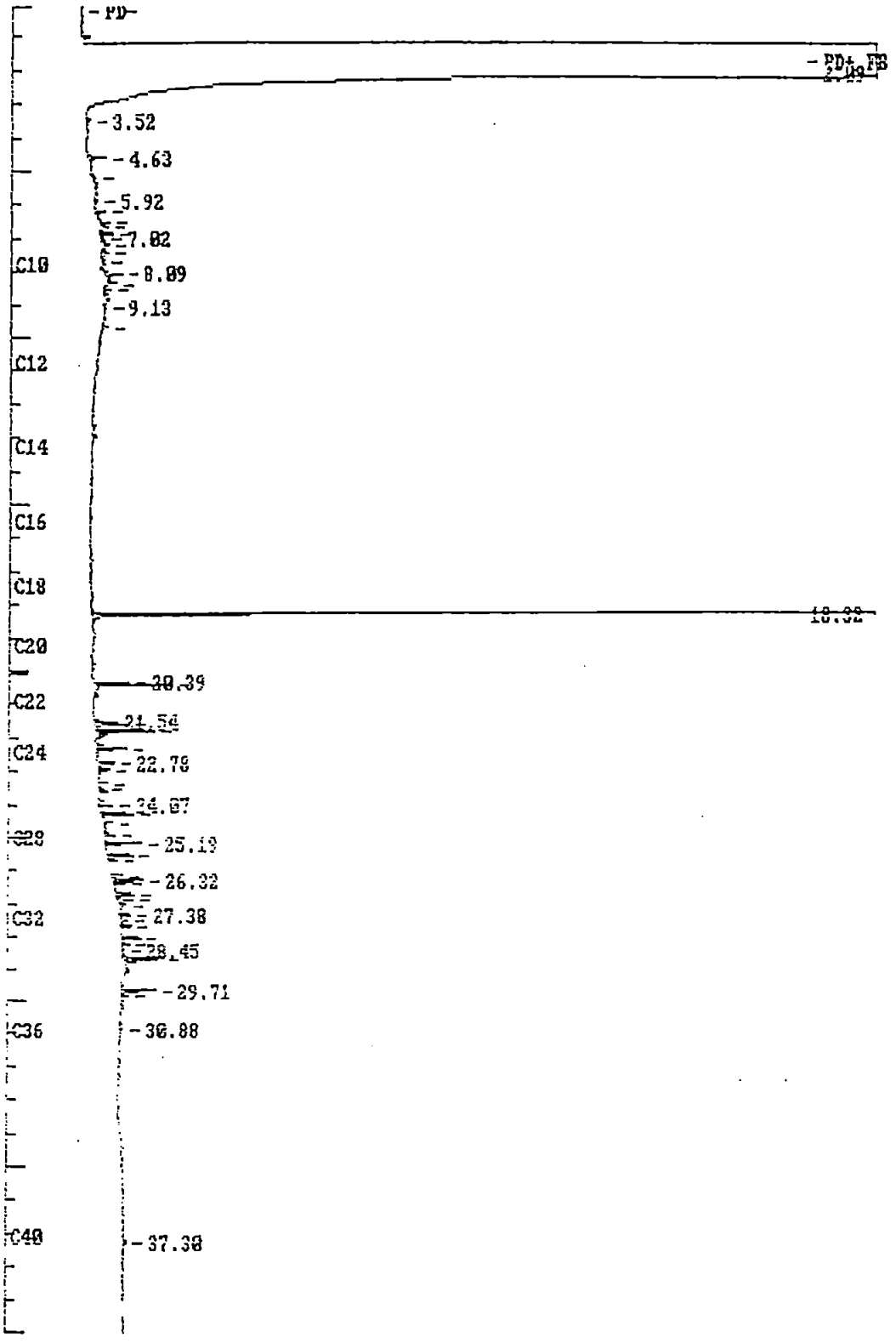
Compound		
Total Extractable Organics:		
C_{10}-C_{24} Quantitated as Diesel:	25	U
C_{24}-C_{40} Quantitated as Motor Oil:	75	U

Surrogate	
Percent O-Terphenyl	78

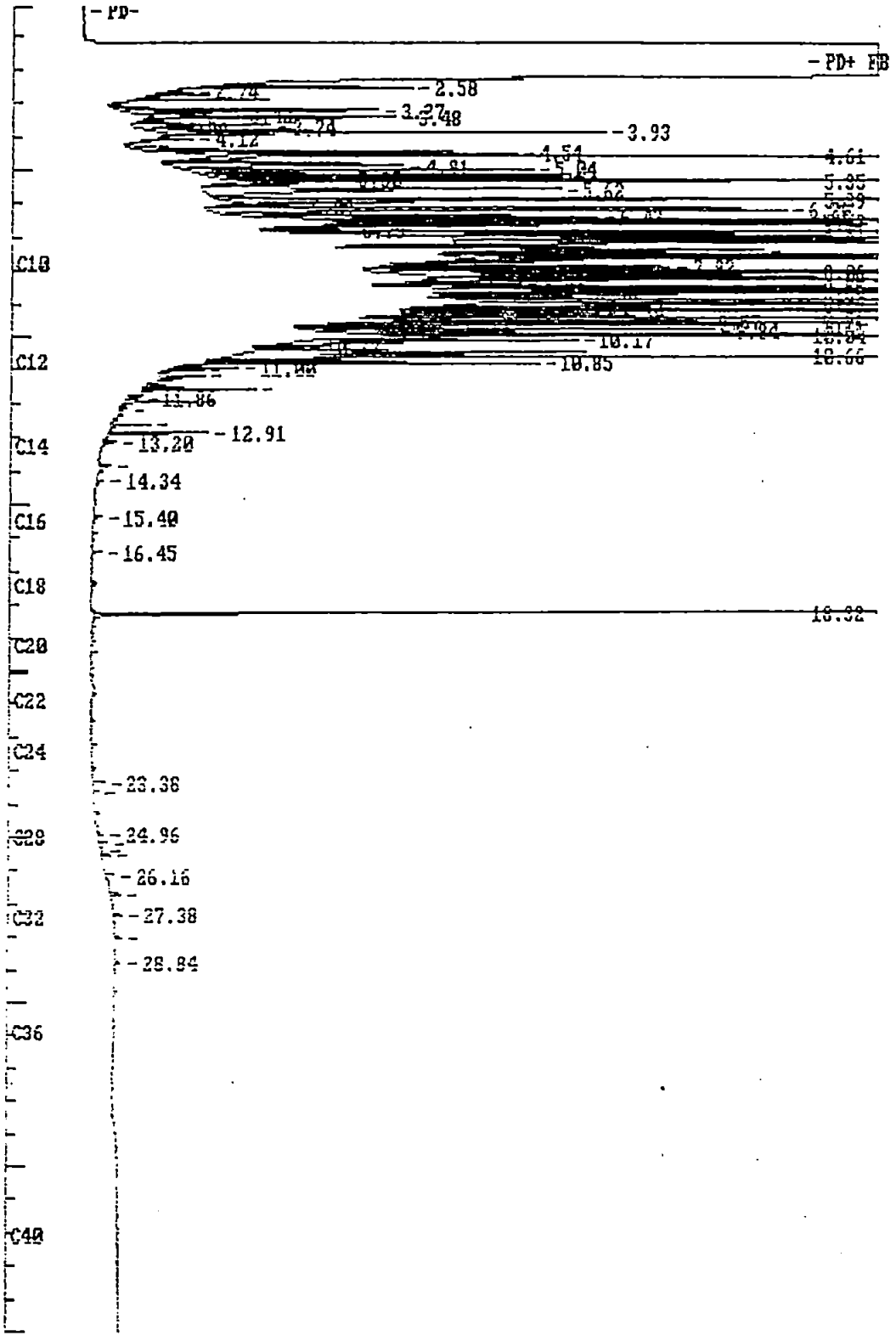
SAMPLE NAME: DIESEL/MO 500/1500/100 COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: 03-30-1992 14:21:06 INSTRUMENT I.D.: GCFA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = F:A090-5.PTS



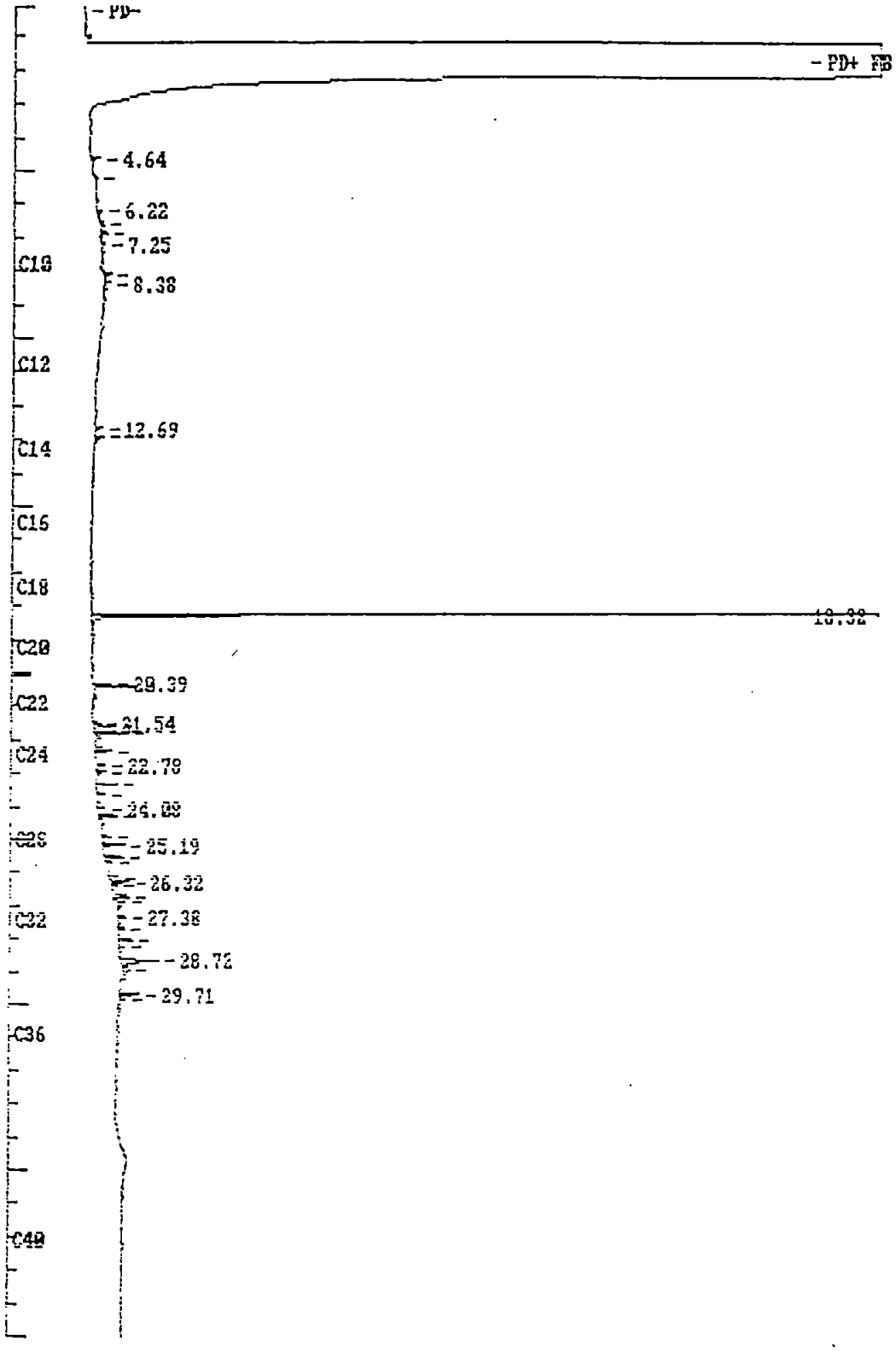
SAMPLE NAME: 3953-01 COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: "03-31-1992 03:51:1 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = P:A090-21.PTS



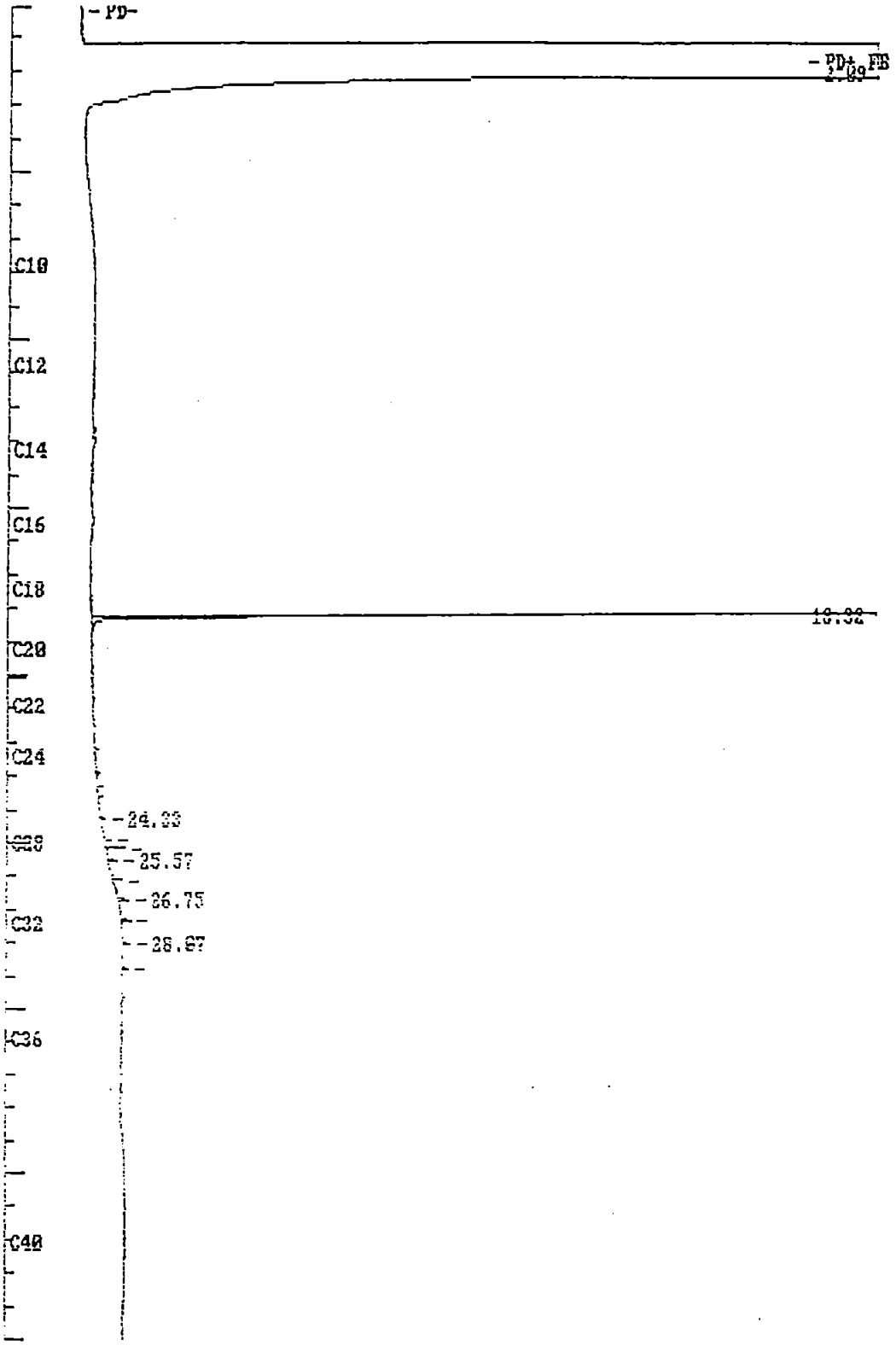
SAMPLE NAME: 3953-02 COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: "03-31-1992 05:30:4 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = F:A090-23.PTS



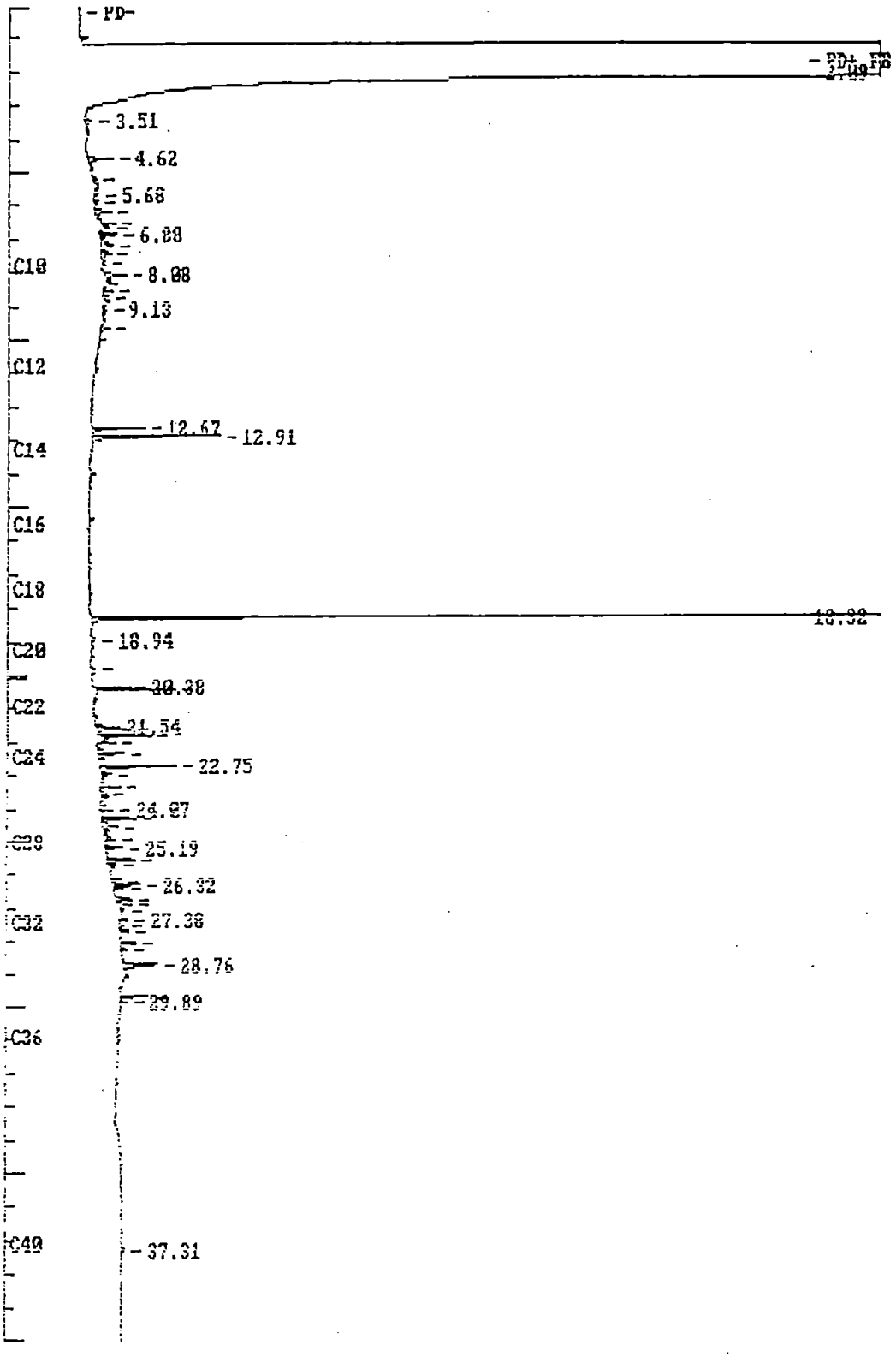
SAMPLE NAME: 3953-03 COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: "03-31-1992 06:20:5 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = F:A090-24.PTS



SAMPLE NAME: 3953-MB COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: "03-31-1992 02:10:5 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = P:A090-19.PTS



SAMPLE NAME: 2953-01D COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: "03-31-1992 04:40:5 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = F:A090-22.PTS



NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\CM

METALS ANALYSIS

Client Sample ID: MW3 @ 13-13.5'
Sample Matrix: Soil
Units of Measure: mg/kg
PNELI Sample ID: 3953-01
Date Sample Received: 03-26-92
% Solids Content: 73.5

Analyte		Concentration	Method Blank Concentration		M	Date Analyzed
Lead	(Pb)	6.3	0.4	U	F	04-04-92

Client Sample ID: MW3 @ 18.5-19'
Sample Matrix: Soil
Units of Measure: mg/kg
PNELI Sample ID: 3953-02
Date Sample Received: 03-26-92
% Solids Content: 85.0

Analyte		Concentration	Method Blank Concentration		M	Date Analyzed
Lead	(Pb)	2.6	0.4	U	F	04-04-92

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\CM

METALS QC SUMMARY

Client Sample ID: MW3 @ 13-135'
PNELI Sample ID: 3953-01
Sample Matrix: Soil
Date Sample Received: 03-26-92
Units of Measure: mg/kg

Analyte		Duplicate Sample Concentration	Original Sample Concentration	Relative Percent Difference
Lead	(Pb)	6.3	6.3	0

Analyte		Spike Sample Concentration	Original Sample Concentration	Spike Level	Percent Recovery
Lead	(Pb)	11.2	6.3	5.4	90.7

APPENDIX D

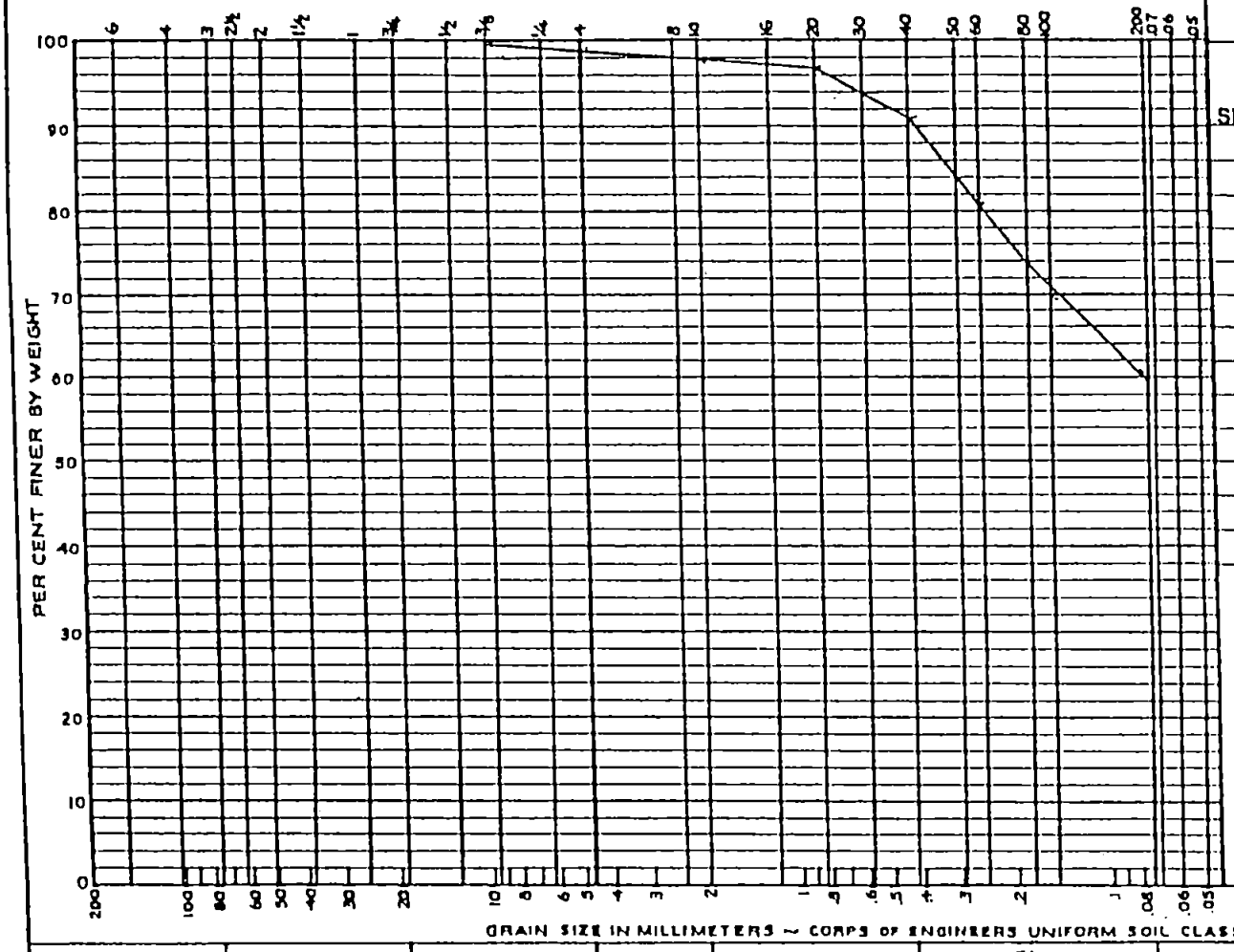
LABORATORY RESULTS FOR PHYSICAL CHARACTERISTICS ANALYSES OF SOIL SAMPLES

TESTING & INSPECTION / ENGINEERS / GEOLOGISTS

12819 N.E. 126th PLACE
KIRKLAND, WASHINGTON 98034 (206) 823-9000

SEATTLE (206) 525-6700
EVERETT (206) 259-0817

SIEVE ANALYSIS



MATERIAL MW 3 8.0'-8.5' 209.1

SIEVE ANALYSIS

SIEVE SIZE	% PASS	SPECS
3/8"	100	
#4	99	
#10	98	
#20	97	
#40	91	
#60	81	
#80	74	
#100	70	
#200	60	

SAMPLE NO.	DEPTH - FT.	DENSITY - WET	NAT W.C.	L.L.	P.I.	PERMEABILITY
MW 3	8 - 8½					4.06 x 10⁻⁶

PROJECT
Lab Soils
Geraghty & Miller
CERT. NO. 2203-45

Plotted: K
Checked:

4-3-92 (Date of report)

Chief, Soil Mechanics Branch

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. ________

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number: NA209.10
Project Location: BP# 11060 / Fauntleroy
Laboratory: ________
Sampler(s)/Affiliation: MM / G&M. Inc.

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	Moisture	Density	Sieve Analysis	Vertical Permeability						TOTAL
MW3@8-8.5	S	3.23.92		X	X	X	X						1

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 1

Relinquished by: [signature]	Organization: G&M Inc.	Date 3/23/92	Time 1900	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: ________

Delivery Method: ☐ In Person ☐ Common Carrier ☐ Lab Courier ☐ Other

CASCADE TESTING LABORATORY, INC.
TESTING & INSPECTION / ENGINEERS / GEOLOGISTS
14120 NE 21st STREET BELLEVUE, WASHINGTON 98007

REQUEST FOR SOIL TESTING

CERT. NO. 9203-45 PROJECT WA 209.10 MW3 CLIENT Geraghty & Miller

DATE RECEIVED 3-24-92 DATE FINISHED BILLED DATE

BORING NUMBER	SAMPLE NUMBER	SAMPLE DEPTH	MOISTURE	SIEVE	% PASSING 200	HYDROMETER	SOIL CLASSIFICATION	SPECIFIC GRAVITY	LIQUID L. & PLASTIC L.	DEGRADATION	COMPACTION D1557	COMPACTION D698	SAND EQUIVALENT	UNIT WEIGHT	CBR	PERMEABILITY	% ORGANICS BY VOLUME	CONSOLIDATION: SATURATE	CONSOLIDATION: LOAD	CONSOLIDATION: REBOUND	TRIAXIAL OR DIRECT SHEAR: TYPE	TRIAXIAL OR DIRECT SHEAR: PRESSURE (PSI)	OTHER TESTING	SPECIAL INSTRUCTIONS AND/OR COMMENTS
	MW3	B-8.5		X	X																		Perm exhibit +	

APPENDIX E

LABORATORY RESULTS FOR CHEMICAL ANALYSES OF GROUND-WATER SAMPLES

NATIONAL EXPRESS LABORATORIES, INC.

NATEX

Pacific Northwest Environmental Laboratory, Inc.
6645 185th Avenue NE, Suite 100
Redmond, WA 98052
(206) 885-0083
FAX (206) 883-8528

April 23, 1992

Kelly Kline
Geraghty and Miller, Inc.
8330 154th Ave. N.E.
Redmond, WA 98052

NARRATIVE FOR PNELI 3977

Enclosed are data summary sheets and supporting documentation for the samples received on April 09, 1992 of the BP 11060 project. The samples were received as follows:

CLIENT ID	PNELI ID	DATE COLLECTED
MW-1	3977-01	04-08-92
Trip Blank	3977-02	04-08-92

Listed below are anomalies and narratives associated with the receipt and/or analysis of these samples.

Sample Receiving

There were no anomalies associated with the receipt of these samples.

Purgeable Aromatics by GC — Method 8020, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.

Total Petroleum Hydrocarbons as Gasoline by GC — Washington State Department of Ecology Method WTPHG.

There were no anomalies associated with the preparation and/or analysis of these samples.

Total Petroleum Hydrocarbons as Diesel and Other Extractable Products by GC — Washington State Department of Ecology Method WTPHD.

There were no anomalies associated with the analysis of these samples and their associated QC.

Total Metals Digestion Procedure — Acid Digestion of Sediments, Sludges and Solids by Method 3050, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.

Lead — Graphite Furnace Method 7421, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.

There were no anomalies associated with the preparation and/or analysis of these samples.

All samples in this case were batched with QC samples previously reported in PNELI Case 3941. All QC results and sample analyses are summarized here.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Sincerely,

Randal G. Jenkins

Enclosures

GERAGHTY & MILLER, INC.
Environmental Services

LABORATORY TASK ORDER

Task Order No.: 2644

Geraghty & Miller Office: Redmond WA Phone: 206-889-6321 Date: March 13, 1992
Address: 8330 154th AVE NE Project Number: WA20910
Redmond WA 98052 Laboratory Reporting Level: ☐I ☒II ☐III ☐IV
Project Name: BP #1060 Location: Seattle, WA
Laboratory: DHEL Phone: 895-0083 Contact: Diane Risk
Lab Provides Sample Containers? ☒Yes ☐No Date Required: 3/25 Ship To: As above; Attn Kelly Kline
Estimated Date Of Sample Receipt By Laboratory: 3/24 Report Due: Standard TAT/2 wks verbal/fax
Reports Delivered To: As above; Attn Kelly Kline Number Of Reports: 2
Work Description:
Send Invoice To: as above; Attn Kelly Kline

PHYSICAL PROPERTIES	# Water	Method	Det. Limit	# Soil	Method	Det. Limit	NON-METALLICS	# Water	Method	Det. Limit	# Soil	Method	Det. Limit
pH							Acidity						
Spec. Cond.							Alkalinity (Total)						
Hardness (total)							Carbonate						
TDS							Bicarbonate						
TSS							Bromide						
Temperature							Chloride						
Turbidity							Cyanide						
Ignitability							Fluoride						
Corrosivity							Ammonia						
Reactivity							Nitrate						
E.P. Tox. Extraction							TKN						
TCLP Extraction							Nitrite						
E.P. Tox. Corrosion							Phosphorus						
TCLP Corrosion							Silica						
METALS*							Sulfate						
Aluminum							Sulfide						
Antimony							Surfactants (MBAS)						
Arsenic							ORGANICS						
Barium							BOD						
Beryllium							COD						
Cadmium							O & G TPH	2	1413.1	MDL	6	WHG.1	MDL
Calcium							TPH-G	4	M602	MDL	10	WTPHG	MDL
Chromium							TPH-D	2	M602	MDL	6	WTPHD	MDL
Hex Chromium							TPH-Motor Oil	2	M602	MDL	6	WTPHD	MDL
Cobalt							Purg. Halocarbons*	43	601	MDL	6	8010	MDL
Iron							Non-Halogenated VOCs*						
Lead	4	7421	MDL	10	7421	MDL	Purgeable Arom.*						
Magnesium							Phenols*						
Manganese							Pesticides/PCBs*						
Mercury							PAHs*						
Nickel							Org. Phos. Pest.*						
Potassium							Dioxins						
Selenium							Chlor. Herb.*						
Silver							Volatile Organics (BTEX)	6	602	MDL	10	8020	MDL
Sodium							Semi Volatile Organics*						
Thallium							APPENDIX IX*						
Tin							RADIONUCLIDES						
Vanadium							Gross Alpha						
Zinc							Gross Beta						
Priority Pollutant Metals*							Radium 226						
TCL (HSL) Metals*							Radium 228						

* Metals are Total Metals Unless Specified as Dissolved Under Special Instructions. ** Attach Table of Elements or Compounds to be Analyzed. *** Including All Organic and Inorganic Compounds.

Special Instructions Or Other: * Please provide sample containers for water samples only. Include a trip blank for BTEX and 1 for Chlorinated hydrocarbons (601/8010)

G&M Project Manager Signature: _____ Date: _____ G&M QA Officer Signature: [signature] Date: 3/18/92
Laboratory Acceptance: [signature] Date: 3/18/92

LABORATORY TASK ORDER AMENDMENTS

☐ No Changes
Required Change:

G&M Representative Signature: _____ Date: _____

ERAGHTY & MILLER, INC.
Environmental Services

8330 154th Ave NE
Redmond 98052

Laboratory Task Order No. ____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number WA 207.10

Project Location BP # 11060

Laboratory P.N.E.L.

Sampler(s)/Affiliation Amr Amr / Geraghty & Miller

3977

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	SAMPLE BOTTLE / CONTAINER DESCRIPTION: BTEX / TPH(G) 3 x 40 ml VOA's	TPH (D) 2 x 1 L Bottles	Total Lead 1 x 500ml Bottle							TOTAL	
01 MW-1	L	4/8/92 5:50pm		4	2	1 pH<2							7	OK
02 TRIP		4/8/92 5:50pm		2	BTEX only								2	U

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 9 EA.

Relinquished by:		Organization: Geraghty & Miller, Inc.	Date 4/9/92	Time 8:20am	Seal Intact? Yes No N/A
Received by:		Organization: PNEL	Date 4/9/92	Time 8:20 Am	
Relinquished by:		Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:		Organization:	Date / /	Time	

Special Instructions/Remarks: Normal Turnaround Time

DATA REPORTING QUALIFIERS

Some of these qualifiers may appear in this analytical data report. Soil samples are analyzed and reported on a dry weight basis unless otherwise noted.

Organics Data Qualifiers

A - This flag indicates that a TIC is a suspected aldol-condensation product.
B - Indicates compound was found in the associated blank as well as in the sample.
C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.
D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.
J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a target compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
L - Compound detected in leachate blank.
M - Indicates value is taken from a medium level analysis.
N - Indicates that the identity of the compound is based upon a mass spectral library search (applies to tentatively identified compounds only).
ND- Not detected. Detection limit shown in parentheses.
NQ- Not quantitated as...
U - Indicates compound was analyzed for but not detected at the given detection limit. The sample quantitation limit was corrected for dilution and for percent moisture, when applicable.
X - Other specific flags and footnotes may be required to properly define the results. If more than two qualifiers are required for a sample result, the "X" flag combines several flags, as needed. For instance, the "X" flag might combine the "A," "B," and "D" flags for some sample.
* - Indicates spiked compounds used for MS/MSD analysis.

Inorganics Data Qualifiers

NA- Relative percent difference calculation is not applicable to analytes when not detected.
NC- Not calculated when analyte is not detected.
NS- Not calculated when sample concentration of analyte exceeds spike level by a factor of four or more.
U - Indicates that analyte was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.
B - Indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the Cover Page (if the problem applies to all samples) or on the specific FORM-I (if it is an isolated problem).
M - Duplicate injection precision not met.
N - Spike sample recovery not within control limits.
S - The reported value was determined by the Method of Standard Additions (MSA).
W - Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance. (See Exhibit E.)
* - Duplicate analysis not within control limits.
+ - Correlation coefficient for the MSA is less than 0.995.

Inorganics Method Qualifiers

CV- Manual Cold Vapor AA
F - FURNACE AA
P - ICP

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\BTEX

PURGEABLE AROMATICS (BTEX) BY GC
Method 8020

Client Sample ID	MW-1	Trip Blank	
PNELI Sample ID	3977-01	3977-02	
Sample Matrix	Water	Water	
Date Sample Received	04-09-92	04-09-92	
Date Sample Analyzed	04-14-92	04-14-92	
Units of Measure	µg/ℓ	µg/ℓ	
Compounds			
Benzene	11	0.5	U
Toluene	2.6	1.5	
Ethylbenzene	4.9	0.5	U
Total Xylene	17	1.0	U
Surrogate			
% Fluorobenzene	91	92	
% 2-Chlorotoluene	100	100	

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\BTEX

PURGEABLE AROMATICS (BTEX) BY GC
Method 8020

Client Sample ID	Method Blank	Method Blank
PNELI Sample ID	3977-MB01	3977-MB02
Sample Matrix	Water	Water
Date Sample Received	NA	NA
Date Sample Analyzed	04-14-92	04-15-92
Units of Measure	µg/ℓ	µg/ℓ

Compounds				
Benzene	0.5	U	0.5	U
Toluene	0.5	U	0.5	U
Ethylbenzene	0.5	U	0.5	U
Total Xylene	1.0	U	1.0	U

Surrogate		
% Fluorobenzene	92	92
% 2-Chlorotoluene	100	100

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\BTEX

QC SUMMARY
PURGEABLE AROMATICS (BTEX) BY GC

Client Sample ID:	NA	**PNELI Sample ID:**	3969-02
Sample Matrix:	Water	**Date Sample Received:**	04-02-92
Units of Measure:	µg/ℓ	**Date Sample Analyzed:**	04-08-92

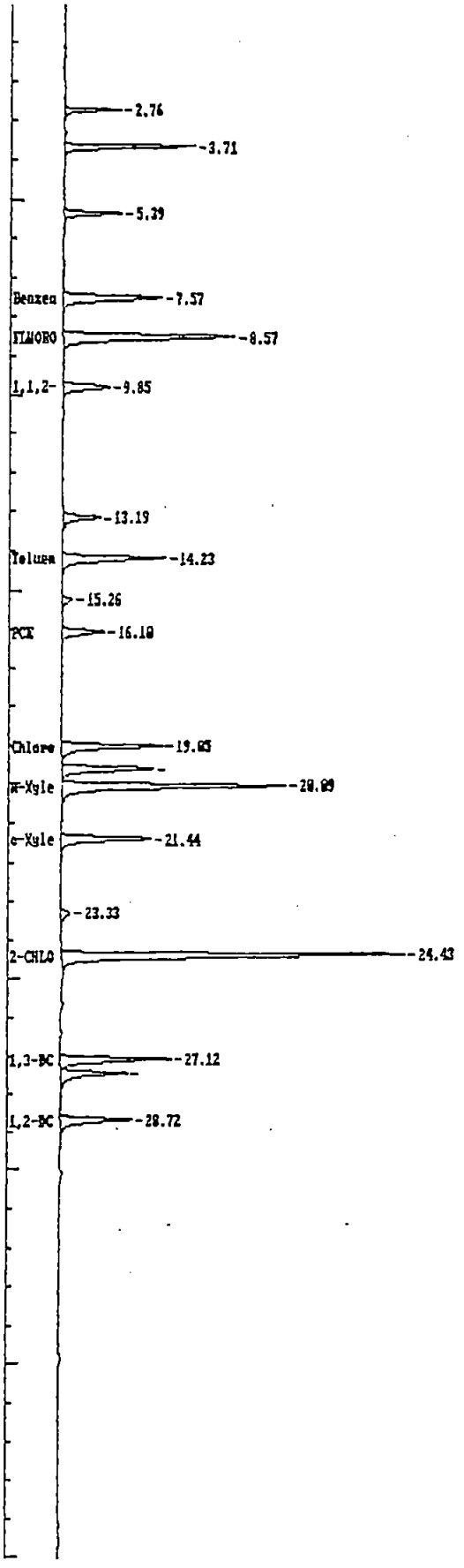
MATRIX SPIKE RESULTS

Compound	Spike Added	Sample Conc.		MS Conc.	MS % Rec.	Water QC Limits Rec.	Soil QC Limits Rec.
Benzene	10	0.5	U	9.7	97	76-127	66-142
Toluene	10	0.5	U	10.1	101	76-125	59-139

MATRIX SPIKE DUPLICATE RESULTS

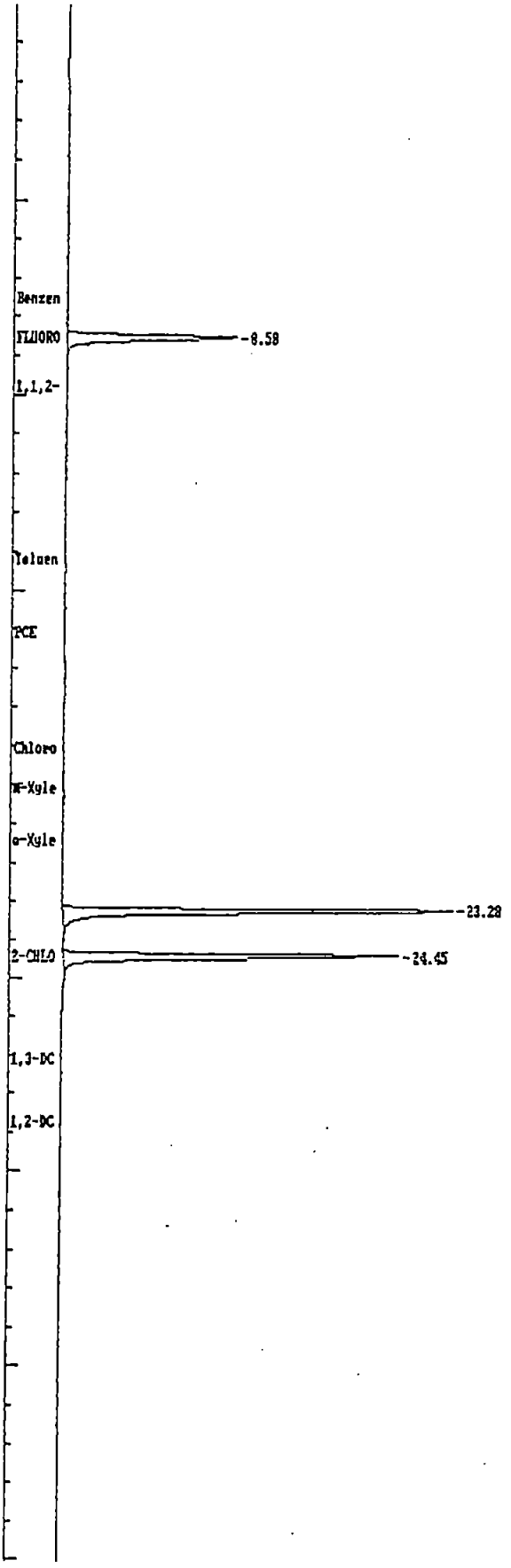
Compound	Spike Added	MSD Conc.	MSD % Rec.	% RPD	Water QC Limits RPD	Water QC Limits Rec.	Soil QC Limits RPD	Soil QC Limits Rec.
Benzene	10	9.8	98	1.0	11	76-127	21	66-142
Toluene	10	9.9	99	2.0	13	76-125	21	59-139

SAMPLE NAME: BTEX Std 10 ug/L COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-14-1992 09:18:27 INSTRUMENT I.D.: GCKAS890
Full Range: 40 millivolts Data File = K:A10S-2.PTS



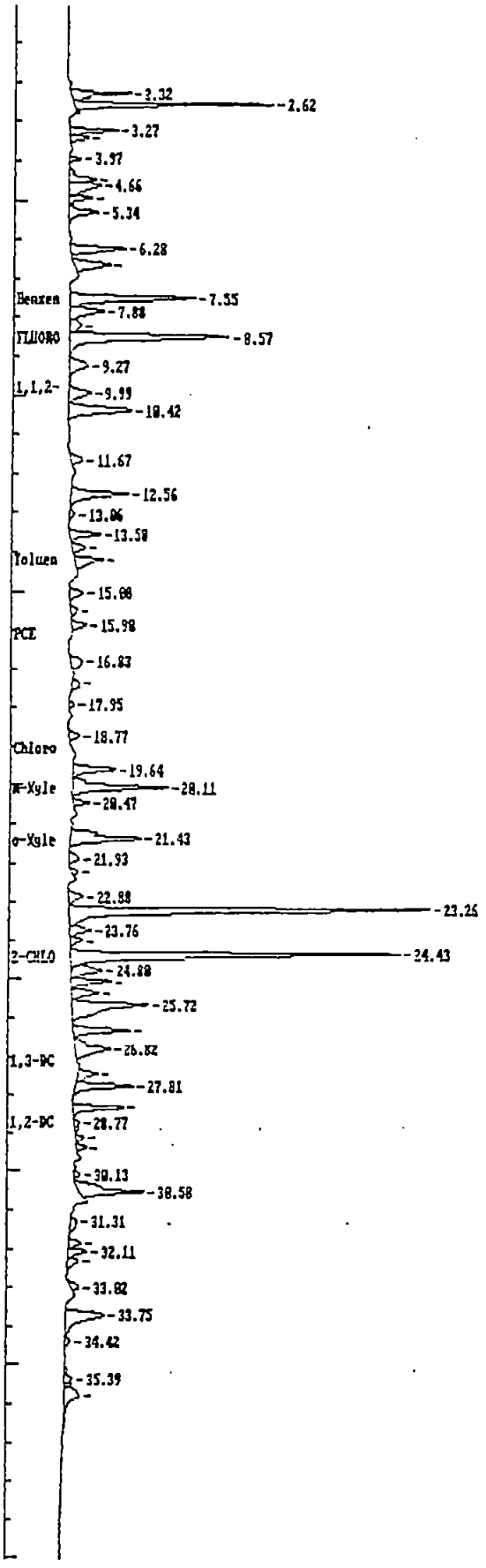
APR 2 0 1992

SAMPLE NAME: Water Blank COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-14-1992 10:28:34 INSTRUMENT I.D.: GCKA5890
Full Range: 40 millivolts Data File = K:A105-3.PTS



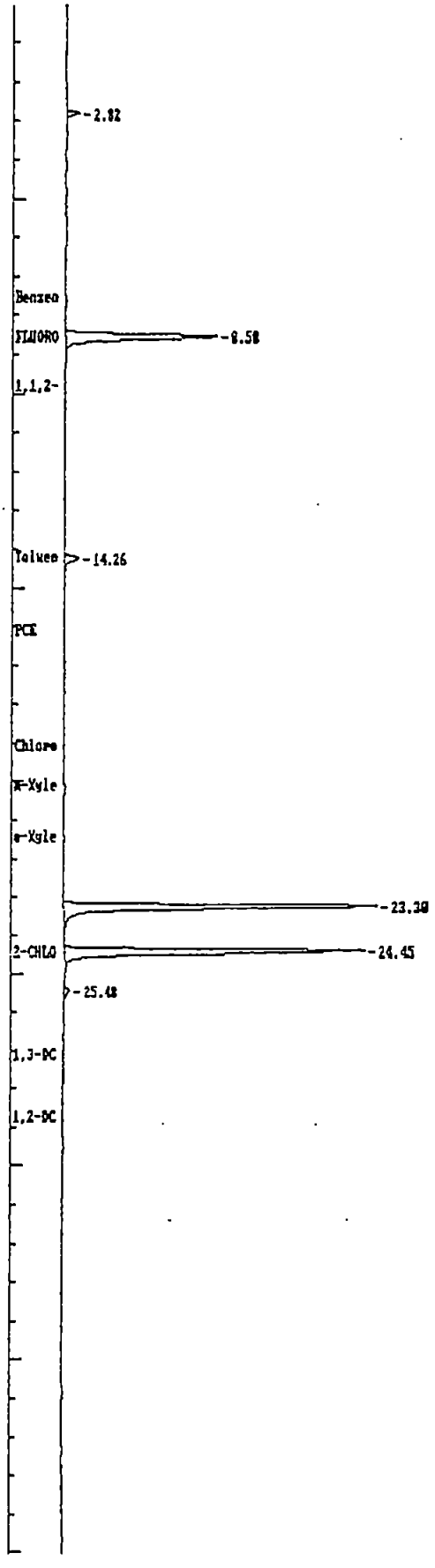
APR 2 0 1992

SAMPLE NAME: 3977-01 COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-14-1992 11:40:23 INSTRUMENT I.D.: GCKA5890
Full Range: 40 millivolts Data File = K:A105-4.PTS



APR 2 0 1992

SAMPLE NAME: 3977-02 COLUMN: 30m x 0.53mm DB-624 : PID
DATE AND TIME INJECTED: 04-14-1992 14:01:36 INSTRUMENT I.D.: GCKAS890
Full Range: 40 millivolts Data File = K:A10S-6.PTS



APR 2 0 1992

NatEx Laboratories, Inc.
Pacific Northwest Environmental Laboratory, Inc.

\TVPH

TPH - GASOLINE RANGE PETROLEUM PRODUCTS BY GC

Client Sample ID	MW-1	MW-1 Dup.
PNELI Sample ID	3977-01	3977-01 Dup.
Sample Matrix	Water	Water
Date Sample Received	04-09-92	04-09-92
Date Sample Analyzed	04-14-92	04-14-92
Units of Measure	mg/ℓ	mg/ℓ

Compounds		
TPH Quantitated as:		
Gasoline	0.47	0.43

Surrogate		
% 4-Bromoflurobenzene	102	94

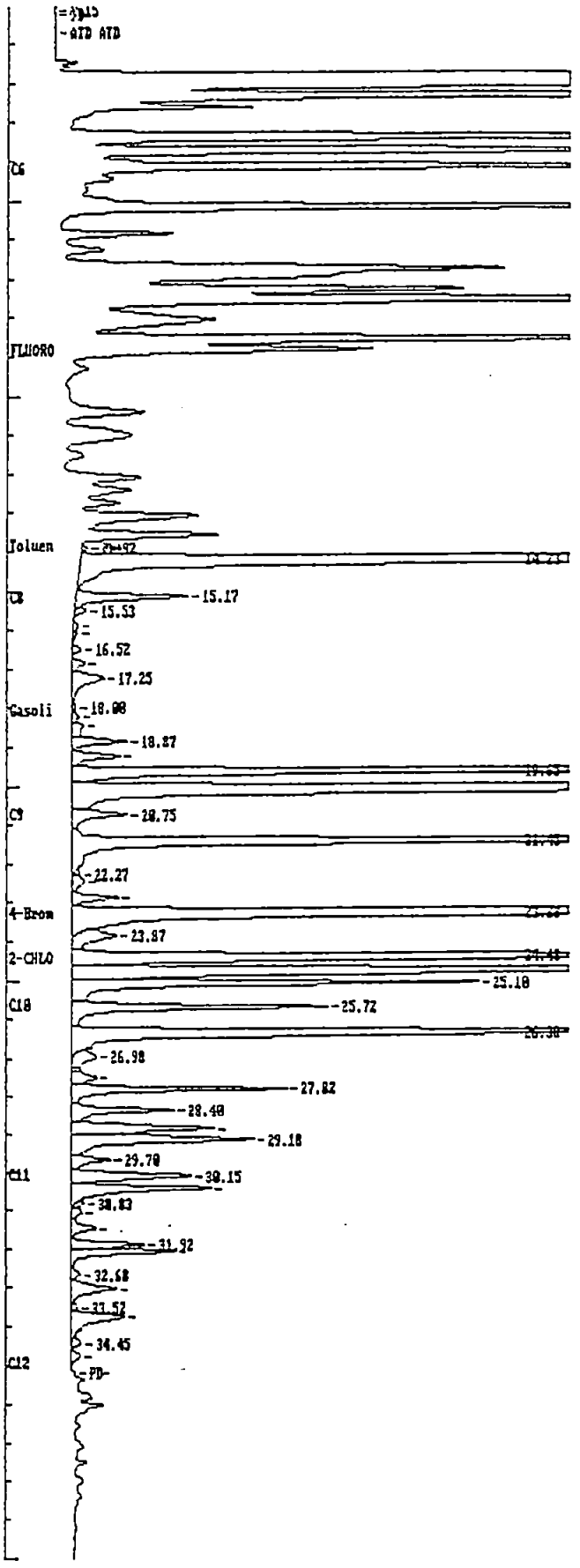
TPH - GASOLINE RANGE PETROLEUM PRODUCTS BY GC

Client Sample ID	Method Blank
PNELI Sample ID	3977-MB
Sample Matrix	Water
Date Sample Received	NA
Date Sample Analyzed	04-14-92
Units of Measure	mg/ℓ

Compounds		
TPH Quantitated as:		
Gasoline	0.05	U

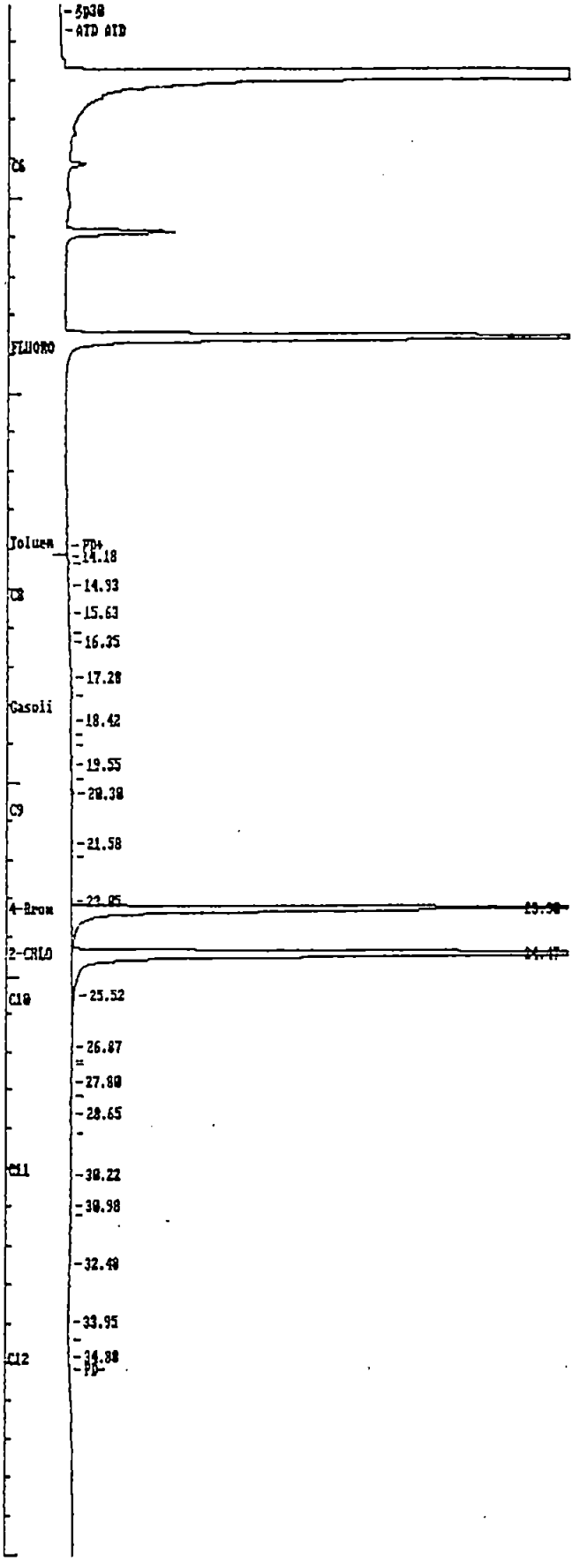
Surrogate	
% 4-Bromoflurobenzene	94

SAMPLE NAME: TPHG Std 1000 ug/L COLUMN: 30m x 0.53mm DB-624 : FID
DATE AND TIME INJECTED: "04-14-1992 08:08:0 INSTRUMENT I.D.: GCKC5890
Full Range: 50 millivolts Data File = X:C105-1.PTS



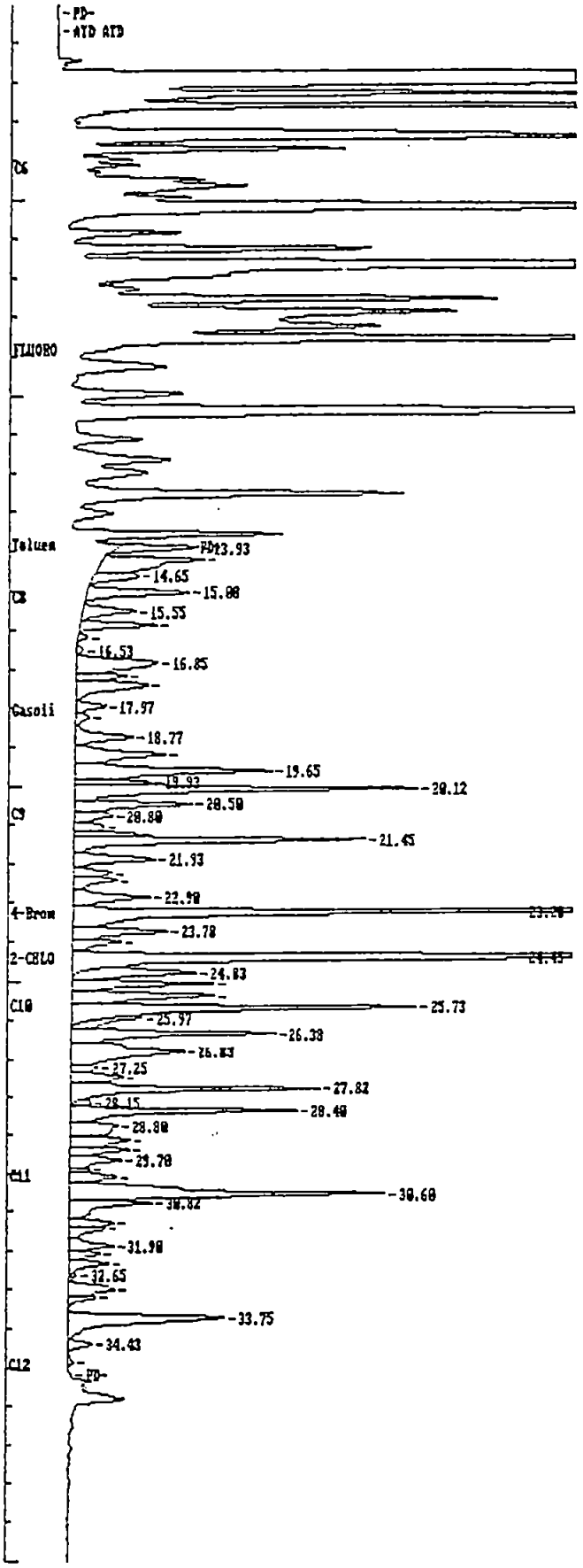
APR 2 0 1992

SAMPLE NAME: Water Blank COLUMN: 30m x 0.53mm DB-624 : FID
DATE AND TIME INJECTED: 04-14-1992 10:28:34 INSTRUMENT I.D.: GCKC5890
Full Range: 50 millivolts Data File = X:C105-3.PTS



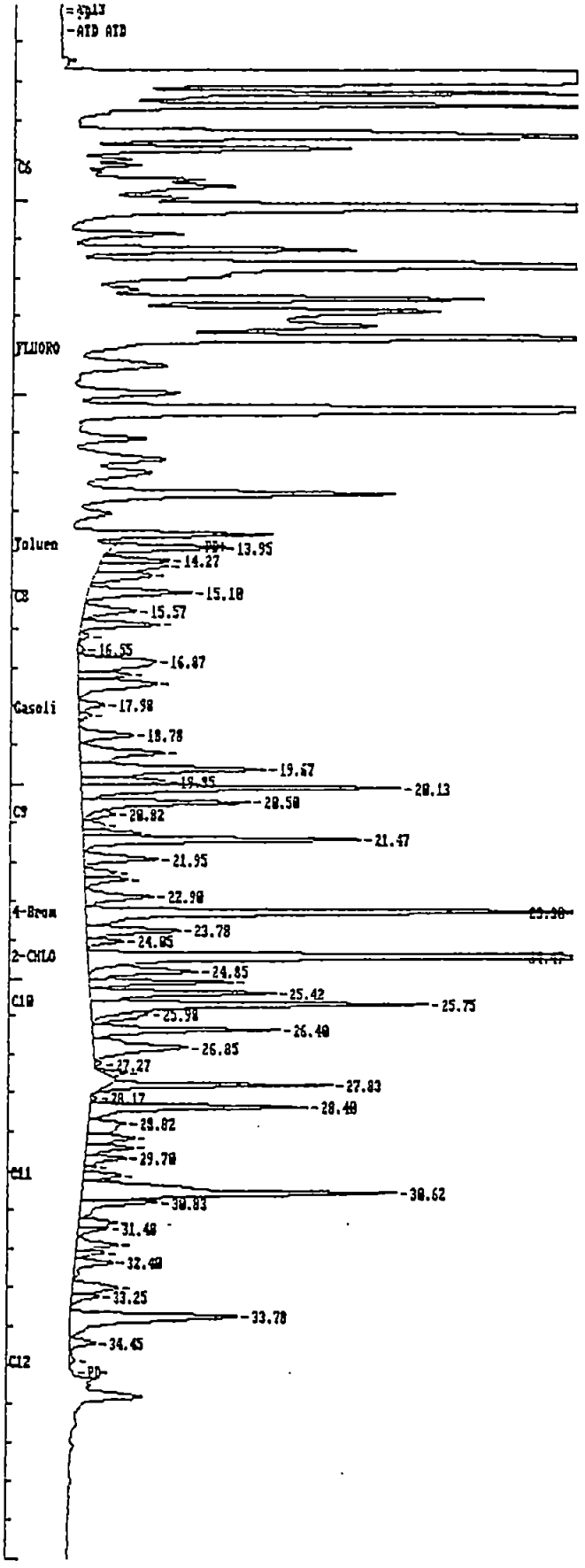
APR 2 0 1992

SAMPLE NAME: 3977-01 COLUMN: 30m x 0.53mm DB-624 : FID
DATE AND TIME INJECTED: 04-14-1992 11:40:23 INSTRUMENT I.D.: GCKC5890
Full Range: 50 millivolts Data File = X:C105-4.PTS



APR 2 0 1992

SAMPLE NAME: 3977-01 DUP COLUMN: 30m x 0.53mm DB-624 : FID
DATE AND TIME INJECTED: 04-14-1992 12:51:11 INSTRUMENT I.D.: GCKC5890
Full Range: 50 millivolts Data File = X:C105-5.PTS



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TPH-DIESEL AND OTHER EXTRACTABLE PETROLEUM PRODUCTS BY GC

Client Sample ID	MW-1	MW-1 Dup.
PNELI Sample ID	3977-01	3977-01 Dup.
Matrix	Water	Water
Date Received	04-09-92	04-09-92
Date Extracted	04-09-92	04-09-92
Date Analyzed	04-11-92	04-11-92
Units of Measure	mg/ℓ	mg/ℓ

Compound		
Total Extractable Organics:		
C_{12}-C_{24} Quantitated as Diesel:	0.67	0.59
C_{24}-C_{40} Quantitated as Motor Oil:	0.75 U	0.75 U
Surrogate		
Percent O-Terphenyl	109	106

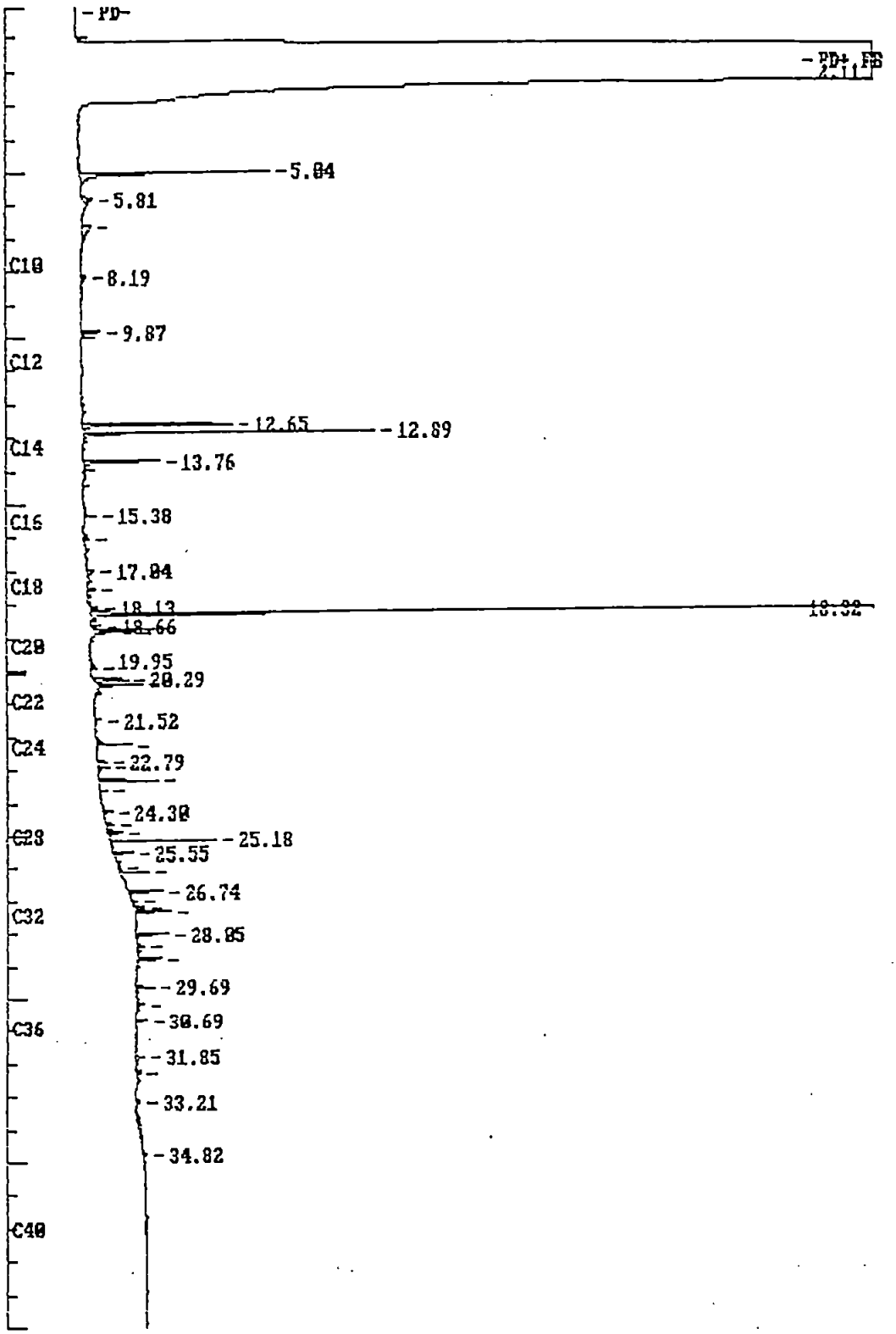
TPH-DIESEL AND OTHER EXTRACTABLE PETROLEUM PRODUCTS BY GC

Client Sample ID	Method Blank
PNELI Sample ID	3977-MB
Matrix	Water
Date Received	NA
Date Extracted	04-09-92
Date Analyzed	04-11-92
Units of Measure	mg/ℓ

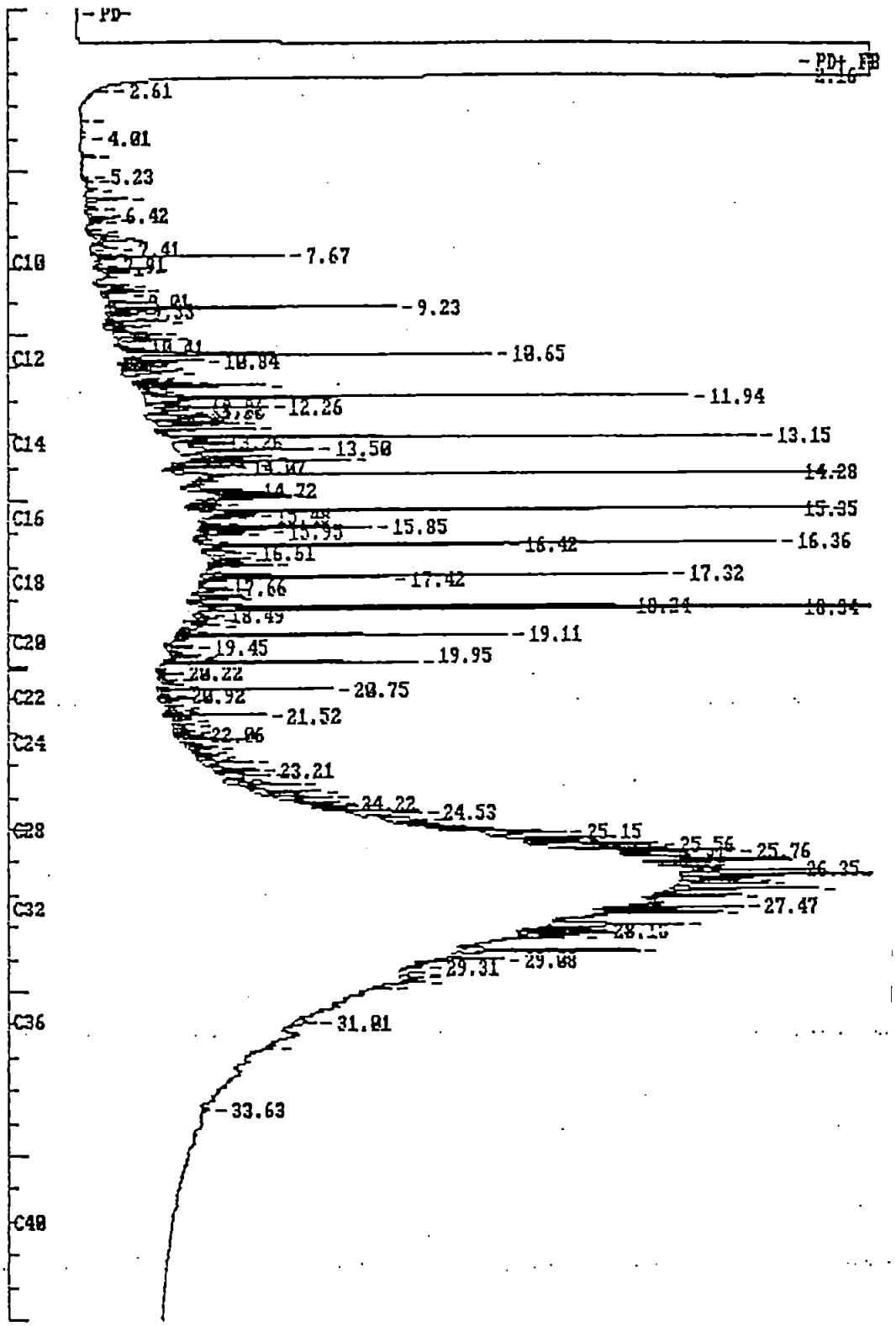
Compound		
Total Extractable Organics:		
C_{12}-C_{24} Quantitated as Diesel:	0.25	U
C_{24}-C_{40} Quantitated as Motor Oil:	0.75	U

Surrogate	
Percent O-Terphenyl	94

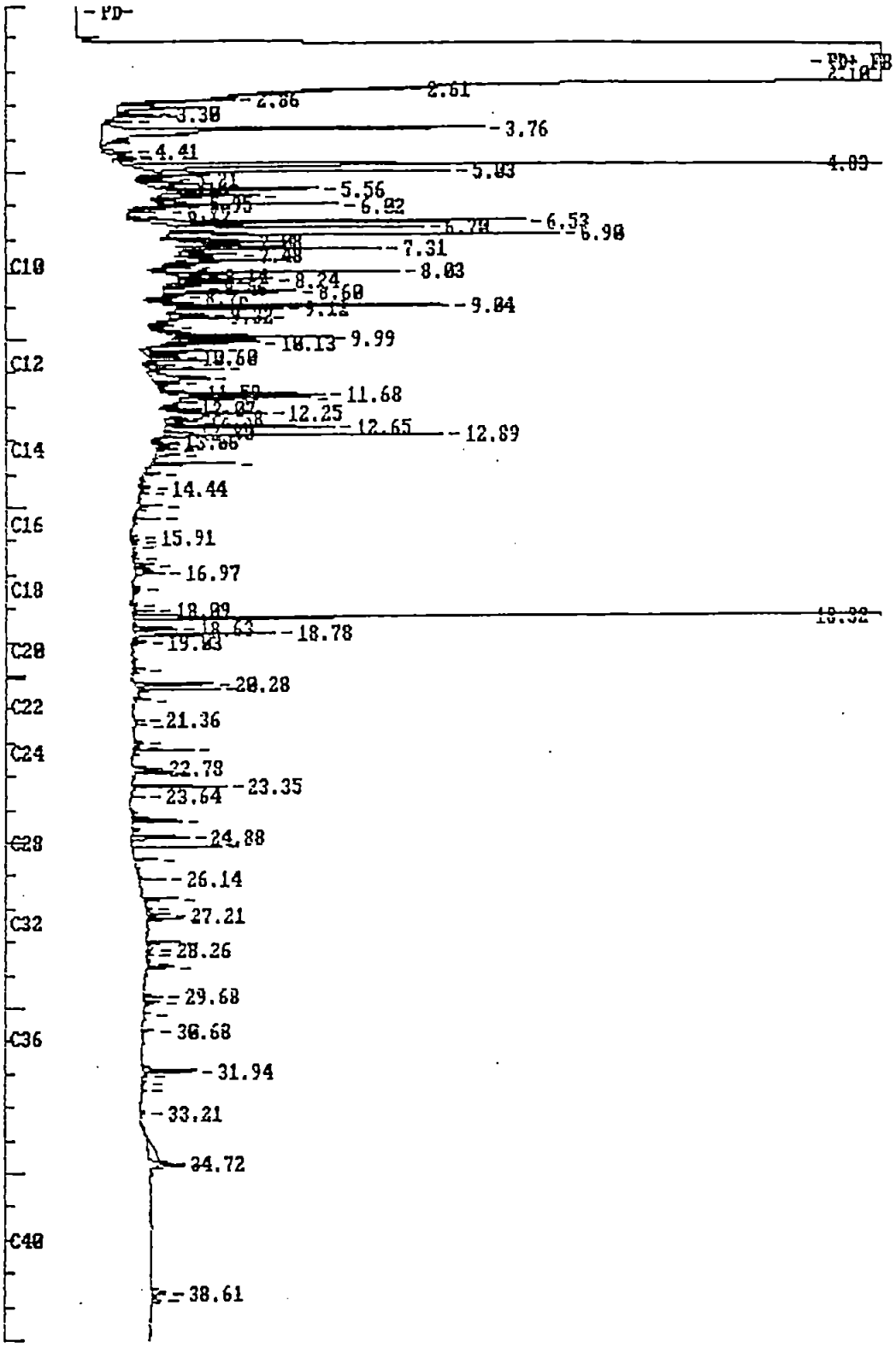
SAMPLE NAME: 3977-MB COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: "04-11-1992 04:52:3 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = P:A101-21.PTS



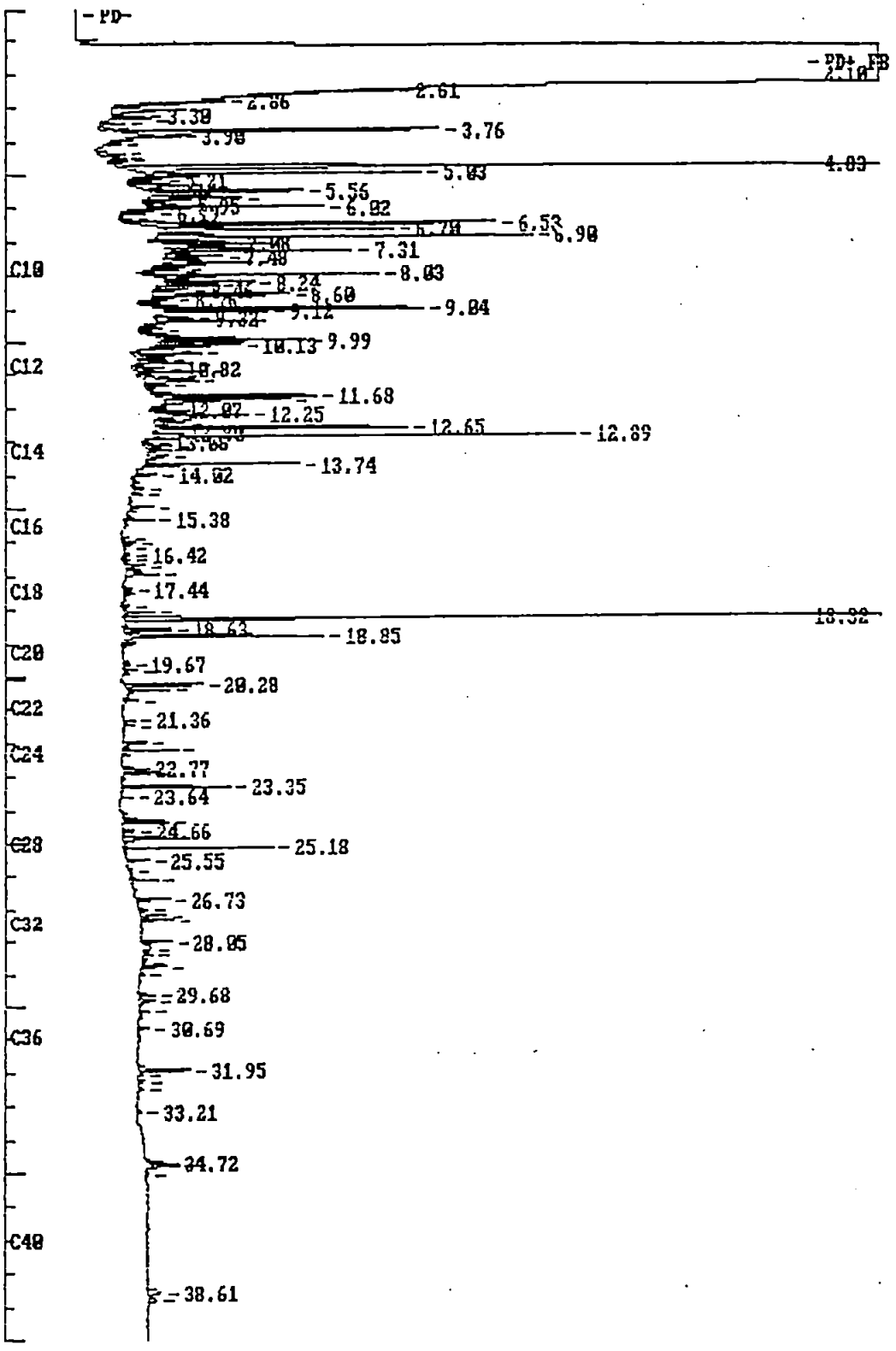
SAMPLE NAME: DIESEL/MOTOR OIL 250 UG/ML COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: 04-10-1992 17:07:07 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = P:A101-7.PTS



SAMPLE NAME: 3977-01 COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: "04-11-1992 06:33:4 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = P:A101-23.PTS



SAMPLE NAME: 3977-01D COLUMN: 15m x 0.32mm DB-5 : FID
DATE AND TIME INJECTED: "04-11-1992 07:24:2 INSTRUMENT I.D.: GCPA5890
VOLUME INJECTED: 2 uL
Full Range: 60 millivolts Data File = P:A101-24.PTS



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METALS ANALYSIS

Client Sample ID: MW-1
Sample Matrix: Water
Units of Measure: µg/ℓ

PNELI Sample ID: 3977-01
Date Sample Received: 04-09-92

Analyte		Concentration	Method Blank Concentration		M	Date Analyzed
Lead	(Pb)	3.1	2.0	U	F	04-14-92

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METALS QC SUMMARY

Client Sample ID: NA
Sample Matrix: Water
Units of Measure: µg/ℓ

PNELI Sample ID: 3941-01
Date Sample Received: 03-24-92

Analyte		Duplicate Sample Concentration		Original Sample Concentration		Relative Percent Difference
Lead	(Pb)	2.0	U	2.0	U	NC

Analyte		Spike Sample Concentration	Original Sample Concentration		Spike Level	Percent Recovery
Lead	(Pb)	20.9	2.0	U	20.0	104