Consulting Engineers
and Geoscientists

GeoEngineers

Focused Phase II Environmental Site Assessment
7301 Martin Luther King Jr. Way South
Seattle, Washington

June 20, 2002

Phase I in file?
Maybe the only report
- housing wants to clean up
as part of construction

GeoEngineers

June 20, 2002

Consulting Engineers and Geoscientists

Seattle Housing Authority
120 Sixth Avenue North
Seattle, Washington 98109-5003

Attention: Larry Hard

We are pleased to submit three copies of our "Focused Phase II Environmental Site Assessment" at 7301 Martin Luther King Jr. Way South in Seattle, Washington. Our services were completed in general accordance with Contract 2938 dated September 5, 2001, Notice of Extension dated December 11, 2001, Change Order 1 authorized February 6, 2002, Change Order 2 submitted May 23, 2002, and the access agreement signed by the property owner, GeoEngineers and Seattle Housing Authority in February and March 2002. We appreciate the opportunity to work with Seattle Housing Authority on this project. Please contact us if you have questions or require additional information.

Respectfully submitted,

GeoEngineers, Inc.

Lisa J. Bona

Lisa J. Bona, P.G.
Senior Geologist

Debra C. Deebay

for

Dana Carlisle, P.E.
Associate

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FOCUSED PHASE II ENVIRONMENTAL SITE ASSESSMENT
7301 MARTIN LUTHER KING JR. WAY SOUTH
SEATTLE, WASHINGTON
FOR
SEATTLE HOUSING AUTHORITY

INTRODUCTION AND BACKGROUND

This report presents the results of the focused Phase II Environmental Site Assessment (ESA) at the above-mentioned property on Martin Luther King Jr. Way South (MLK) in Seattle, Washington. We understand that Seattle Housing Authority (SHA) is considering purchase of this property. SHA's New Holly development is located adjacent to this property. The property is shown relative to surrounding features in Figure 1.

A "Phase I Environmental Site Assessment and Hazardous Materials Survey," dated February 13, 2001, was prepared by Eco Compliance Corporation for Seattle Housing Authority. Based on our review of the Phase I ESA, past site use at 7301 MLK included a gasoline service station. At least four underground storage tanks (USTs) reportedly were used to store fuel on the property. The property currently is owned by James Lee and is occupied by a restaurant.

PURPOSE AND SCOPE OF SERVICES

The purpose of our services was to assess subsurface soil and groundwater for petroleum-related contamination, based on past and/or present site use. GeoEngineers' specific scope of services included the following.

1. Conduct a search of City of Seattle DCLU records, Washington State Archives records and Sanborn historical maps to attempt to identify locations of past or present USTs or other features associated with potential sources of contamination on the 7301 MLK property.
2. Request a one-call underground utility locate and subcontract an on-site utility locate service to identify the locations of existing underground utilities before exploration activities are conducted.
3. Subcontract Apollo Geophysics to conduct a geophysical reconnaissance to locate potential existing USTs at the 7301 MLK property.
4. Prepare a site-specific health and safety plan for GeoEngineers' personnel prior to starting the project. The plan will address contaminants and physical hazards that may be encountered during drilling activities.
5. Monitor the excavation of seven direct-push borings on the 7301 MLK property in locations selected based on likely locations of past and/or present USTs or other features associated with potential sources of contamination. The borings extended to depths of approximately 12to 13.5 feet below ground surface (bgs).
6. Obtain soil samples from the borings at approximate 3-foot intervals from the soil cores. Field screen the soil samples for evidence of petroleum using visual, water sheen and headspace vapor screening methods. Visually classify the samples in general accordance

with American Society for Testing and Materials (ASTM) D-2488 and maintain a detailed log of each soil boring.

7. Obtain grab groundwater samples from two borings during the time of drilling using a peristaltic pump.
8. Submit selected soil and groundwater samples (see tables) for one or more of the following chemical analyses: benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8021B; gasoline-range hydrocarbons by Northwest Method NWTPH-Gx; diesel- and heavy oil-range hydrocarbons by Northwest Method NWTPH-Dx; ethyl dibromide (EDB) by EPA Method 8260 (soil) or 504.1 (water); 1,2-dichloroethane (EDC) by EPA Method 8260; total lead by EPA Method 6010; and polycyclic aromatic hydrocarbons (PAHs) including naphthalenes and carcinogenic PAHs (cPAHs) by EPA Method 8270SIM.
9. Evaluate data relative to applicable MTCA Method A cleanup levels, in effect as of August 2001.

SITE CONDITIONS

The property is located in a mixed used commercial/residential district in the Rainier Valley of Seattle. The 7301 MLK property is occupied by a restaurant, surrounded with asphalt pavement, planters and a concrete-paved drive-through. An espresso stand is located in the northeast site corner.

RESULTS FOR 7301 MLK PROPERTY

HISTORIC RECORDS RESEARCH

Historic maps and tax assessment records were obtained from Environmental Data Resources, Inc. (EDR), the City of Seattle Department of Construction and Land Use (DCLU) and the Puget Sound Regional Archives in October 2001. Based on our review of maps, photos and records from these sources, we identified at least two generations of service station facilities on the 7301 MLK property:

- According to the archive records, tax assessment records identify the site ownership and use from about 1940 to 1973. These records include photographs of a Union Oil service station dated May 25, 1944. In their photographs, the configuration and location of the station and dispenser island does not look the same as the later generation facility. The number and size of tanks is not reported. These archive records also show voided documentation for a one-room (224 square feet) gas station that was built in 1916 and remodeled in 1932. Voided documentation typically implies that the facilities were known to be present on the site in the past but were not present at the time the tax assessment record was completed. The tax lot number apparently changed from 60 to 85 in 1940, when the records began. It is unclear whether the older station is the same structure as that photographed in 1944, however the 1944 photograph also shows a garage.

- According to the archive records, the site was occupied by a Tidewater Associates Oil Co. station (#609) from about 1954 to at least 1973. A tank installation plot plan dated January 19, 1972 for the site in DCLU files was drafted by Phillips Petroleum Co. for service station #7060(?)8. Comparing sketches of the Tidewater facility in the archive records to the 1972 Phillips site plan, it appears that the Phillips and Tidewater building and service station configuration were the same. Archive records and the 1972 site plan indicate the presence of one 3,000-gallon UST, one 4,000-gallon UST and one 350-gallon tank, with two dispenser islands and one hoist inside the building. The 1972 plan shows a 10,000-gallon UST to be installed near the other USTs.
- Apparently, Church's Fried Chicken, Inc. built a restaurant on the property in about 1979. A 1979 site plan for restaurant construction at DCLU shows that the service station facilities were existing at that time. The Church's building is overlaying the service station in another drawing. The approximate locations of the 1972/1979 facilities are shown in Figure 2. Based on the configuration and location, the current site restaurant appears to be the same building as that constructed by Church's.

GEOPHYSICAL RECONNAISSANCE

Apollo Geophysics (Apollo) conducted a geophysical reconnaissance at 7301 MLK on April 26, 2002. Apollo first transversed the site with an electromagnetic (EM) instrument to detect metal objects. Apollo then further investigated possible targets (anomalies) identified with the EM using ground-penetrating radar (GPR), which assists in determining depth of the object, size and subsurface profile.

Apollo identified two targets (#1 and #2) with the EM instrument, which they further investigated with the GPR instrument. Target #1 did not appear to be a probable UST, based on Apollo's interpretation of the GPR data; target #2, however, was consistent with a small UST from Apollo's interpretation of the GPR data. Apollo did not identify the USTs for the Tidewater/Phillips service station recorded in the historic records. The approximate locations of the anomalies are shown in Figure 2. Apollo's report is provided as Appendix A.

As a result of the geophysical reconnaissance, GeoEngineers hand-dug in the planter in the location of target #1. Chunks of broken concrete were encountered approximately one foot bgs in the area of target #1. Additionally, a boring (B-6) was located as close as possible to anomaly #2 without drilling through the reinforced concrete drive slab over the anomaly (see next section).

SUBSURFACE EXPLORATIONS

Sampling Rationale

The sampling locations and testing planned for the 7301 MLK property were based on recognized environmental concerns identified in the Phase I ESA report for the site prepared by others. Petroleum hydrocarbons were identified as the potential contaminant of concern, based on past site use and activities. In addition, we completed testing of other compounds, in general

accordance with Table 830-1 in the 2001 MTCA. The exploration locations were selected to provide general coverage at the locations of known former facilities and the geophysical anomaly that appeared to possible represent a UST, and to assess lateral extent of hydrocarbon contamination based on field screening results during drilling in May 2002.

General

Seven explorations (B-6 through B-12) were completed at the 7301 MLK property on May 1, 2002, to investigate subsurface conditions and collect soil and/or grab groundwater samples. The explorations were completed using direct-push drilling equipment owned and operated by ESN Northwest Inc. The explorations extended to depths ranging from approximately 9 to 13.5 feet bgs.

Soil samples were collected from continuous cores in each of the explorations to the full depth explored. Samples were collected using a 3-foot-long split-barrel sampler. The explorations were observed by a representative of GeoEngineers who visually classified the soil samples obtained during drilling and performed field screening on selected samples for evidence of petroleum hydrocarbons. Soil samples were classified in accordance with the system described in Appendix B. Field screening consisted of headspace vapor testing for combustible vapors, water sheen testing, and observation for staining. Field screening methods are described in more detail in Appendix B. The exploration logs also are presented in Appendix B.

Nine soil samples from the borings were selected for chemical analysis based on the field screening results and/or proximity to groundwater encountered in the boring. Two groundwater samples were selected from borings with high soil field screening results for chemical analysis. Soil and groundwater samples were submitted to CCI Analytical of Everett, Washington for chemical analysis. The chemical analytical program is discussed in more detail in Appendix C.

Subsurface Conditions

Soil encountered in borings generally consisted of silty sand, sand with silt or silt with varying amounts of gravel overlying sandstone bedrock. Several of the borings were terminated at practical refusal in the bedrock, at approximately 12 to 13.5 feet bgs. Groundwater was encountered at depths of approximately 4 to 7 feet bgs during drilling. The soil and groundwater conditions encountered at each log are shown on the individual exploration logs. Groundwater levels should be expected to fluctuate as a function of season, precipitation and other factors.

Field screening results indicated evidence of petroleum in one or more samples obtained from the seven borings. However, the sample obtained near the water table from boring B-7 contained a chunk of asphalt or some other material that likely caused the sheen, but was not representative of the entire sample. Therefore, this sample (B-7-3.0) was not submitted for chemical analysis. The results of sheen and headspace vapor testing for the soil samples are shown on the exploration (boring) logs presented in Appendix B.

CHEMICAL ANALYTICAL RESULTS

General

A summary of the soil chemical analytical data is presented in Table 1A; the groundwater chemical analytical data are presented in Table 1B. The soil samples are identified by the sequential boring number and the sample depth within the exploration (e.g., B-6-3.0). The sample identification numbers are shown on the exploration logs (Appendix B). One soil sample was selected from each of borings B-6, B-8 and B-9. Two soil samples were selected from borings B-10, B-11 and B-12 in an attempt to assess the vertical extent of likely contamination. Grab groundwater samples from B-9 and B-10 were submitted for chemical analysis.

MTCA Cleanup Levels

Ecology revised the Model Toxics Control Act (MTCA) in February 2001, which became in effect on August 15, 2001. MTCA provides three methods (Methods A, B, and C) to establish requirements for cleanup of soil and groundwater. The regulations that enforce the MTCA are included in WAC Chapter 173-340. The chemical analytical data for soil beneath the site were evaluated with respect to MTCA Method A cleanup levels for unrestricted site use conditions. "Unrestricted site use conditions" means restrictions on the use of the site or natural resources affected by releases of hazardous substances from the site are not required to ensure continued protection of human health and the environment. The applicable MTCA Method A cleanup levels are provided in Tables 1A and 1B.

Analytical Results

Soil. As summarized in Table 1A, gasoline-range hydrocarbons and/or benzene, ethylbenzene and xylenes were detected at concentrations exceeding the MTCA Method A cleanup levels in the 8-foot sample from B-8, the 11-foot sample from B-9, the 6-foot samples from B-10 and B-12 and the 3-foot and 6.5-foot samples from B-11. Sample B-10-6.0 also was submitted for chemical analysis of the gasoline additives EDB, EDC and total lead. These additives were not detected in the sample. Sample B-11-3.0 also was submitted for chemical analysis of diesel-related PAHs. Naphthalenes were detected at a concentration less than the MTCA Method A cleanup level. No carcinogenic PAHs were detected in the sample.

Water. As summarized in Table 1B, gasoline- and diesel-range hydrocarbons and/or benzene, ethylbenzene, and xylenes were detected at concentrations exceeding the MTCA Method A cleanup levels in grab groundwater samples B-9 and B-10. Sample B-9 also was submitted for analysis of PAHs. Naphthalenes were detected at a concentration exceeding the MTCA Method A cleanup level. Sample B-10 also was submitted for analysis of EDB and EDC. These gasoline additives were not detected in the sample.

DISCUSSION OF 7301 MLK PROPERTY RESULTS

Historic research indicated the presence of two generations of service station facilities on the property. The layout of the first generation facility is not known. The approximate layout of the second generation facility is shown on Figure 2.

A geophysical reconnaissance conducted at 7301 MLK indicated a possible UST (target #2) to the south of the former service station building. Field screening and chemical analytical results for the soil sample obtained from the soil boring nearest to the possible UST, B-6, did not indicate the evidence of petroleum contaminants approximately 20 feet north of the anomaly. It is possible that a UST exists in this location. The reinforced concrete would need to be removed before this area can be fully assessed. The other geophysical anomaly (target #1) appeared to be related to buried concrete.

Field screening and soil chemical analytical data from seven borings completed at 7301 MLK indicated that petroleum-related soil contamination is present in at least the northeastern portion of the property. Soil appears to be contaminated at depths ranging from approximately 2 to 8 feet bgs at borings B-10, B-11 and B-12, from 6 to 9 feet bgs at boring B-8, and from 4 to 13 feet bgs at boring B-9. The product type in boring B-8 appeared to be weathered gasoline. A mixture of product types (gasoline, diesel and/or oil) was identified at the other boring locations. The one-time grab groundwater samples analyzed from borings B-9 and B-10 confirmed groundwater contamination beneath the property.

Under the MTCA (Washington Administrative Code [WAC] 173-340-300), the owner of this property needs to report the release of a hazardous substance (petroleum hydrocarbons) to the subsurface within 90 days of discovery. This report may serve as a record of the release, and should be filed with the Washington State Department of Ecology, by the site owner by August 1, 2002.

LIMITATIONS

We have prepared this report for use by the Seattle Housing Authority for evaluation of the 7301 Martin Luther King Jr. Way South property in Seattle, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to the Appendix D, "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

We appreciate the opportunity to work with Seattle Housing Authority on this project. Please call if you have questions or require additional information.

Respectfully submitted,

GeoEngineers, Inc.

Lisa J. Bona

Lisa J. Bona, P.G.
Senior Geologist

Debra C. Overbay

for Dana Carlisle, P.E.
Associate

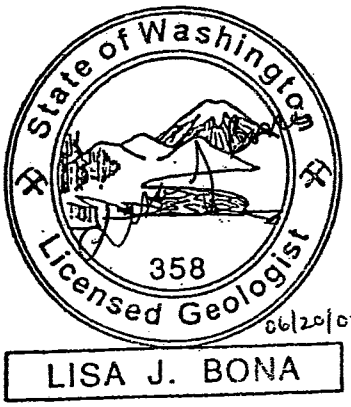

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TABLE 1A (Page 1 of 2)
SUMMARY OF SOIL FIELD SCREENING AND CHEMICAL ANALYTICAL DATA
DIRECT-PUSH BORINGS, 7301 MARTIN LUTHER KING JR. WAY SOUTH
SEATTLE, WASHINGTON

Boring Number - Depth Sampled[1] (feet bgs)	Date Sampled	Field Screening Results[2]		BETX[3] (mg/kg)				MTBE[3] (mg/kg)	Gasoline-range Hydrocarbons[4] (mg/kg)	Diesel-range Hydrocarbons[5] (mg/kg)	Heavy oil-range Hydrocarbons[5] (mg/kg)
		Headspace Vapors (ppm)	Sheen	B	E	T	X				
B-6-3.0	05/01/02	<100	SS	<0.03	<0.05	<0.05	<0.2	<0.1	<3	<25	<50
B-8-8.0	05/01/02	400	MS	2.2	6.4	<1	22	<2	1,000	<50	<50
B-9-11.0	05/01/02	7,000	HS	5.2	31	<2.5	160	<5	2,400	<25	<50
B-10-6.0[6]	05/01/02	2,000	HS	<0.6	1.5	1.1	<4	<2	750	<25	<50
B-10-9.0	05/01/02	<100	NS	<0.03	<0.05	<0.05	<0.2	<0.1	<3	<25	<50
B-11-3.0[7]	05/01/02	700	HS	0.23	1.4	0.3	4.5	<0.2	160	45	190
B-11-6.5	05/01/02	400	MS	0.93	1.8	0.4	7.0	<0.4	320	<25	<50
B-12-6.0	05/01/02	700	MS	1.1	2.2	<0.3	6.0	<1	450	<25	<50
B-12-9.0	05/01/02	<100	NS	<0.03	<0.05	<0.05	<0.2	<0.1	<3	<25	<50
MTCA Method A Cleanup Level[8]				0.03	6	7	9	0.1	30	2,000	2,000

Notes appear on page 2 of 2.

TABLE 1B
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
DIRECT-PUSH BORINGS, 7301 MARTIN LUTHER KING JR. WAY SOUTH SEATTLE, WASHINGTON

Boring Number - Depth Sampled[1] (feet bgs)	Date Sampled	BETX[3] (µg/l)				MTBE[3] (mg/l)	Gasoline-range Hydrocarbons[4] (mg/l)	Diesel-range Hydrocarbons[5] (mg/l)	Heavy oil-range Hydrocarbons[5] (mg/l)
		B	E	T	X				
B-9	05/01/02	530	1,600	<100	4,300	<300	32.0	0.660	0.310
B-10	05/01/02	240	240	110	330	<150	26.0	5.10	>0.630
MTCA Method A Cleanup Level[8]		5	700	1,000	1,000	20	0.800	0.500	0.500

NOTES:

[1]Approximate boring locations are shown in Figure 2.

[2]Field screening methods are described in Appendix A.
NS=no sheen, SS=slight sheen, MS=moderate sheen, HS=heavy sheen

[3]B=benzene, E=ethybenzene, T=toluene, X=xylenes, MTBE=methyl tert butyl ether. BETX and MTBE analyzed by EPA Method 8021B.

[4]Analyzed by Ecology Method NWTPH-Gx.

[5]Analyzed by Ecology Method NWTPH-Dx with a silica gel cleanup.

[6]Sample also analyzed for ethylene dibromide (EDB) and 1,2-dichloroethane (EDC) by EPA Method 8260 and total lead by EPA Method 6010. EDB, EDC and total lead were not detected; however, the detection limit for EDB (0.021 mg/kg) exceeded the cleanup level (0.005 mg/kg).

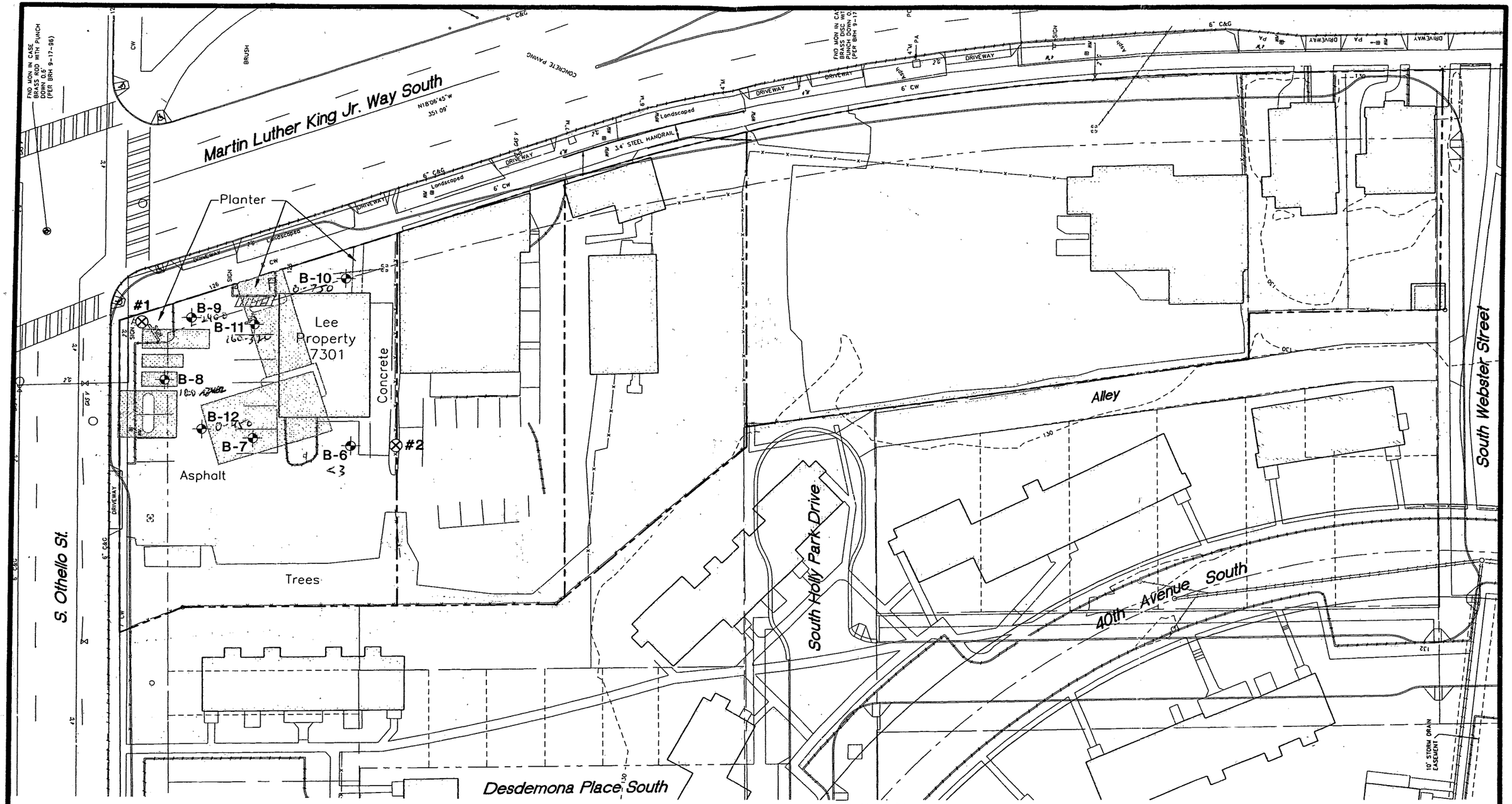
[7]Samples also analyzed for polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270 SIM. Naphthalenes were detected as a concentration of 0.50 mg/kg. The MTCA Method A cleanup level is 5 mg/kg.

[8]Model Toxics Control Act Method A in effect as of August 15, 2001.

[9]Sample also analyzed for PAHs by EPA Method 8270 SIM. Naphthalenes were detected at a concentration of 266 µg/l. The MTCA Method A cleanup level is 160 µg/l.

[10]Sample also analyzed for EDB by EPA Method 504.1 and EDC by EPA Method 8260. EDB and EDC were not detected.

bgs = below ground surface
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
µg/l = micrograms per liter
Shading indicates a concentration exceeding the MTCA Method A Cleanup Level.
Chemical analyses conducted by CCI Analytical of Bothell, Washington. The laboratory report is presented in Appendix C.



EXPLANATION:

B-7 ⊕ DIRECT PUSH BORING COMPLETED 05/01/02

#1 ⊗ GEOPHYSICAL ANOMALY INDICATED ON 04/26/02

FORMER SERVICE STATION FACILITY

N

0 40 80

SCALE IN FEET

Notes: 1. The locations of all features shown are approximate.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Reference: Undated CAD file "hp3_survey" provided May 2002.

GeoEngineers

SITE PLAN, 7301 MLK JR. WAY SOUTH

FIGURE 2

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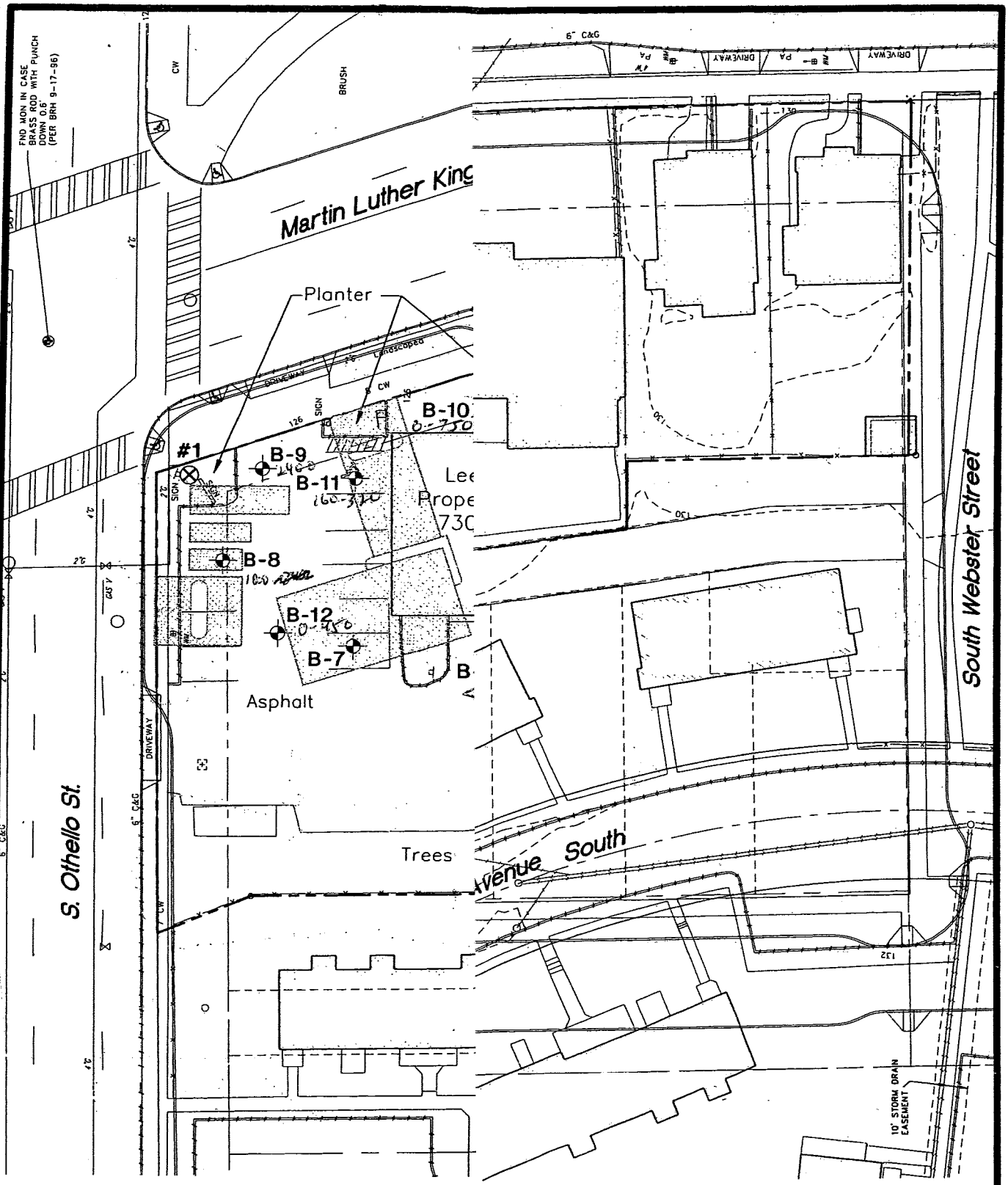

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02

26/02

Notes: 1. The locations of all features shown
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copy is stored by GeoEngineers, In

Reference: Undated CAD file "hp3_survey" pr

N

0 40 80

SCALE IN FEET

SITE PLAN, 7301 MLK JR. WAY SOUTH

FIGURE 2

APPENDIX A

APOLLO GEOPHYSICS REPORT

APOLLO GEOPHYSICS CORPORATION

Engineering, Geology, Environmental & Construction

Wednesday, May 1, 2002

Lisa Bona
GeoEngineers, Inc.
2924 Colby Avenue
Everett, Washington 98201

AGC's File No.: **02.2016**

Re: **UST Locate**
7301 Martin Luther King Way
Seattle, Washington

Dear Ms. Bona,

This letter reports the results of geophysical exploration for potential Underground Storage Tanks (USTs) at the above referenced site. The site is located at 7301 Martin Luther King Way in Seattle, Washington. A two-person field crew from **APOLLO GEOPHYSICS** completed the geophysical field program on Friday, April 26, 2002.

We investigated the site with an Electromagnetic (EM) instrument, which locates buried metal objects. We traversed the site with the EM instrument on approximate 5-foot line spacings, which produced target areas for the Ground Penetrating Radar (GPR). We further investigated the target areas using GPR, which enabled us to identify the targets as potential USTs, underground utilities, or demolition debris. Ground Penetrating Radar established a relative depth, size and ground projection of the object (i.e. to determine if the object was indicative or was not indicative of a UST). Small objects in the near surface, 1 to 2 feet, will respond the same as a larger object (UST) at depth.

RESULTS OF THE GEOPHYSICAL SURVEY

We traversed the area surrounding the restaurant located at the above address with an EM instrument, which found no target areas for further investigation with the GPR instrument. Several GPR traverses were made on the South side of the restaurant where reinforcing steel in the driveway prevented the use of the EM instrument. The locations of all target areas were indicated to your onsite personnel.

GPR imagery from Target #1 showed potential as a UST or possibly a nesting of pipes or conduit. We recommend this area to be further evaluated with direct exploration.

A GPR traverse in the driveway area, Target #2, produced a GPR image consistent with that of a small UST or large pipe. A traverse completed in the North-South direction appeared to produce bounds of the target, providing further evidence for a potential UST. We recommend this area to be further evaluated with direct exploration.

The GPR images for target areas #1 and #2 are presented in Figures 1 through 4. All EM target areas and recommended direct exploration locations were marked in the field with environmentally degradable paint. Suspected pipes, demolition debris, etc., were not marked in the field.

The 'GPR Imagery' presented in Figures 1 through 4 have a horizontal and vertical scale of approximately 1 inch equals 4 feet. With regard to the estimated vertical scale, the normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship. Therefore it should be expected that the vertical scale is an estimate only and may vary from the shown scale.

ELECTROMAGNETIC

The electromagnetic, or EM device, transmits and receives an electromagnetic signal. The EM signal is transmitted through the ground, which in turn radiates a signal that is dependent on the ground conductivity and which is also received at the receiver. The

two signals, the transmitted and ground response EM waves, are balanced for a zero response in the instrument. When the ground conditions change, for example, when the transmitted signal encounters buried metal, the balance or null point changes, and the instrument responds with an audible signal. Depending on the size of the metal object, the penetration is up to 10 feet in depth. The EM survey was limited in areas, where reinforcing steel was present in concrete or immediately adjacent to any above ground metal objects on the site.

GROUND PENETRATING RADAR

APOLLO GEOPHYSICS uses a PE1000 with either a 450 or 110 MHz antenna for shallow UST Locates. The radar antenna transmits an electromagnetic step-pulse at a frequency of 450/110 MHz at a selected stack rate of 32/64. When the signal encounters a change in electrical properties/permittivity, a portion of the signal energy is reflected back to the surface. The character of the reflection is used to define the source of the reflection. The reflected signal is received by the antenna, processed by a DSP radar processor with signal gain control and the raw data is recorded by the outboard 80486 computer with 16 MB RAM & 300 MB Hard Drive. The radar data is displayed by the computer on a 16.5 cm Color Active Matrix LCD VGA screen in real-time. The radar displays the data in real-time, which enables us to review the data in the field for on the spot evaluation. The recorded raw data, as recorded by the computer, is then later processed to remove unwanted peripheral effects by proprietary GPR software.

A typical circular UST will produce, in cross-section, a hyperbolic reflection. A traverse parallel to the centerline of the UST will show a horizontal (if there is no velocity or elevation change along the traverse) reflection, with a partial hyperbolic signature at both ends of the UST. The hyperbolic signature is the result of "seeing" the tank before the center of the antenna is over the tank.

WARRANTY OF SERVICES

Electromagnetic methods may define UST's constructed of non-ferrous metals, but not fiberglass or plastic materials. Ground Penetrating Radar may define fiberglass or plastic UST's or drums provided they fall within the exploration grid of the GPR.

All geophysical information presented is based upon geophysical measurements made by generally accepted methods and field procedures and **APOLLO GEOPHYSICS'** interpretation of these data. The geophysical results are, therefore, interpretative in nature and are considered to be a reasonably accurate presentation of existing conditions within the limitations of the methods employed. Services performed by **APOLLO GEOPHYSICS** under this agreement are conducted in a manner consistent with, but no less than, that level of care skill ordinarily exercised by members of the profession currently practicing under similar conditions. We cannot guarantee the accuracy or correctness of any interpretation, and we shall not be liable or responsible for any loss, cost, damages or expenses incurred or sustained by the Client resulting from any interpretation made by any of our officers, agents or employees. No other warranty, expressed or implied, is made. **APOLLO GEOPHYSICS** recognizes that subsurface conditions may vary from those encountered at the location where geophysical or other explorations are made. The data interpretations and recommendations made by **APOLLO GEOPHYSICS** are based solely on the information available to them at the time of performance; and **APOLLO GEOPHYSICS** shall not be responsible for the interpretation, by others, of the information developed.

o O o

We trust this will complete your requirements for this project and look forward to working with you on future projects. If you have any further questions or need further assistance, please don't hesitate to call.

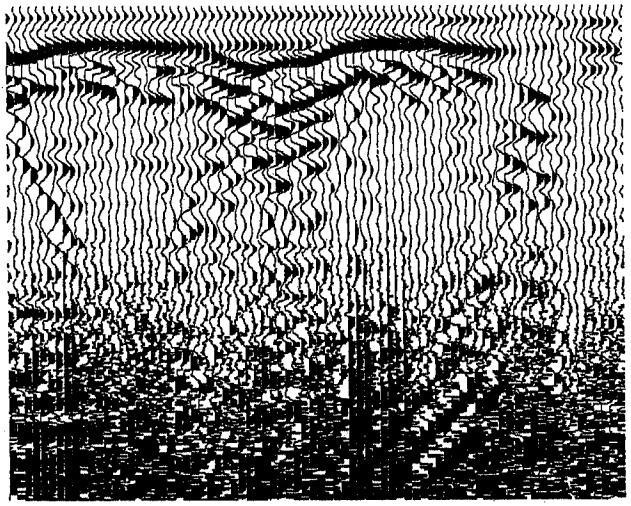
Sincerely,

APOLLO GEOPHYSICS CORPORATION

Lynn M. Ringstad, RG, CEG
Project Geologist/Geophysicist

Clyde A. Ringstad, RG, CEG
Senior Geophysicist

GPR Imagery - Target #1



top of anomaly

limits of anomaly

0 4 8

Approximate Scale 1" = 4'

NOTE: The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

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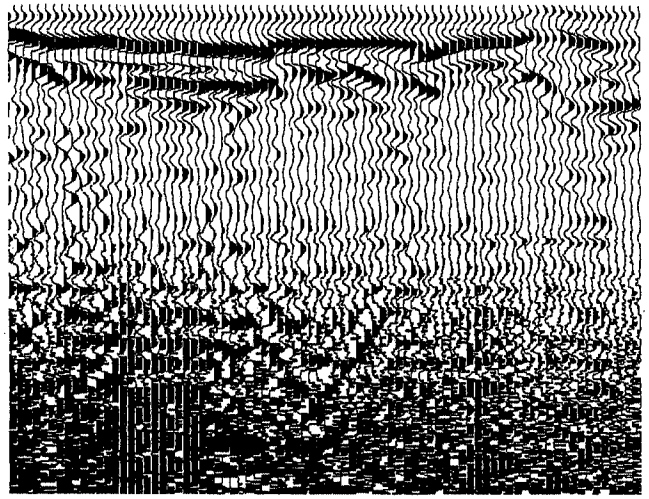
7301 Martin Luther King Way
Seattle, Washington

FIGURE 1

FILE NO. 02.2016

DATE May 2002

GPR Imagery - Target #1



top of anomaly

limits of anomaly

0 4 8

Approximate Scale 1" = 4'

NOTE: The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

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Seattle, Washington

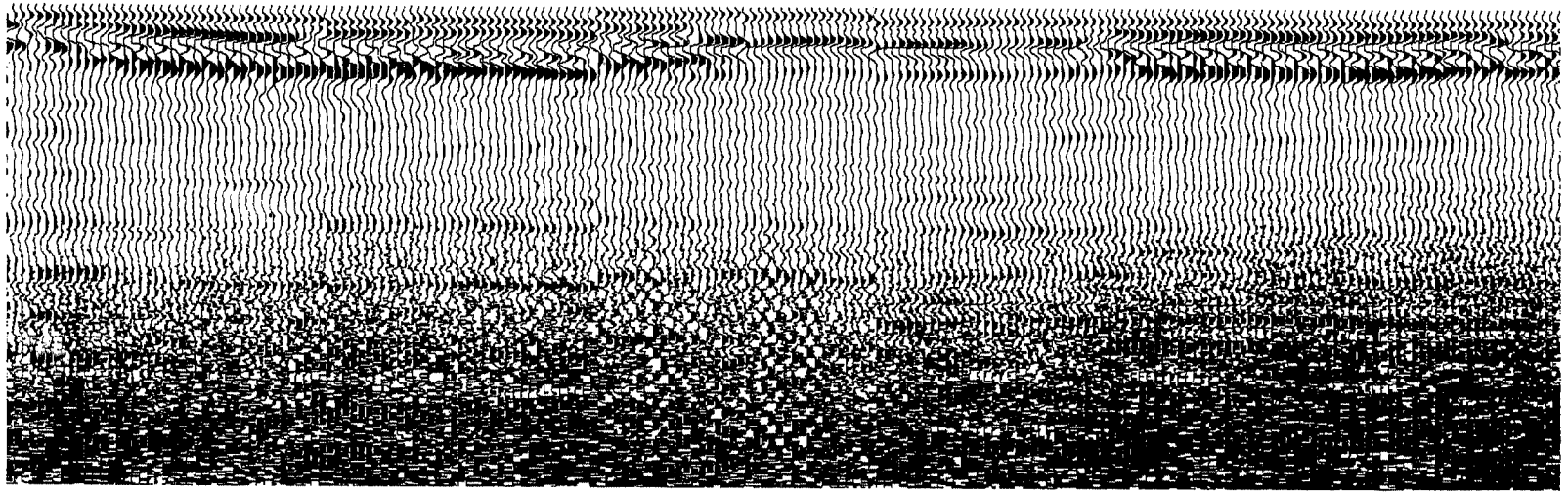
FIGURE 2

FILE NO. 02.2016

DATE May 2002

GPR Imagery - Target #2

top of suspected UST



limits of suspected UST

0 4 8

Approximate Scale 1" = 4'

NOTE: The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

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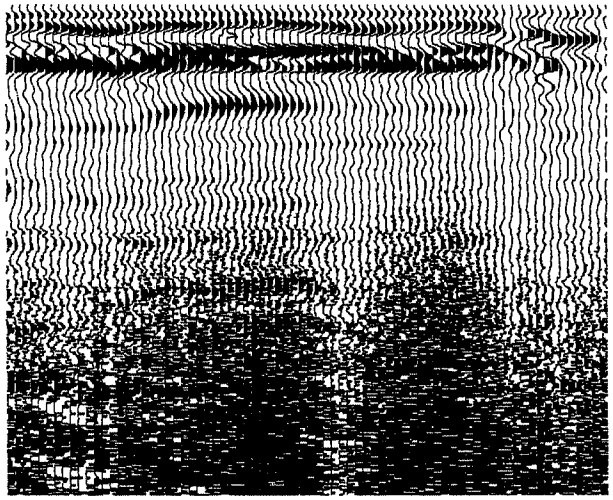
Seattle, Washington

FIGURE 3

FILE NO. 02.2016

DATE May 2002

GPR Imagery - Target #2



top of
suspected UST

limits of
suspected UST

0 4 8

Approximate Scale 1" = 4'

NOTE: The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

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7301 Martin Luther King Way
Seattle, Washington

FIGURE
4

FILE NO.
02.2016

DATE
May 2002

APPENDIX B

FIELD EXPLORATION PROGRAM

APPENDIX B

FIELD EXPLORATION PROGRAM

GENERAL

Subsurface conditions were explored by completing seven direct-push borings (B-6 through B-12) at the 7301 MLK property on May 1, 2002. A representative from our staff selected the locations for borings, observed and classified the soils encountered, and prepared a detailed log of each boring. The soils were classified in accordance with the system described in Figure B-1. An explanation of the boring log symbols is presented in Figure B-2. The boring logs are presented in Figures B-3 through B-9.

SOIL SAMPLING

Soil samples were continuously collected during exploration using direct-push drilling equipment owned and operated by ESN Northwest, Inc. of Lacey, Washington. Soil samples were collected using a 3-foot long split barrel sampler. The sampler was hydraulically driven into the soil. Upon retrieval, the sampler was opened and GeoEngineers' representative logged the soils in general accordance with the Unified Soil Classification System (ASTM D-2488-90). The soil samples were collected in glass jars (supplied by the analytical laboratory), labeled and stored in an ice-chest pending delivery to the laboratory. The soils were classified according to the system described in Figure B-1.

FIELD SCREENING METHODS

Our representative conducted field screening on each of the soil samples obtained from the borings. Field screening results can be used as a general guideline to delineate areas of potential petroleum-related contamination in soils. In addition, screening results are often used as a basis for selecting soil samples for chemical analysis. The screening methods employed included: (1) visual examination; (2) screening for organic vapors; and (3) water sheen testing.

Visual screening consists of observing the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons such as motor oil, or when hydrocarbon concentrations are high. Sheen screening and headspace screening are more sensitive screening methods that can be effective in detecting petroleum-based products in concentrations lower than regulatory cleanup guidelines.

Water sheen testing involves placing soil in water and observing the water surface for signs of sheen. The results of water sheen testing on soil samples from the borings are presented on the boring logs. Sheens are classified as follows:

No Sheen (NS)	No visible sheen on water surface.
Slight Sheen (SS)	Light colorless film, spotty to globular; spread is irregular, not rapid; areas of no sheen remain; film dissipates rapidly.

Moderate Sheen (MS)	Light to heavy film, may have some color or iridescence, globular to stringy, spread is irregular to flowing; few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy colorful film with iridescence; stringy, spread is rapid; sheen flows off the sample; most of water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of the Bacharach TLV Sniffer (combustible gas indicator) is inserted in the bag, and the device measures the concentration of combustible vapors present within the sample bag headspace. The TLV measures combustible vapor concentrations in parts per million (ppm) and has a range of significance of 100 to 10,000 ppm in this application. The results of headspace vapor screening are presented on the boring logs.

GROUNDWATER SAMPLING

Groundwater samples were obtained from selected borings by ESN and GeoEngineers using a peristaltic pump and new flexible tubing at each selected direct-push boring location.

SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE GRAINED SOILS More Than 50% Retained on No. 200 Sieve	GRAVEL More Than 50% of Coarse Fraction Retained on No. 4 Sieve	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND More Than 50% of Coarse Fraction Passes No. 4 Sieve	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE GRAINED SOILS More Than 50% Passes No. 200 Sieve	SILT AND CLAY Liquid Limit Less Than 50	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY Liquid Limit 50 or More	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1. Field classification is based on visual examination of soil in general accordance with ASTM D2488-93.
2. Soil classification using laboratory tests is in general accordance with ASTM D2487-98.
3. Descriptions of soil density or consistency are based on interpretation of blow count data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS:

Dry - Absence of moisture, dusty, dry to the touch

Moist - Damp, but no visible water

Wet - Visible free water or saturated, usually soil is obtained from below water table

Geo Engineers

SOIL CLASSIFICATION SYSTEM

FIGURE B-1

LABORATORY TESTS

AL	Atterberg limits
CA	Chemical analysis
CP	Compaction
CS	Consolidation
DS	Direct shear
GS	Grain size
%F	Percent fines
HA	Hydrometer analysis
SK	Permeability
SM	Moisture content
MD	Moisture and density
ST	Swelling test
TX	Triaxial compression
UC	Unconfined compression

FIELD SCREENING TESTS

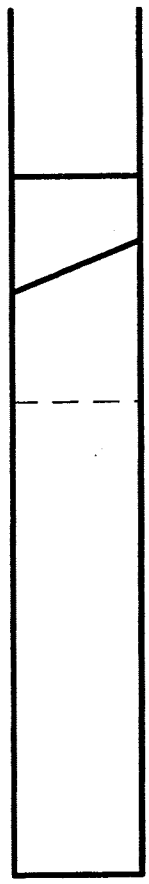
Visual Sheen Test Classifications

NS	No Visible Sheen
SS	Slight sheen
MS	Moderate sheen
HS	Heavy sheen
--	Not tested

Vapor Measurements

TLV	TLV™ sniffer
PID	Photo ionization detector
FID	Flame ionization detector
OVA	Organic vapor analyzer
--	Not tested

SOIL GRAPHICS



SM — Soil Group Symbol (See Note 2)

Distinct Contact Between Soil Strata

Gradual or Approximate Location of Change Between Soil Strata

Approximate Location of Change Within a Soil Strata

Measured ground water level

Ground water encountered during drilling

Perched water encountered during drilling

Measured Free Product

Bottom of Boring

BLOW-COUNT

Blows required to drive sampler 6 inches using a -pound hammer falling -inches — 15

"P" indicates sampler pushed against with weight of hammer or against weight of drill rig

SAMPLE GRAPHICS

Location of sampling interval with relatively undisturbed recovery

Location of sampling interval with disturbed recovery

Location of sampling interval with no recovery

NOTES:
1. The reader must refer to the discussion in the report text, the Key to Log Symbols and the exploration logs for a proper understanding of subsurface conditions.
2. Soil classification system is summarized in Figure B-1.

KEY TO LOG SYMBOLS

GeoEngineers

Project:
Project Location: 7301 Martin Luther King Way, Seattle, WA
Project Number: 0241-012-00

Figure: B-2
Sheet 1 of 1

Date(s) Drilled	5/1/02	Logged By	GJA	Checked By	LJB
Drilling Contractor	ESN Northwest	Drilling Method	Direct Push	Sampling Methods	1 1/2-inch split barrel sampler
Auger Data	3	Hammer Data		Drilling Equipment	Truck-mounted Geoprobe
Total Depth (ft)	12	Surface Elevation (ft)		Ground Water Level (ft. bgs)	4
Datum/ System					

Depth feet	SAMPLES Interval	Testing	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV(ppm)	NOTES
0							AC	3 inches asphalt concrete			
		CA					SM	Bluish gray silty fine sand with occasional gravel (medium dense, moist)	SS	<100	
					▽		OL	Black organic silt (medium stiff, moist)			
5									NS	<100	
							ML	Grayish red silt (medium stiff, moist)	NS	<100	
10							SM	Grayish red silty fine sand with gravel (very dense, moist)	NS	<100	
								Groundwater observed from 4 to 5 feet Groundwater samples obtained			
15											

Note: See Figure B-2 for explanation of symbols

0241-012-00 GEI ENVBORING 2.1.0 P:\0\0241\012\00\FINALS\0241012A.GPJ GEIV2_1.GDT 6/20/02

LOG OF BORING B-6

Geo Engineers

Project:
Project Location: 7301 Martin Luther King Way, Seattle, WA
Project Number: 0241-012-00

Figure: B-3
Sheet 1 of 1

Date(s) Drilled	5/1/02	Logged By	GJA	Checked By	LJB
Drilling Contractor	ESN Northwest	Drilling Method	Direct Push	Sampling Methods	1 1/2-inch split barrel sampler
Auger Data	3	Hammer Data		Drilling Equipment	Truck-mounted Geoprobe
Total Depth (ft)	12	Surface Elevation (ft)		Ground Water Level (ft. bgs)	4
Datum/ System					

Depth feet	SAMPLES Interval Testing	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV(ppm)	NOTES
0						AC	3 inches asphalt concrete			
						SM	Grayish brown silty fine sand (medium dense, moist)			
	CA							MS	<100	Chunk of possible asphalt
				▽						
5						OL	Black organic silt with wood fragments (stiff, moist)	NS	<100	
						ML	Grayish blue silt (medium stiff, moist)			
								NS	<100	
10								NS	<100	
						SP-SM	Brownish gray fine to medium sand with silt (very dense, moist)	NS	<100	
							Groundwater observed at 4 feet			
15										

Note: See Figure B-2 for explanation of symbols

LOG OF BORING B-7

GeoEngineers

Project:
Project Location: 7301 Martin Luther King Way, Seattle, WA
Project Number: 0241-012-00

Figure: B-4
Sheet 1 of 1

Date(s) Drilled	5/1/02	Logged By	GJA	Checked By	LJB
Drilling Contractor	ESN Northwest	Drilling Method	Direct Push	Sampling Methods	1 1/2-inch split barrel sampler
Auger Data	3	Hammer Data		Drilling Equipment	Truck-mounted Geoprobe
Total Depth (ft)	12	Surface Elevation (ft)		Ground Water Level (ft. bgs)	4
Datum/ System					

Depth feet	SAMPLES Interval	Testing	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV(ppm)	NOTES
0							AC	3 inches asphalt concrete			
							SM	Gray silty fine sand (medium dense, moist)			
									SS	<100	
					▽						
5									SS	<100	
		CA					ML	Gray silt with sand (medium stiff, moist)	MS	400	
							SM	Gray silty fine to medium sand with occasional gravel (medium dense, moist)	SS	400	
10							SM	Gray sandstone (very dense, dry)	NS	<100	
								Groundwater observed at 4 feet Groundwater samples obtained			
15											

Note: See Figure B-2 for explanation of symbols

0241-012-00 GEI ENVBORING 2.1.0 P:\0\0241012\00\FINALS\0241012A.GPJ GEIV2_1.GDT 6/20/02

LOG OF BORING B-8

Geo Engineers

Project:
Project Location: 7301 Martin Luther King Way, Seattle, WA
Project Number: 0241-012-00

Figure: B-5
Sheet 1 of 1

Date(s) Drilled	5/1/02	Logged By	GJA	Checked By	LJB
Drilling Contractor	ESN Northwest	Drilling Method	Direct Push	Sampling Methods	1 1/2-inch split barrel sampler
Auger Data	3	Hammer Data		Drilling Equipment	Truck-mounted Geoprobe
Total Depth (ft)	13.5	Surface Elevation (ft)		Ground Water Level (ft. bgs)	4.5
Datum/ System					

Depth feet	SAMPLES Interval	Testing	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV(ppm)	NOTES
0							AC	3 inch asphalt concrete			
							SM	Grayish brown silty fine sand with occasional gravel (medium dense, moist)			
									SS	<100	
5					▽				MS	400	
								Becomes wet at 6 feet			
									HS	400	
10		CA					SP-SM	Gray fine to medium sand with silt (dense, wet)	HS	7000	
									SS	<100	
								Groundwater sample obtained			
15											

Note: See Figure B-2 for explanation of symbols

0241-012-00 GEI ENVBORING 2.1.0 P:\0\0241012\00\FINALS\0241012A.GPJ GEIV2_1.GDT 6/20/02

LOG OF BORING B-9

Geo Engineers

Project:
Project Location: 7301 Martin Luther King Way, Seattle, WA
Project Number: 0241-012-00

Figure: B-6
Sheet 1 of 1

Date(s) Drilled	5/1/02	Logged By	GJA	Checked By	LJB
Drilling Contractor	ESN Northwest	Drilling Method	Direct Push	Sampling Methods	1 1/2-inch split barrel sampler
Auger Data	3	Hammer Data		Drilling Equipment	Truck-mounted Geoprobe
Total Depth (ft)	12	Surface Elevation (ft)		Ground Water Level (ft. bgs)	7
Datum/ System					

Depth feet	SAMPLES Interval Testing	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV(ppm)	NOTES
0						CC	4 inch portland cement concrete			
						SM	Gray silty fine sand with occasional gravel (medium dense, moist)			
								MS	500	
5	CA							HS	2000	
				▽				HS	1000	
	CA							NS	<100	
10										
						RX	Gray silty fine sand (very dense, dry)	NS	<100	
							Groundwater sample obtained			
15										

Note: See Figure B-2 for explanation of symbols

LOG OF BORING B-10

Geo Engineers

Project:
Project Location: 7301 Martin Luther King Way, Seattle, WA
Project Number: 0241-012-00

Figure: B-7
Sheet 1 of 1

Date(s) Drilled	5/1/02	Logged By	GJA	Checked By	LJB
Drilling Contractor	ESN Northwest	Drilling Method	Direct Push	Sampling Methods	1 1/2-inch split barrel sampler
Auger Data	3	Hammer Data		Drilling Equipment	Truck-mounted Geoprobe
Total Depth (ft)	9	Surface Elevation (ft)		Ground Water Level (ft. bgs)	7
Datum/ System					

Depth feet	SAMPLES Interval	Testing	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV(ppm)	NOTES
0							AC	3 inch asphalt concrete			
							ML	Black to gray silt with occasional gravel (medium stiff, moist)			
		CA							HS	700	
5											
		CA			▽			Becomes gray	MS	400	
									NS	<100	
								No groundwater samples obtained			
10											
15											

Note: See Figure B-2 for explanation of symbols

LOG OF BORING B-11

GeoEngineers

Project:
Project Location: 7301 Martin Luther King Way, Seattle, WA
Project Number: 0241-012-00

Figure: B-8
Sheet 1 of 1

Date(s) Drilled	5/1/02	Logged By	GJA	Checked By	LJB
Drilling Contractor	ESN Northwest	Drilling Method	Direct Push	Sampling Methods	1 1/2-inch split barrel sampler
Auger Data	3	Hammer Data		Drilling Equipment	Truck-mounted Geoprobe
Total Depth (ft)	13.5	Surface Elevation (ft)		Ground Water Level (ft. bgs)	7
Datum/ System					

Depth feet	SAMPLES Interval	Testing	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV(ppm)	NOTES
0							AC	3 inch asphalt concrete			
							ML	Grayish black silt w/occasional gravel (stiff, moist)			
									MS	400	
5		CA							MS	700	
					▽		SP-SM	Gray fine to medium sand with silt (medium dense, moist)			
							ML	Gray silt (stiff, moist)			
		CA							NS	<100	
10											
									SS	<100	
								Becomes wet			
							RX	Gray sandstone (very dense, dry)	NS	<100	
								No groundwater samples obtained			
15											

Note: See Figure B-2 for explanation of symbols

LOG OF BORING B-12

GeoEngineers

Project:
Project Location: 7301 Martin Luther King Way, Seattle, WA
Project Number: 0241-012-00

Figure: B-9
Sheet 1 of 1

APPENDIX C

CHEMICAL ANALYTICAL DATA

APPENDIX C

CHEMICAL ANALYTICAL DATA

SAMPLES

Chain-of-custody procedures were followed during the transport of the field samples to the accredited analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results and quality control records are included in this appendix.

ANALYTICAL DATA REVIEW

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Any data quality exceptions documented by the accredited laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this appendix.

DATA QUALITY EXCEPTION SUMMARY

No significant data quality exceptions were noted in the laboratory report or during our review. Therefore, it is our opinion that the analytical data are of acceptable quality for their intended use.

CCI
ANALYTICAL
LABORATORIES, INC.

CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/10/02
CCIL JOB #: 205019
CCIL SAMPLE #: 20
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-6-3.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	ND	3	1	MG/KG	5/8/02	CMH
MTBE***	EPA-8021	ND	0.1	1	MG/KG	5/8/02	CMH
BENZENE	EPA-8021	ND	0.03	1	MG/KG	5/8/02	CMH
TOLUENE	EPA-8021	ND	0.05	1	MG/KG	5/8/02	CMH
ETHYLBENZENE	EPA-8021	ND	0.05	1	MG/KG	5/8/02	CMH
XYLENES	EPA-8021	ND	0.2	1	MG/KG	5/8/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	ND	25	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

*** ANY POSITIVE MTBE RESULT SHOULD BE CONFIRMED BY GC/MS ANALYSIS

APPROVED BY: _____

8620 Holly Drive • Everett, WA 98208 • 425 356-2600 • FAX 425 356-2626 • Seattle 206 292-9059

CCI
ANALYTICAL
LABORATORIES, INC.

CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/10/02
CCIL JOB #: 205019
CCIL SAMPLE #: 32
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-8-8.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	1000	60	20	MG/KG	5/9/02	CMH
MTBE***	EPA-8021	ND	2	20	MG/KG	5/9/02	CMH
BENZENE	EPA-8021	2.2	0.6	20	MG/KG	5/9/02	CMH
TOLUENE	EPA-8021	ND	1	20	MG/KG	5/9/02	CMH
ETHYLBENZENE	EPA-8021	6.4	1	20	MG/KG	5/9/02	CMH
XYLENES	EPA-8021	22	4	20	MG/KG	5/9/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB

NOTE: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCT WHICH IS LIKELY WEATHERED GASOLINE

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

*** ANY POSITIVE MTBE RESULT SHOULD BE CONFIRMED BY GC/MS ANALYSIS

APPROVED BY: _____

CCI
ANALYTICAL
LABORATORIES, INC.

CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/10/02
CCIL JOB #: 205019
CCIL SAMPLE #: 39
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-9-11.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	2400	150	50	MG/KG	5/9/02	CMH
MTBE***	EPA-8021	ND	5	50	MG/KG	5/9/02	CMH
BENZENE	EPA-8021	5.2	1.5	50	MG/KG	5/9/02	CMH
TOLUENE	EPA-8021	ND	2.5	50	MG/KG	5/9/02	CMH
ETHYLBENZENE	EPA-8021	31	2.5	50	MG/KG	5/9/02	CMH
XYLENES	EPA-8021	160	10	50	MG/KG	5/9/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	110	25	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB

NOTES: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCT WHICH IS LIKELY WEATHERED GASOLINE AND DIESEL #2
DIESEL RANGE RESULT BIASED HIGH DUE TO VOLATILE RANGE OVERLAP

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

*** ANY POSITIVE MTBE RESULT SHOULD BE CONFIRMED BY GC/MS ANALYSIS

APPROVED BY: _____

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CCI
ANALYTICAL
LABORATORIES, INC.

CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019
CCIL SAMPLE #: 41
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-9 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	32000	5000	100	UG/L	5/8/02	CMH
MTBE***	EPA-8021	ND	300	100	UG/L	5/8/02	CMH
BENZENE	EPA-8021	530	100	100	UG/L	5/8/02	CMH
TOLUENE	EPA-8021	ND	100	100	UG/L	5/8/02	CMH
ETHYLBENZENE	EPA-8021	1600	100	100	UG/L	5/8/02	CMH
XYLENES	EPA-8021	4300	300	100	UG/L	5/8/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	660	130	1	UG/L	5/8/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	310	250	1	UG/L	5/8/02	AIB
NAPHTHALENE	EPA-8270 SIM	190	0.4	10	UG/L	5/8/02	RAL
1-METHYLNAPHTHALENE	EPA-8270 SIM	24	0.4	10	UG/L	5/8/02	RAL
2-METHYLNAPHTHALENE	EPA-8270 SIM	52	0.4	10	UG/L	5/8/02	RAL
ACENAPHTHYLENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
ACENAPHATHENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
FLUORENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
PHENANTHRENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
ANTHRACENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
FLUORANTHENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
PYRENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
BENZO[A]ANTHRACENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
CHRYSENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
BENZO[B]FLUORANTHENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
BENZO[K]FLUORANTHENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
BENZO(A)PYRENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
INDENO[1,2,3-CD]PYRENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
DIBENZ[A,H]ANTHRACENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL
BENZO[G,H,I]PERYLENE	EPA-8270 SIM	ND	0.4	10	UG/L	5/8/02	RAL

NOTES: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCTS WHICH ARE LIKELY WEATHERED GASOLINE, DIESEL #2, AND LUBE OIL
DIESEL RANGE RESULT BIASED HIGH DUE TO VOLATILE AND LUBE OIL OVERLAP

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019
CCIL SAMPLE #: 41
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-9 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

*** ANY POSITIVE MTBE RESULT SHOULD BE CONFIRMED BY GC/MS ANALYSIS

APPROVED BY: CNL

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019
CCIL SAMPLE #: 43
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-10-6.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	750	60	20	MG/KG	5/9/02	CMH
MTBE***	EPA-8021	ND	2	20	MG/KG	5/9/02	CMH
BENZENE	EPA-8021	ND	0.6	20	MG/KG	5/9/02	CMH
TOLUENE	EPA-8021	1.1	1	20	MG/KG	5/9/02	CMH
ETHYLBENZENE	EPA-8021	1.5	1	20	MG/KG	5/9/02	CMH
XYLENES	EPA-8021	ND	4	20	MG/KG	5/9/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	ND	25	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB
1,2-DICHLOROETHANE (EDC)	EPA-8260	ND	42	10	UG/KG	5/8/02	RAL
1,2-DIBROMOETHANE (EDB)	EPA-8260	ND	21	10	UG/KG	5/8/02	RAL
LEAD	EPA-6010	ND	9.4	8	MG/KG	5/20/02	RAB

NOTE: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCT WHICH IS LIKELY WEATHERED GASOLINE

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

*** ANY POSITIVE MTBE RESULT SHOULD BE CONFIRMED BY GC/MS ANALYSIS

APPROVED BY: _____

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/10/02
CCIL JOB #: 205019
CCIL SAMPLE #: 45
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-10-9.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	ND	3	1	MG/KG	5/8/02	CMH
MTBE***	EPA-8021	ND	0.1	1	MG/KG	5/8/02	CMH
BENZENE	EPA-8021	ND	0.03	1	MG/KG	5/8/02	CMH
TOLUENE	EPA-8021	ND	0.05	1	MG/KG	5/8/02	CMH
ETHYLBENZENE	EPA-8021	ND	0.05	1	MG/KG	5/8/02	CMH
XYLENES	EPA-8021	ND	0.2	1	MG/KG	5/8/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	ND	25	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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APPROVED BY: CMH

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019
CCIL SAMPLE #: 47
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-10 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	26000	2500	50	UG/L	5/8/02	CMH
MTBE***	EPA-8021	ND	150	50	UG/L	5/8/02	CMH
BENZENE	EPA-8021	240	50	50	UG/L	5/8/02	CMH
TOLUENE	EPA-8021	110	50	50	UG/L	5/8/02	CMH
ETHYLBENZENE	EPA-8021	240	50	50	UG/L	5/8/02	CMH
XYLENES	EPA-8021	330	150	50	UG/L	5/8/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	5100	130	1	UG/L	5/8/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	630	1	UG/L	5/8/02	AIB
1,2-DICHLOROETHANE (EDC)	EPA-8260	ND	2	1	UG/L	5/6/02	RAL
1,2-DIBROMOETHANE (EDB)	EPA-504.1	ND	0.023	1	UG/L	5/9/02	STL

NOTES: CHROMATOGRAM INDICATES SAMPLE CONTAINS WEATHERED GASOLINE AND LATE DIESEL RANGE PRODUCT
LUBE OIL REPORTING LIMIT RAISED DUE TO DIESEL RANGE OVERLAP

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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*** ANY POSITIVE MTBE RESULT SHOULD BE CONFIRMED BY GC/MS ANALYSIS

APPROVED BY: _____

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019
CCIL SAMPLE #: 48
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-11-3.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	160	6	2	MG/KG	5/8/02	CMH
MTBE***	EPA-8021	ND	0.2	2	MG/KG	5/8/02	CMH
BENZENE	EPA-8021	0.23	0.06	2	MG/KG	5/8/02	CMH
TOLUENE	EPA-8021	0.3	0.1	2	MG/KG	5/8/02	CMH
ETHYLBENZENE	EPA-8021	1.4	0.1	2	MG/KG	5/8/02	CMH
XYLENES	EPA-8021	4.5	0.4	2	MG/KG	5/8/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	45	25	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	190	50	1	MG/KG	5/9/02	AIB
NAPHTHALENE	EPA-8270 SIM	0.37	0.02	1	MG/KG	5/8/02	RAL
1-METHYLNAPHTHALENE	EPA-8270 SIM	0.04	0.02	1	MG/KG	5/8/02	RAL
2-METHYLNAPHTHALENE	EPA-8270 SIM	0.09	0.02	1	MG/KG	5/8/02	RAL
ACENAPHTHYLENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
ACENAPHATHENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
FLUORENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
PHENANTHRENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
ANTHRACENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
PYRENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO[A]ANTHRACENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
CHRYSENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO[B]FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO[K]FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO(A)PYRENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
INDENO[1,2,3-CD]PYRENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
DIBENZ[A,H]ANTHRACENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO[G,H,I]PERYLENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL

NOTES: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCTS WHICH ARE LIKELY WEATHERED GASOLINE, DIESEL #2, AND LUBE OIL
DIESEL RANGE RESULT BIASED HIGH DUE TO VOLATILE AND LUBE OIL OVERLAP

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CCI
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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019
CCIL SAMPLE #: 48
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-11-3.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

*** ANY POSITIVE MTBE RESULT SHOULD BE CONFIRMED BY GC/MS ANALYSIS

APPROVED BY: _____

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/10/02
CCIL JOB #: 205019
CCIL SAMPLE #: 49
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-11-6.5 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	320	12	4	MG/KG	5/9/02	CMH
MTBE***	EPA-8021	ND	0.4	4	MG/KG	5/9/02	CMH
BENZENE	EPA-8021	0.93	0.12	4	MG/KG	5/9/02	CMH
TOLUENE	EPA-8021	0.4	0.2	4	MG/KG	5/9/02	CMH
ETHYLBENZENE	EPA-8021	1.8	0.2	4	MG/KG	5/9/02	CMH
XYLENES	EPA-8021	7.0	0.8	4	MG/KG	5/9/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	ND	25	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB

NOTE: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCT WHICH IS LIKELY HIGHLY WEATHERED GASOLINE

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APPROVED BY: _____

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/10/02
CCIL JOB #: 205019
CCIL SAMPLE #: 52
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-12-6.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	450	30	10	MG/KG	5/9/02	CMH
MTBE***	EPA-8021	ND	1	10	MG/KG	5/9/02	CMH
BENZENE	EPA-8021	1.1	0.3	10	MG/KG	5/9/02	CMH
TOLUENE	EPA-8021	ND	0.5	10	MG/KG	5/9/02	CMH
ETHYLBENZENE	EPA-8021	2.2	0.5	10	MG/KG	5/9/02	CMH
XYLENES	EPA-8021	6	2	10	MG/KG	5/9/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	ND	25	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB

NOTE: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCT WHICH IS LIKELY WEATHERED GASOLINE

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APPROVED BY: CMA

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/10/02
CCIL JOB #: 205019
CCIL SAMPLE #: 53
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: B-12-9.0 5/1/02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	7	3	1	MG/KG	5/8/02	CMH
MTBE***	EPA-8021	ND	0.1	1	MG/KG	5/8/02	CMH
BENZENE	EPA-8021	ND	0.03	1	MG/KG	5/8/02	CMH
TOLUENE	EPA-8021	ND	0.05	1	MG/KG	5/8/02	CMH
ETHYLBENZENE	EPA-8021	ND	0.05	1	MG/KG	5/8/02	CMH
XYLENES	EPA-8021	ND	0.2	1	MG/KG	5/8/02	CMH
TPH-DIESEL RANGE	NWTPH-DX W/CLEANUP	ND	25	1	MG/KG	5/9/02	AIB
TPH-OIL RANGE	NWTPH-DX W/CLEANUP	ND	50	1	MG/KG	5/9/02	AIB

NOTE: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCT WHICH IS LIKELY HIGHLY WEATHERED GASOLINE

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DATE: 5/21/02
CCIL JOB #: 205019

DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	ANALYTE	SUR ID	SPIKE AMOUNT	% RECV
205019-01	NWTPH-GX	TFT	1 PPM	88
205019-01	EPA-8021	TFT	1 PPM	87
205019-01	NWTPH-DX	C25	5 PPM	67
205019-05	NWTPH-GX	TFT	1 PPM	87
205019-05	EPA-8021	TFT	1 PPM	88
205019-05	NWTPH-DX	C25	5 PPM	74
205019-07	NWTPH-HCID	BCB	1.3 PPM	83
205019-07	NWTPH-HCID	C25	0.25 PPM	83
205019-07(CONCENTRATE)	NWTPH-HCID	C25	0.25 PPM	94
205019-13	NWTPH-GX	TFT	1 PPM	94
205019-13	EPA-8021	TFT	1 PPM	92
205019-13	NWTPH-DX	C25	5 PPM	119
205019-20	NWTPH-GX	TFT	1 PPM	89
205019-20	EPA-8021	TFT	1 PPM	89
205019-20	NWTPH-DX	C25	5 PPM	66
205019-32	NWTPH-GX	TFT	1 PPM	*
205019-32	EPA-8021	TFT	1 PPM	*
205019-32	NWTPH-DX	C25	5 PPM	78
205019-39	NWTPH-GX	TFT	1 PPM	*
205019-39	EPA-8021	TFT	1 PPM	*
205019-39	NWTPH-DX	C25	5 PPM	81
205019-41	NWTPH-GX	TFT	10 PPB	109
205019-41	EPA-8021	TFT	10 PPB	99
205019-41	NWTPH-DX	C25	100 PPB	64
205019-41	EPA-8270 SIM	TERPHENYL-d14	4 PPB	79
205019-43	NWTPH-GX	TFT	1 PPM	*
205019-43	EPA-8021	TFT	1 PPM	*
205019-43	NWTPH-DX	C25	5 PPM	75
205019-43	EPA-8260	1,2-DCE-d4	210 PPB	138**

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019

DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00

QUALITY CONTROL RESULTS

205019-45	NWTPH-GX	TFT	1 PPM	95
205019-45	EPA-8021	TFT	1 PPM	94
205019-45	NWTPH-DX	C25	5 PPM	77
205019-47	NWTPH-GX	TFT	10 PPB	103
205019-47	EPA-8021	TFT	10 PPB	107
205019-47	NWTPH-DX	C25	100 PPB	103
205019-47	EPA-8260	1,2-DCE-d4	20PPB	127**
205019-47	EPA-504.1	1,2,3-TRICHLOROPROPANE	N/A	106
205019-48	NWTPH-GX	TFT	1 PPM	124
205019-48	EPA-8021	TFT	1 PPM	93
205019-48	NWTPH-DX	C25	5 PPM	86
205019-48	EPA-8270 SIM	TERPHENYL-d14	2 PPM	60
205019-49	NWTPH-GX	TFT	1 PPM	*
205019-49	EPA-8021	TFT	1 PPM	*
205019-49	NWTPH-DX	C25	5 PPM	81
205019-52	NWTPH-GX	TFT	1 PPM	*
205019-52	EPA-8021	TFT	1 PPM	*
205019-52	NWTPH-DX	C25	5 PPM	79
205019-53	NWTPH-GX	TFT	1 PPM	90
205019-53	EPA-8021	TFT	1 PPM	89
205019-53	NWTPH-DX	C25	5 PPM	76

BLANK AND DUPLICATE RESULTS

METHOD	BLK RESULT	ASSOC SMPLS	DUP RESULT	ORIG RESULT	%RDP	ASSOC SMPLS
NWTPH-GX (GAS)	ND(<3)	205019-1,5,13,20,32,39,43,45,48,49,52,	ND(<3)	ND(<3)	****	SAME
EPA-8021(MTBE)	ND(<0.1)	205019-1,5,13,20,32,39,43,45,48,49,52,	ND(<0.1)	ND(<0.1)	****	SAME
EPA-8021(BENZENE)	ND(<0.03)	205019-1,5,13,20,32,39,43,45,48,49,52,	ND(<0.03)	ND(<0.03)	****	SAME
EPA-8021(TOLUENE)	ND(<0.05)	205019-1,5,13,20,32,39,43,45,48,49,52,	ND(<0.05)	ND(<0.05)	****	SAME
EPA-8021(ETHYLBENZ)	ND(<0.05)	205019-1,5,13,20,32,39,43,45,48,49,52,	ND(<0.05)	ND(<0.05)	****	SAME
EPA-8021(XYLENE)	ND(<0.2)	205019-1,5,13,20,32,39,43,45,48,49,52,	ND(<0.2)	ND(<0.2)	****	SAME
NWTPH-DX (DSL)	ND(<25)	205019-1,5,13,20,32,39,43,45,48,49,52,	ND(<25)	ND(<25)	****	SAME
NWTPH-DX (OIL)	ND(<50)	205019-1,5,13,20,32,39,43,45,48,49,52,	ND(<50)	ND(<50)	****	SAME
NWTPH-GX (GAS)	ND(<50)	205019-41, 47	ND(<50)	ND(<50)	****	SAME
EPA-8021(MTBE)	ND(<3)	205019-41, 47	ND(<3)	ND(<3)	****	SAME
EPA-8021(BENZENE)	ND(<1)	205019-41, 47	ND(<1)	ND(<1)	****	SAME
EPA-8021(TOLUENE)	ND(<1)	205019-41, 47	ND(<1)	ND(<1)	****	SAME

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LABORATORIES, INC.

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CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019

DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00

QUALITY CONTROL RESULTS

EPA-8021(ETHYLBENZ)	ND(<1)	205019-41, 47	ND(<1)	ND(<1)	****	SAME
EPA-8021(XYLENE)	ND(<3)	205019-41, 47	ND(<3)	ND(<3)	****	SAME
NWTPH-DX (DSL)	ND(<130)	205019-41, 47	ND(<130)	ND(<130)	****	SAME
NWTPH-DX (OIL)	ND(<250)	205019-41, 47	ND(<250)	ND(<250)	****	SAME
NWTPH-HCID(GAS)	ND(<0.25)	205019-07	ND(<0.25)	ND(<0.25)	****	SAME
NWTPH-HCID(DSL)	ND(<0.63)	205019-07	ND(<0.63)	ND(<0.63)	****	SAME
NWTPH-HCID(OIL)	ND(<0.63)	205019-07	ND(<0.63)	ND(<0.63)	****	SAME
EPA-6010 (PB)	ND(<1.1)	205019-43	ND(<1.1)	ND(<1.1)	****	SAME
EPA-8260 (EDC)	ND(<10)	205019-43				
EPA-8260 (EDB)	ND(<10)	205019-43				
EPA-8260 (EDC)	ND(<2)	205019-47				
EPA-504.1 (EDB)	ND(<0.022)	205019-47				
EPA-8270 SIM	SEE BLANK REPORT					

SPIKE/ SPIKE DUPLICATE RESULTS

METHOD	SPIKE ID	ASSOCIATED SAMPLES	SPIKE AMOUNT	DILUTION FACTOR	% SPIKE RECOVERY	% SPIKE DUP RECOVERY	REL % DIFF
EPA-8021	MTBE	05019-1,5,13,20,32,39,43,45,48,49,52,5	2 PPM	1	110	N/A	N/A
EPA-8021	BENZENE	05019-1,5,13,20,32,39,43,45,48,49,52,5	1 PPM	1	82	N/A	N/A
EPA-8021	TOLUENE	05019-1,5,13,20,32,39,43,45,48,49,52,5	1 PPM	1	79	N/A	N/A
EPA-8021	ETHYLBENZENE	05019-1,5,13,20,32,39,43,45,48,49,52,5	1 PPM	1	81	N/A	N/A
EPA-8021	XYLENE	05019-1,5,13,20,32,39,43,45,48,49,52,5	3 PPM	1	82	N/A	N/A
EPA-8021	MTBE	205019-41, 47	40 PPB	1	107	N/A	N/A
EPA-8021	BENZENE	205019-41, 47	20 PPB	1	95	N/A	N/A
EPA-8021	TOLUENE	205019-41, 47	20 PPB	1	94	N/A	N/A
EPA-8021	ETHYLBENZENE	205019-41, 47	20 PPB	1	94	N/A	N/A
EPA-8021	XYLENE	205019-41, 47	60 PPB	1	94	N/A	N/A
EPA-6010	LEAD	205019-43	1 PPM	1	104	N/A	N/A
EPA-8270SI	NAPHTHALENE	205019-41	5 PPB	1	58	60	3
EPA-8270SI	ACENAPHTHENE	205019-41	5 PPB	1	63	63	1
EPA-8270SI	PYRENE	205019-41	5 PPB	1	68	68	0
EPA-8270SI	BENZO[g,h,I]PERYLENE	205019-41	5 PPB	1	66	66	1
EPA-8270SI	NAPHTHALENE	205019-48	0.5 PPM	1	80	75	6
EPA-8270SI	ACENAPHTHENE	205019-48	0.5 PPM	1	90	91	1
EPA-8270SI	PYRENE	205019-48	0.5 PPM	1	91	94	3
EPA-8270SI	BENZO[g,h,I]PERYLENE	205019-48	0.5 PPM	1	89	89	0

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2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019

DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00

QUALITY CONTROL RESULTS

EPA-8260	TRICHLOROETHENE	205019-43	0.02 PPM	1	100	108	8
EPA-8260	TRICHLOROETHENE	205019-47	20 PPB	1	97	98	0
EPA-504.1	EDB	205019-47	0.11 PPB	1	87	80	8

* SURROGATE DILUTED OUT OF CALIBRATION RANGE
** SURROGATE OUTSIDE OF CONTROL LIMITS DUE TO MATRIX INTERFERENCE
**** %RPD NOT REPORTED FOR VALUES <X5 THE REPORTING LIMIT

APPROVED BY: _____

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CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019
CCIL SAMPLE #: BLK
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8270 SIM FOR SAMPLE 41

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
NAPHTHALENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
1-METHYLNAPHTHALENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
2-METHYLNAPHTHALENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
ACENAPHTHYLENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
ACENAPHATHENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
FLUORENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
PHENANTHRENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
ANTHRACENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
PYRENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
BENZO[A]ANTHRACENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
CHRYSENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
BENZO[B]FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
BENZO[K]FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
BENZO(A)PYRENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
INDENO[1,2,3-CD]PYRENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
DIBENZ[A,H]ANTHRACENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL
BENZO[G,H,I]PERYLENE	EPA-8270 SIM	ND	0.02	1	UG/L	5/8/02	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY: _____

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LABORATORIES, INC.

CERTIFICATE OF ANALYSIS

CLIENT: GEOENGINEERS, INC
2924 COLBY AVE.
EVERETT, WA 98201

DATE: 5/21/02
CCIL JOB #: 205019
CCIL SAMPLE #: BLK
DATE RECEIVED: 5/2/02
WDOE ACCREDITATION #: C142

CLIENT CONTACT: LISA BONA

CLIENT PROJECT ID: SHA/MLK WAY 0241-012-00
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8270 SIM FOR SAMPLE 48

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
NAPHTHALENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
1-METHYLNAPHTHALENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
2-METHYLNAPHTHALENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
ACENAPHTHYLENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
ACENAPHATHENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
FLUORENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
PHENANTHRENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
ANTHRACENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
PYRENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO[A]ANTHRACENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
CHRYSENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO[B]FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO[K]FLUORANTHENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO(A)PYRENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
INDENO[1,2,3-CD]PYRENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
DIBENZ[A,H]ANTHRACENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL
BENZO[G,H,I]PERYLENE	EPA-8270 SIM	ND	0.02	1	MG/KG	5/8/02	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

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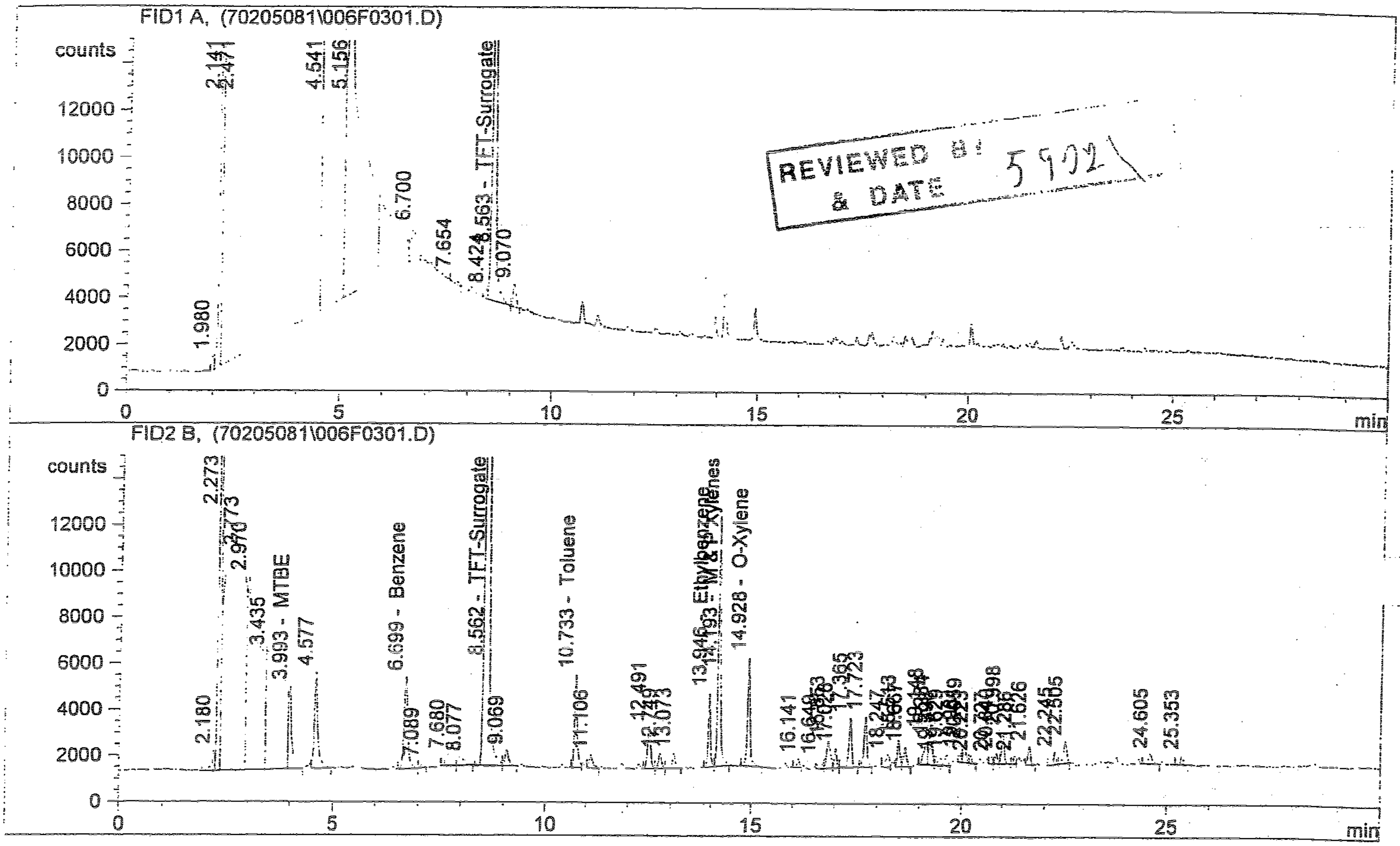
Data file : D:\HPCHEM\2\DATA\70205081\006F0301.D
Gas/BTEX 2 Report Created on 5/8/02 1:42:16 PM
Injection Date & Time: Wed, 8. May. 2002 1:12:12 PM
Sample Name : 205019-1 100 UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Ret.	Compound Name	Area	Amount ug/L
8.563	TFT-Surrogate	105025.187	8.787 ÷10×100 = 88%
0.000	Gasoline Envelope	0.000	0.000

Dry Wt. = 12.16g

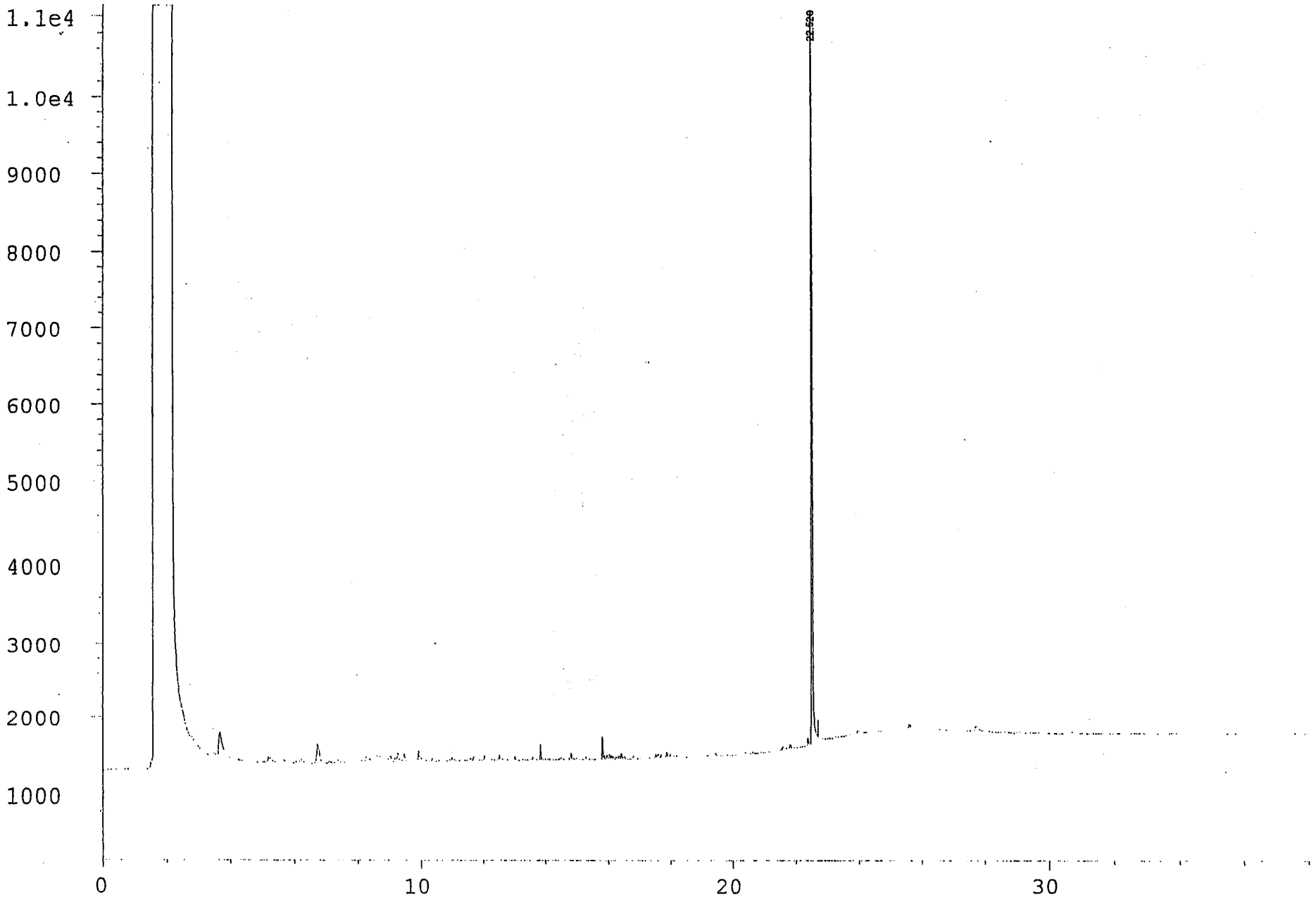
Gas = < 3.0 mg/kg

Ret.	Compound Name	Area	Amount ug/L
3.993	MTBE	20670.545	0.674
6.699	Benzene	24637.643	0.229
8.562	TFT-Surrogate	244021.250	8.725 = 87%
10.733	Toluene	18971.543	0.202
13.946	Ethylbenzene	13341.211	0.174
14.193	M & P Xylenes	48602.543	0.581
14.928	O-Xylene	20410.395	0.279

~~0.860~~

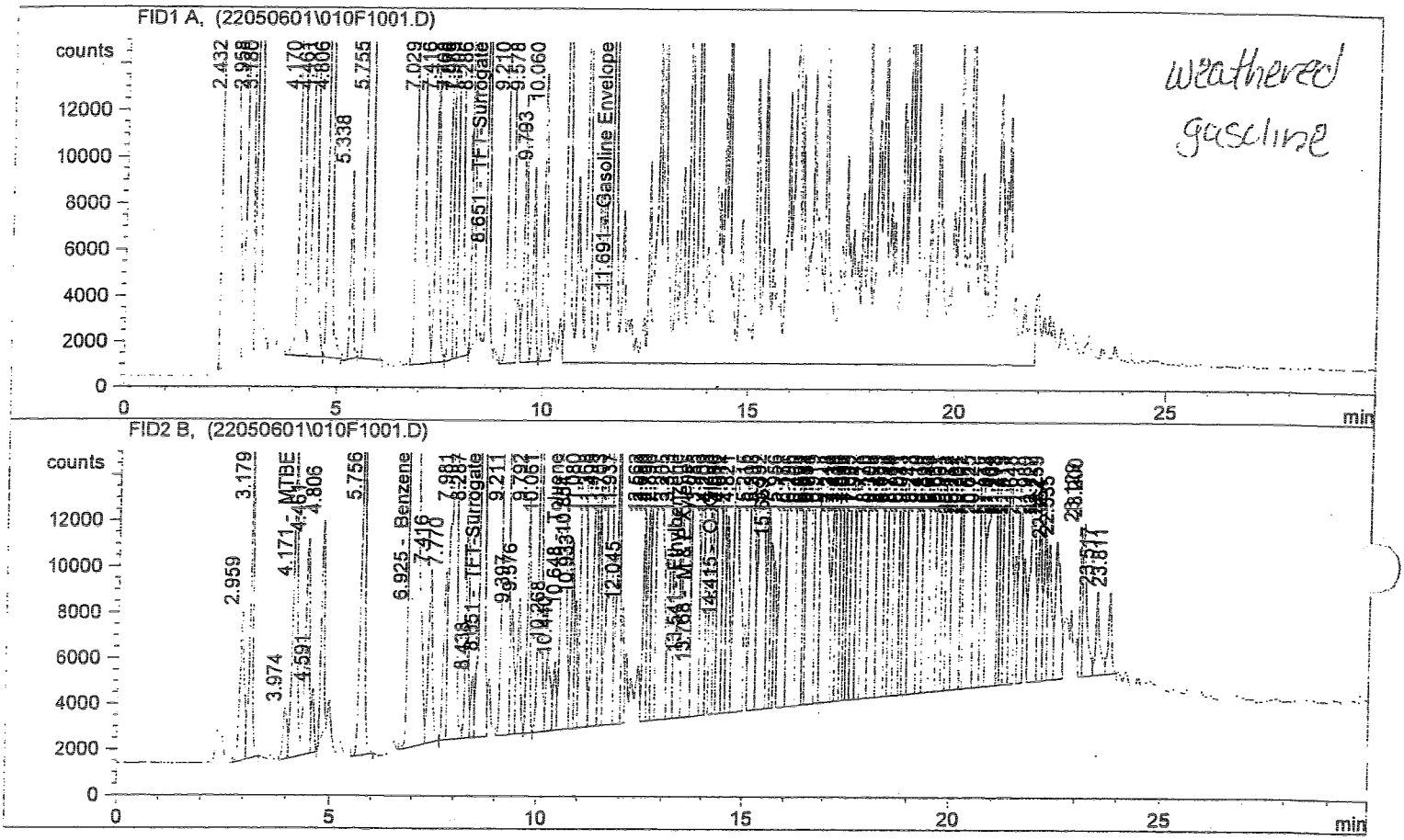
MTBE = < 0.1 mg/kg T, E = < 0.05 mg/kg

user modified



Sig. 1 in D:\HPCHEM\1\DATA\12050701\033F1201.D

Data file : D:\HPCHEM\2\DATA\22050601\010F1001.D
Gas/BTEX 1 Report Created on 5/7/02 7:54:23 PM
Injection Date & Time: Mon, 6. May. 2002 2:02:19 PM
Sample Name : 205019-47 100UL (YSC)
Acq Operator : LAH
Acq. Method : GBTX0202.M
Analysis Method : D:\HPCHEM\2\METHODS\GBTX0202.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



weathered gasoline

Ret.	Compound Name	Area	Amount ug/L	
8.651	TFT-Surrogate	114450.555	10.295	= 10 X 100 = 103 %
11.691	Gasoline Envelope	4030274.750	526.076	

Gas = 526.076ug/L x 50 = 26,000 ug/L

REVIEWED BY & DATE 5-9-02

Ret.	Compound Name	Area	Amount ug/L	
4.171	MTBE	94538.406	1.271	
6.925	Benzene	551703.813	4.873	
8.651	TFT-Surrogate	387362.719	10.669	= 107 %
10.648	Toluene	218739.125	2.114	
13.541	Ethylbenzene	379744.969	4.835	
13.768	M & P Xylenes	525656.375	4.716	
14.415	O-Xylene	209324.797	1.844	
			6.560	

MTBE = < 150 ug/L T = 110 ug/L

External Standard Report

Data File Name	: D:\HPCHEM\1\DATA\12050701\025F0801.D		
Operator	: AB	Page Number	: 1
Instrument	: DIESEL #1	Vial Number	: 25
Sample Name	: 205019-47 H20 SG	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 8
Acquired on	: 08 May 02 11:47 PM	Instrument Method	: TDMOB402.MTH
Report Created on	: 09 May 02 09:00 AM	Analysis Method	: TDMOB402.MTH
Last Recalib on	: 25 APR 02 09:20 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\HPCHEM\1\DATA\12050701\025F0801.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
10.143	7784415	MM	0.469	1	2054.413	Diesel #2
21.319	410395	MM R	0.064	1	340.413	Motor Oil
22.533	194628	MM T	0.031	1	41.086	nC-25 surrogate 103%
25.926	134072	MM	2.178	1	81.974	Motor Oil {2}

User Modified

$\bar{x}_{no} = 211.193$

late diesel range product

$D = 2054.413\ \mu g/mL \times \frac{1.0\ mL}{400\ mL} = 5.1\ mg/L$ ~~Diesel #2~~ *

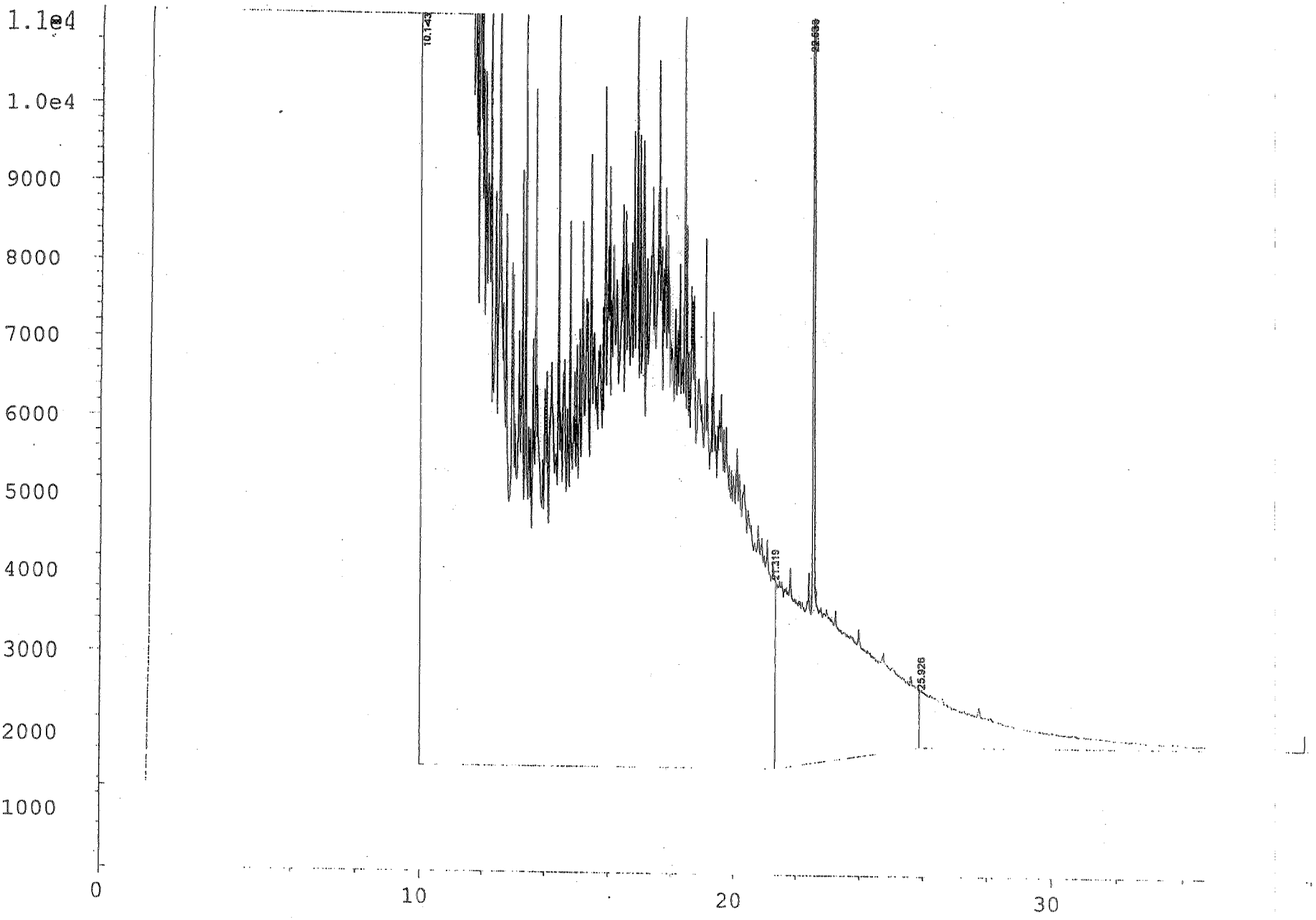
* diesel range biased high due to volatile range overlap

$HO < 250\ \mu g/mL \times \frac{1.0\ mL}{400\ mL} < 0.63\ mg/L$ *

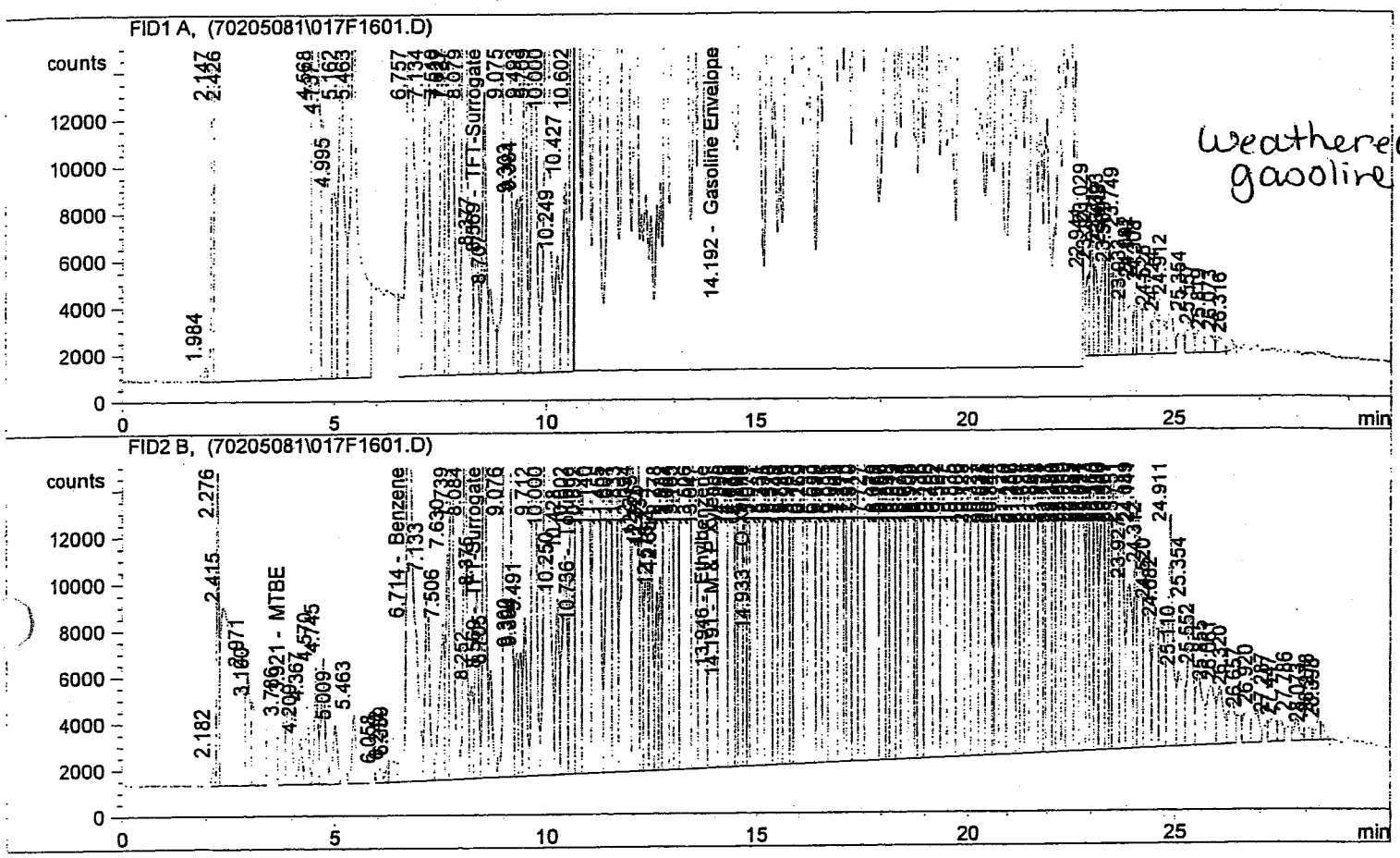
* lube oil detection limit raised due to diesel range overlap

05/09/02 AB

user modified



Data file : D:\HPCHEM\2\DATA\70205081\017F1601.D
Gas/BTEX 2 Report Created on 5/9/02 8:38:43 AM
Injection Date & Time: Wed, 8. May. 2002 8:52:26 PM
Sample Name : 205019-48 50UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Ret.	Compound Name	Area	Amount ug/L
8.569	TFT-Surrogate	78391.070	6.219 x2÷10x100=124%
14.192	Gasoline Envelope	14788261.000	1970.512

Dry wt. = 12.10g

Gas = 160 mg/kg

REVIEWED BY & DATE 5-9-02

Ret.	Compound Name	Area	Amount ug/L
3.921	MTBE	36011.598	1.174
6.714	Benzene	240390.813	2.725
8.569	TFT-Surrogate	133628.453	4.665 =93%
10.736	Toluene	302839.188	3.778
13.946	Ethylbenzene	1124065.750	17.055
14.191	M & P Xylenes	3229161.250	41.022
14.933	O-Xylene	939903.750	13.395
			54.417

MTBE = <0.2 mg/kg
B = 0.23 mg/kg
T = 30.31 mg/kg
E = 1.4 mg/kg

External Standard Report

Data File Name	: D:\HPCHEM\1\DATA\12050701\034F1201.D		
Operator	: AB	Page Number	: 1
Instrument	: DIESEL #1	Vial Number	: 34
Sample Name	: 205019-48 SG	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 12
Acquired on	: 09 May 02 07:49 AM	Instrument Method:	TDMOB402.MTH
Report Created on:	09 May 02 09:48 AM	Analysis Method	: TDMOB402.MTH
Last Recalib on	: 25 APR 02 09:20 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\HPCHEM\1\DATA\12050701\034F1201.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
9.908	512980	MM	1.516	1	120.024	Diesel #2
21.319	552812	MM R	0.373	1	485.701	Motor Oil
22.522	40327	MM T	0.029	1	8.582	nC-25 surrogate 86%
26.578	725096	MM	4.767	1	551.767	Motor Oil (2)

User Modified

$\bar{X}_{MO} = 518.734$

Dry Wt = 26.81 g

$$D = 120.024\ \mu g/mL \times \frac{10mL}{26.81\ g} = 45\ mg/kg\ \text{Diesel \#2}^{*}$$

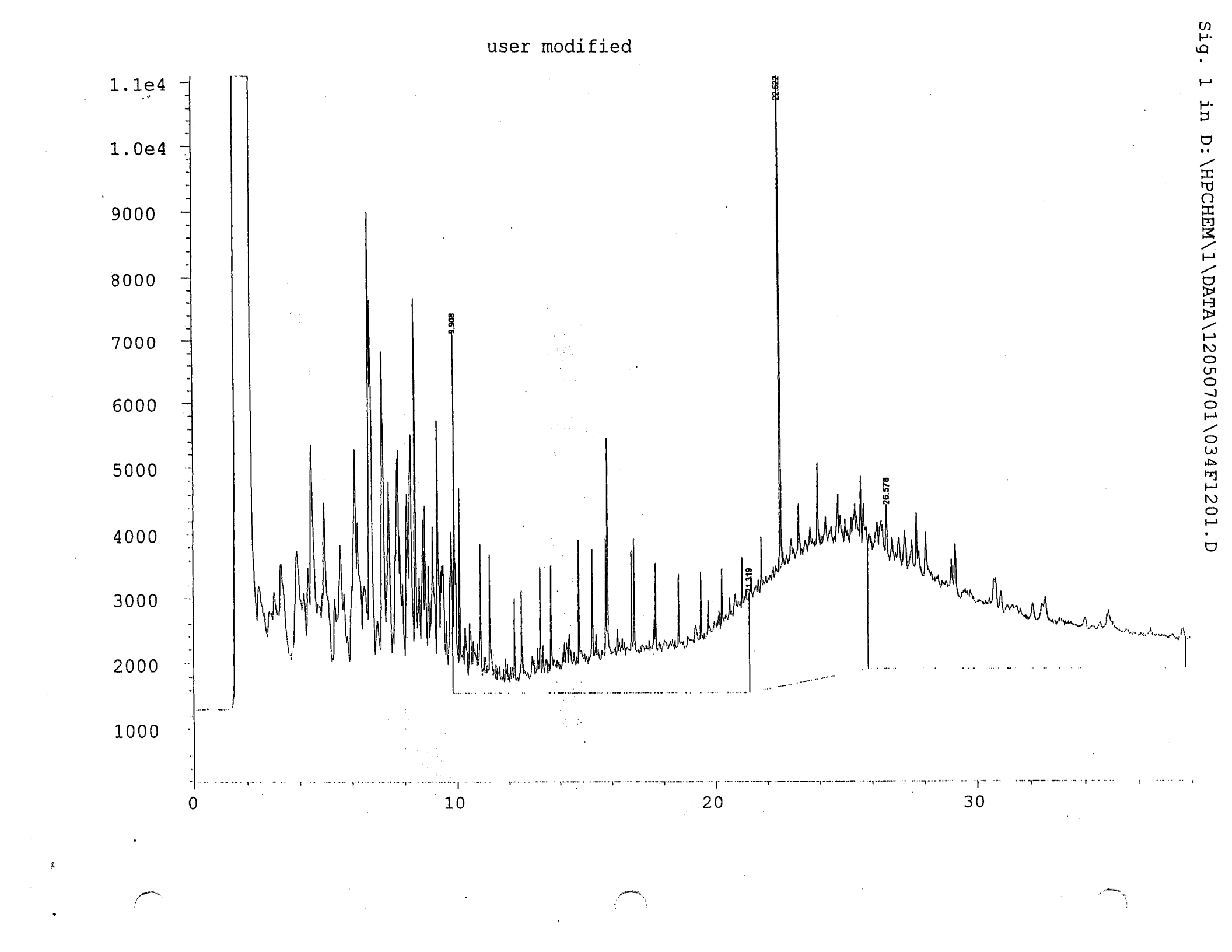
* diesel range biased high by volatile and lube oil range overlap

$$MO = 518.734\ \mu g/mL \times \frac{10mL}{26.81\ g} = 190\ mg/kg\ \text{Lube Oil}^{\circledast}$$

⊛ lube oil range ~~may be~~ biased high due to diesel range overlap

REVIEWED BY & DATE 5.9.02

05/09/02 AB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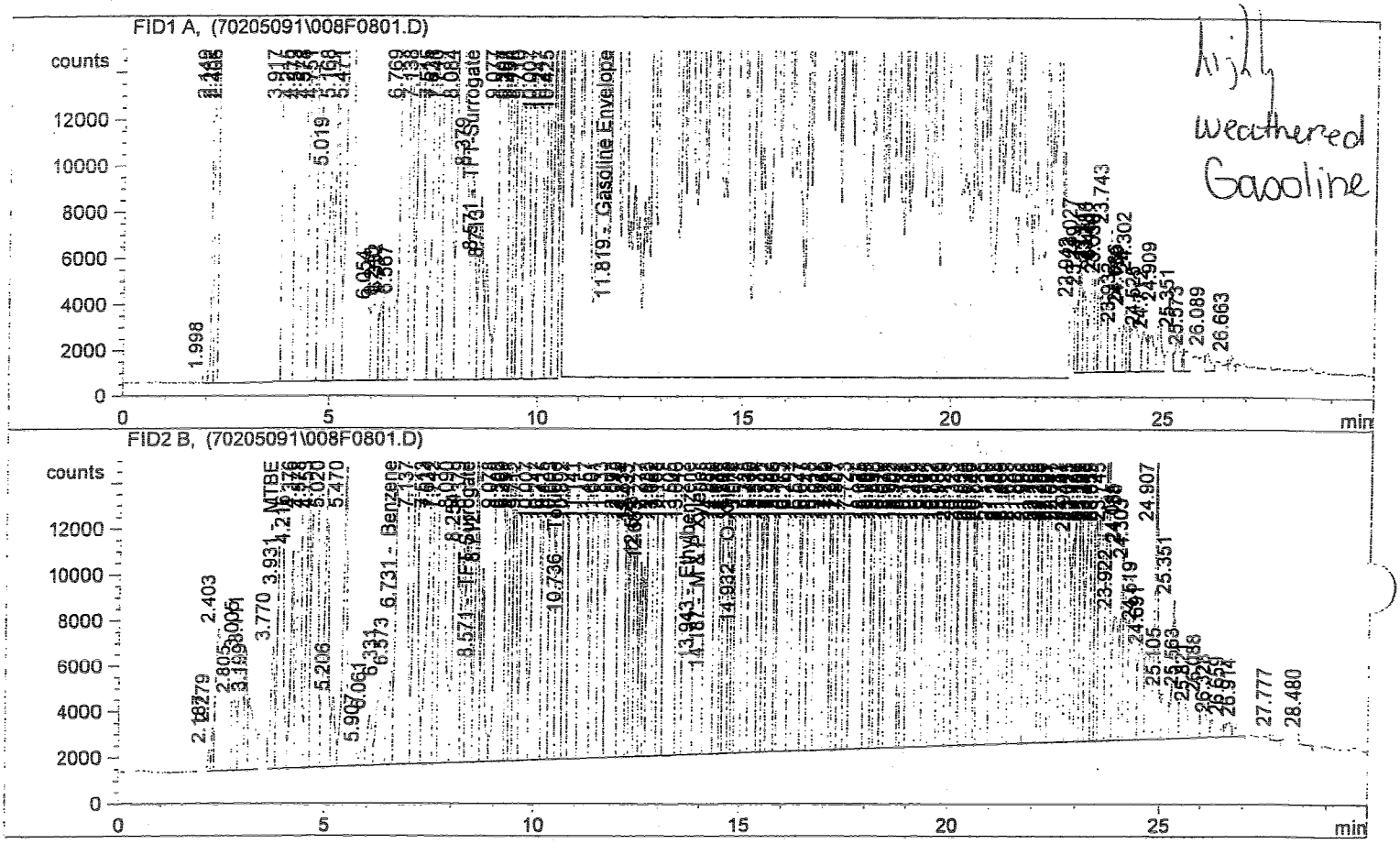
20
30
9.908
21.319
22.522
26.578
Sig. 1 in D:\HPCHEM\1\DATA\12050701\034F1201.D

Data file : D:\HPCHEM\2\DATA\70205091\008F0801.D
Gas/BTEX 2 Report Created on 5/9/02 1:04:26 PM
Injection Date & Time: Thu, 9. May. 2002 12:14:58 PM
Sample Name : 205019-49 25UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Highly Weathered Gasoline

Ret.	Compound Name	Area	Amount ug/L
8.571	TFT-Surrogate	54037.832	4.109 * Low due to dilution
11.819	Gasoline Envelope	13223375.000	1761.359

Gas = 320 mg/kg

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Dry wt. = 10.95g

Ret.	Compound Name	Area	Amount ug/L
3.931	MTBE	119109.648	5.293
6.731	Benzene	424885.188	5.118
8.571	TFT-Surrogate	84269.633	2.850 * Low due to dilution
10.736	Toluene	189858.672	2.277
13.943	Ethylbenzene	647049.875	9.742
14.187	M & P Xylenes	2170949.500	27.536
14.932	O-Xylene	759472.000	10.815
			38.054

MTBE = 0.97 mg/kg
T = 0.48 mg/kg
E = 1.8 mg/kg

External Standard Report

Data File Name : D:\HPCHEM\1\DATA\12050701\035F1201.D
Operator : AB
Instrument : DIESEL #1
Sample Name : 205019-49 SG
Run Time Bar Code:
Acquired on : 09 May 02 08:32 AM
Report Created on: 09 May 02 09:51 AM
Last Recalib on : 06 MAY 02 01:24 PM
Multiplier : 1

Page Number : 1
Vial Number : 35
Injection Number : 1
Sequence Line : 12
Instrument Method: TDMOB402.MTH
Analysis Method : DSL10402.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\12050701\035F1201.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
9.908	339222	MM	2.185	1	33.675	Diesel #1
22.521	37949	MM T	0.030	1	8.081	nC-25 surrogate 81%

User Modified

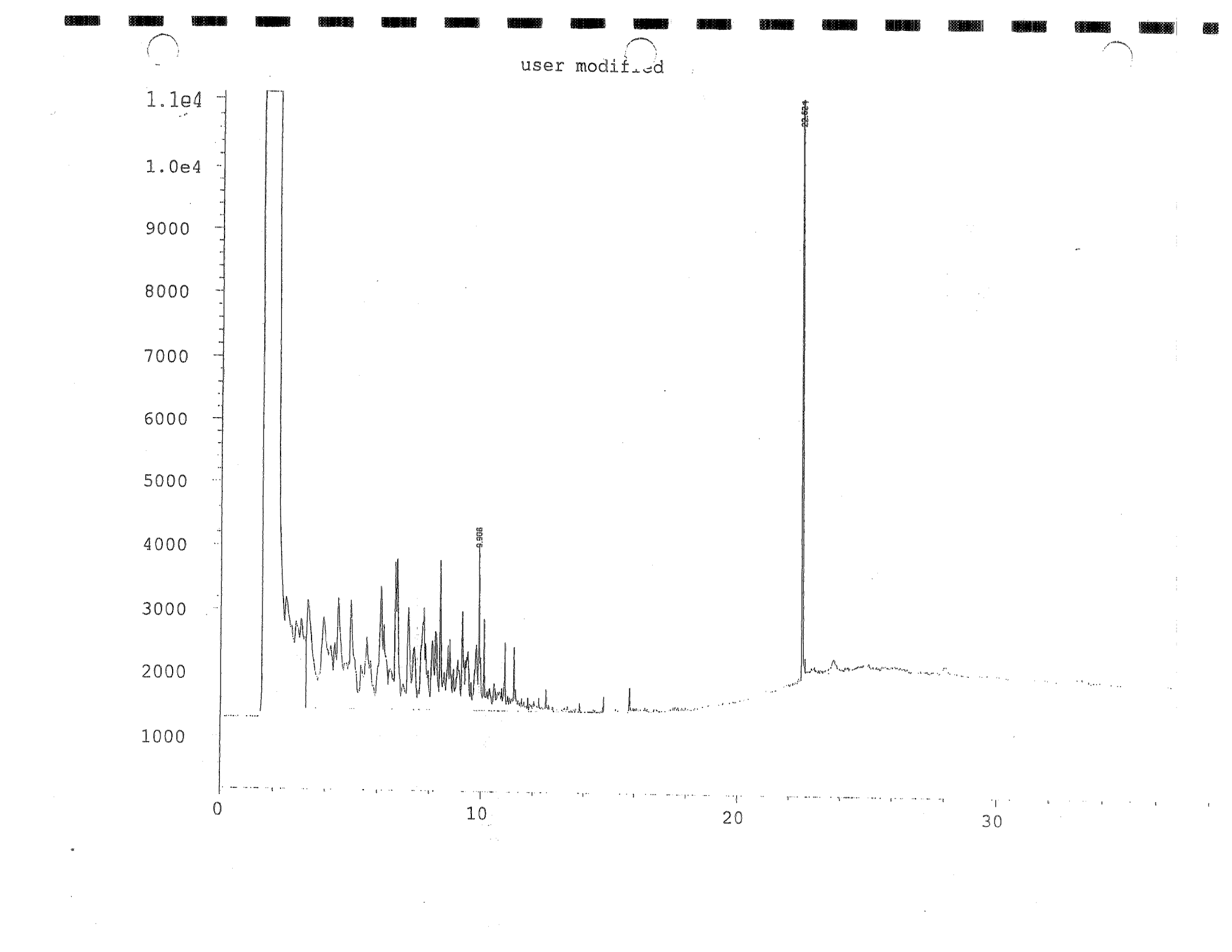
Dry Wt = 23.21 g

D < 25 mg/kg

ND < 50 mg/kg

05/09/02 AB

REVIEWED BY & DATE 5-9-02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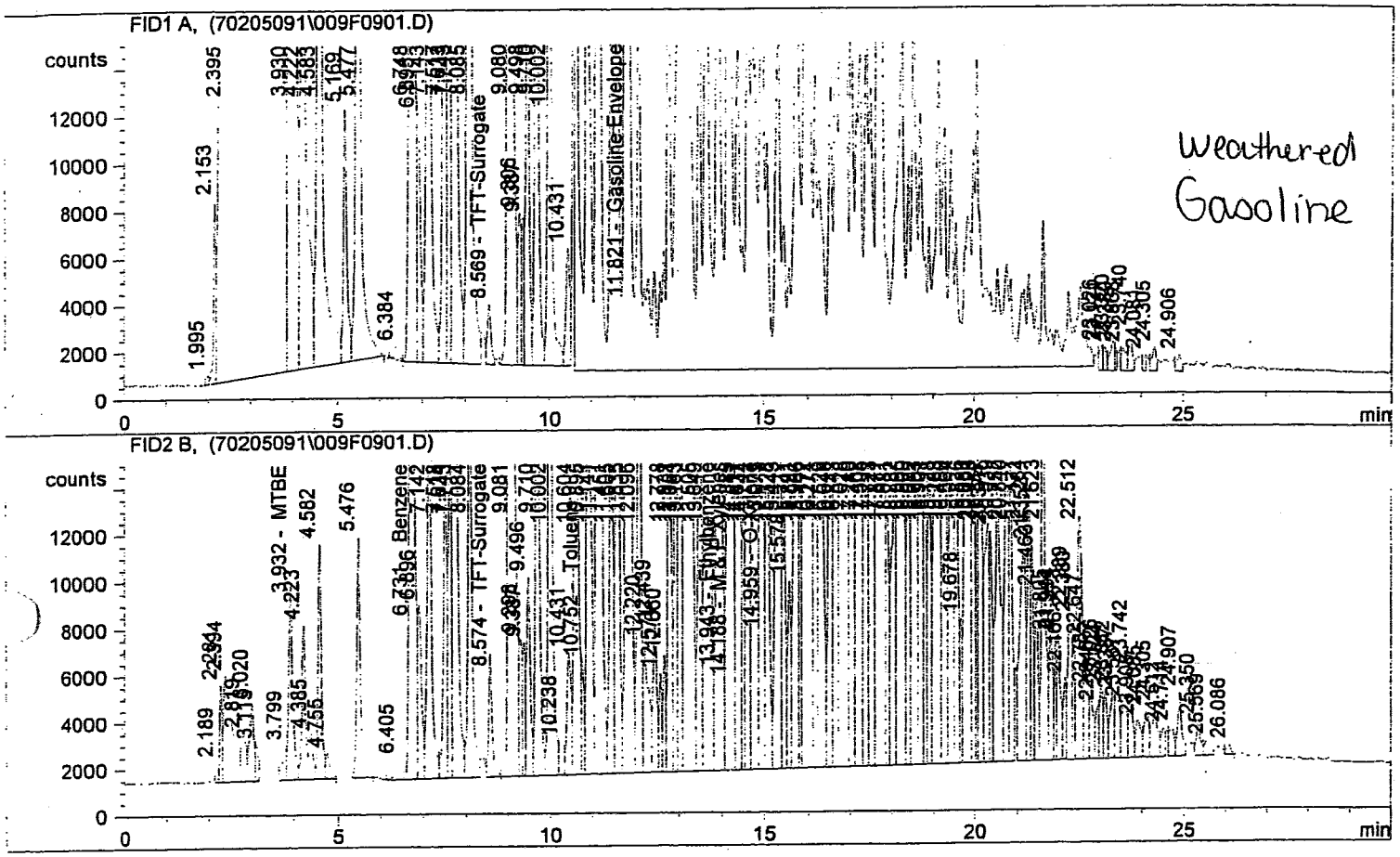
Data file : D:\HPCHEM\2\DATA\70205091\009F0901.D
Gas/BTEX 2 Report Created on 5/9/02 1:21:39 PM
Injection Date & Time: Thu, 9. May. 2002 12:50:26 PM
Sample Name : 205019-52 10UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Weathered Gasoline

Ret.	Compound Name	Area	Amount ug/L	
8.569	TFT-Surrogate	16670.236	1.268	* Low due to dilut
11.821	Gasoline Envelope	7267254.500	965.299	

Dry Wt = 10.80

Gas = 450 mg/kg

REVIEWED BY & DATE 5 9 02

Ret.	Compound Name	Area	Amount ug/L	
3.932	MTBE	53701.953	1.750	
6.731	Benzene	217996.312	2.434	
8.574	TFT-Surrogate	33140.238	0.976	* Low due to dilut
10.752	Toluene	19074.441	0.204	
13.943	Ethylbenzene	326278.844	4.825	
14.188	M & P Xylenes	744610.750	9.357	
14.959	O-Xylene	180439.109	2.535	
			11.892	

MTBE = <1.8 mg/kg
T = <0.5 mg/kg
E = 2.2 mg/kg
B = 1.1 mg/kg

External Standard Report

Data File Name	: D:\HPCHEM\1\DATA\12050701\036F1201.D		
Operator	: AB	Page Number	: 1
Instrument	: DIESEL #1	Vial Number	: 36
Sample Name	: 205019-52 SG	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 12
Acquired on	: 09 May 02 09:15 AM	Instrument Method	: TDMOB402.MTH
Report Created on	: 09 May 02 10:02 AM	Analysis Method	: DSL10402.MTH
Last Recalib on	: 06 MAY 02 01:24 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\HPCHEM\1\DATA\12050701\036F1201.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
6.755	346535	MM	1.844	1	34.401	Diesel #1
22.520	36922	MM T	0.030	1	7.864	nC-25 surrogate 79%

User Modified

Dry wt = 23.39 g

D < 25 mg/kg

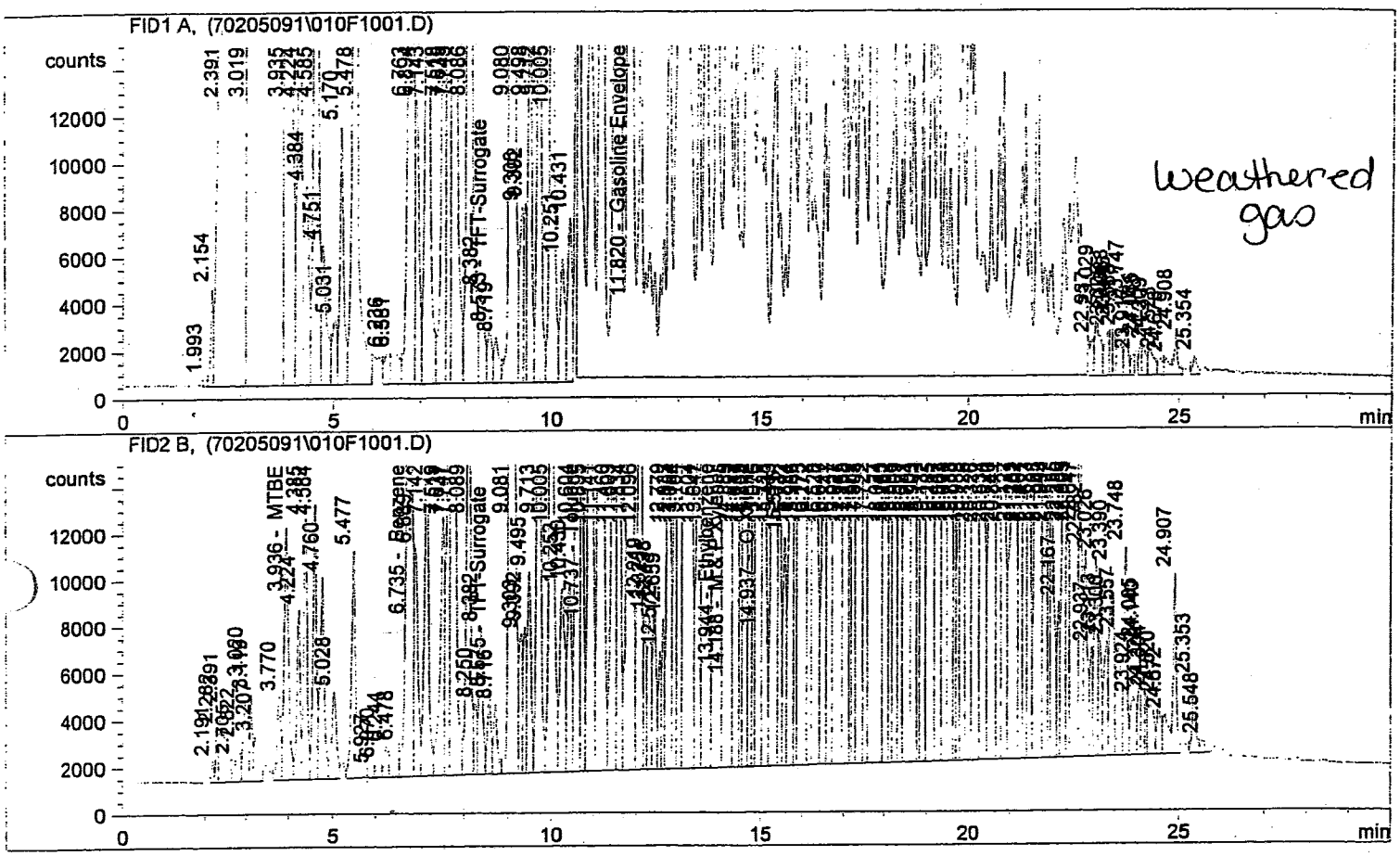
MO < 50 mg/kg

05/09/02 AB

REVIEWED BY & DATE 5-9-02

Data file : D:\HPCHEM\2\DATA\70205091\010F1001.D

Gas/BTEX 2 Report Created on 5/9/02 2:04:40 PM
Injection Date & Time: Thu, 9. May. 2002 1:25:53 PM
Sample Name : 205019-32 5UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Ret.	Compound Name	Area	Amount ug/L	
8.573	TFT-Surrogate	16589.135	1.262	* Low due to dilut
11.820	Gasoline Envelope	8965054.000	1192.217	

Gas = 1000 mg/kg

Dry wt. = 11.42g

REVIEWED BY & DATE 5.9.02

Ret.	Compound Name	Area	Amount ug/L	
3.936	MTBE	75655.414	2.815	
6.735	Benzene	225807.281	2.536	
8.575	TFT-Surrogate	20670.416	0.609	* Low due to dilut
10.737	Toluene	77114.867	0.823	
13.944	Ethylbenzene	490650.906	7.345	
14.188	M & P Xylenes	1565866.625	19.824	
14.937	O-Xylene	399250.094	5.664	
			~~25.488~~	

DLCA

MTBE = ~~2.5~~ mg/kg < 2 T = < 1.0 mg/kg X = 22 mg/kg

External Standard Report

Data File Name : D:\HPCHEM\1\DATA\12050701\030F1201.D
Operator : AB
Instrument : DIESEL #1
Sample Name : 205019-32 SG
Run Time Bar Code:
Acquired on : 09 May 02 04:56 AM
Report Created on: 09 May 02 09:31 AM
Last Recalib on : 06 MAY 02 01:24 PM
Multiplier : 1

Page Number : 1
Vial Number : 30
Injection Number : 1
Sequence Line : 12
Instrument Method: TDMOB402.MTH
Analysis Method : DSL10402.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\12050701\030F1201.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
6.758	4475047	MM	1.989	1	653.398	Diesel #1
22.522	36811	MM T	0.029	1	7.841	nC-25 surrogate 78%

User Modified

Dry Wt = 23.97

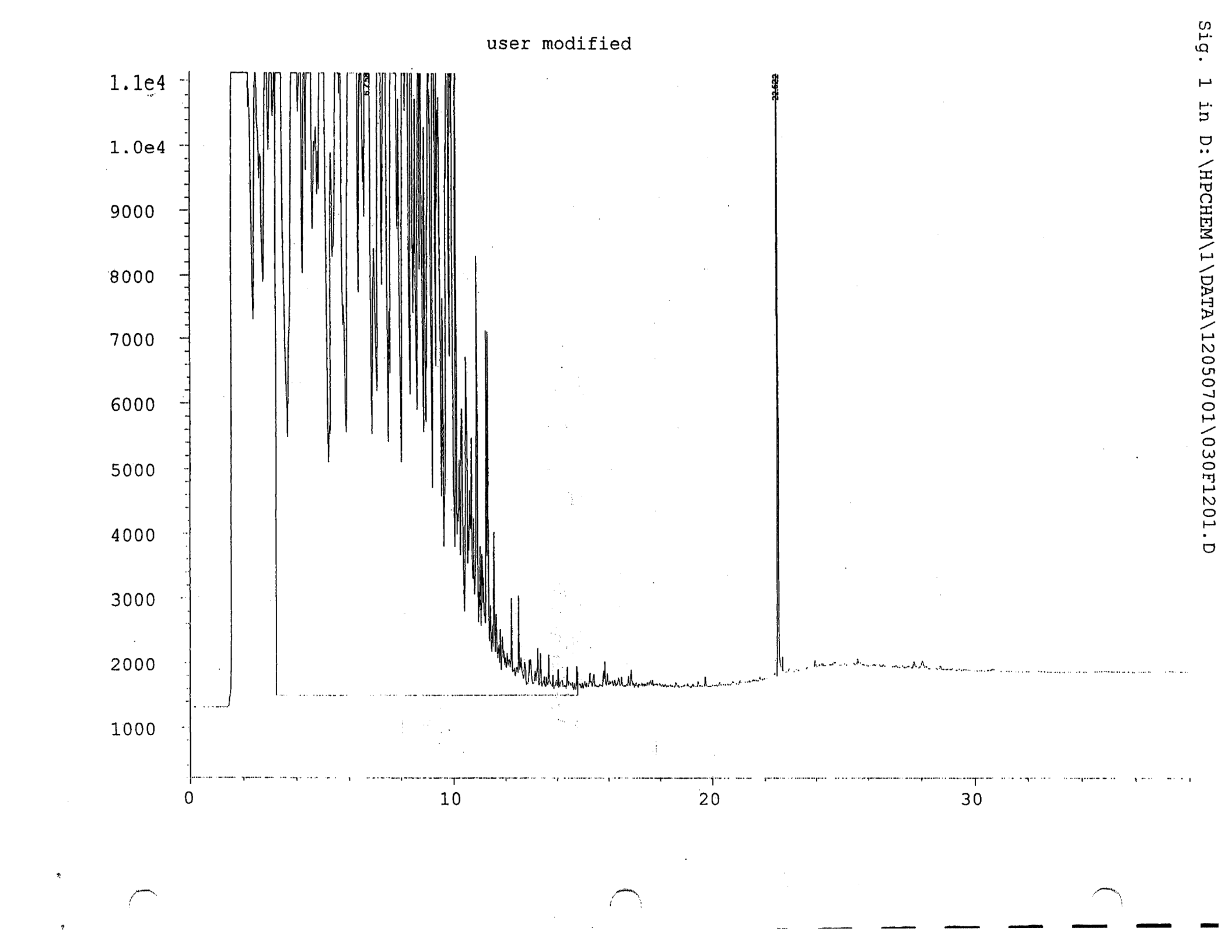
D = 653.398 µg/mL × 10mL / 23.97g = 270 mg/kg volatile range product

Report D = < 25 mg/kg. Could see 50 ~~µg/mL~~ mg/L std.

ND < 50 mg/kg

05/09/02 RB

REVIEWED BY & DATE 5.9.02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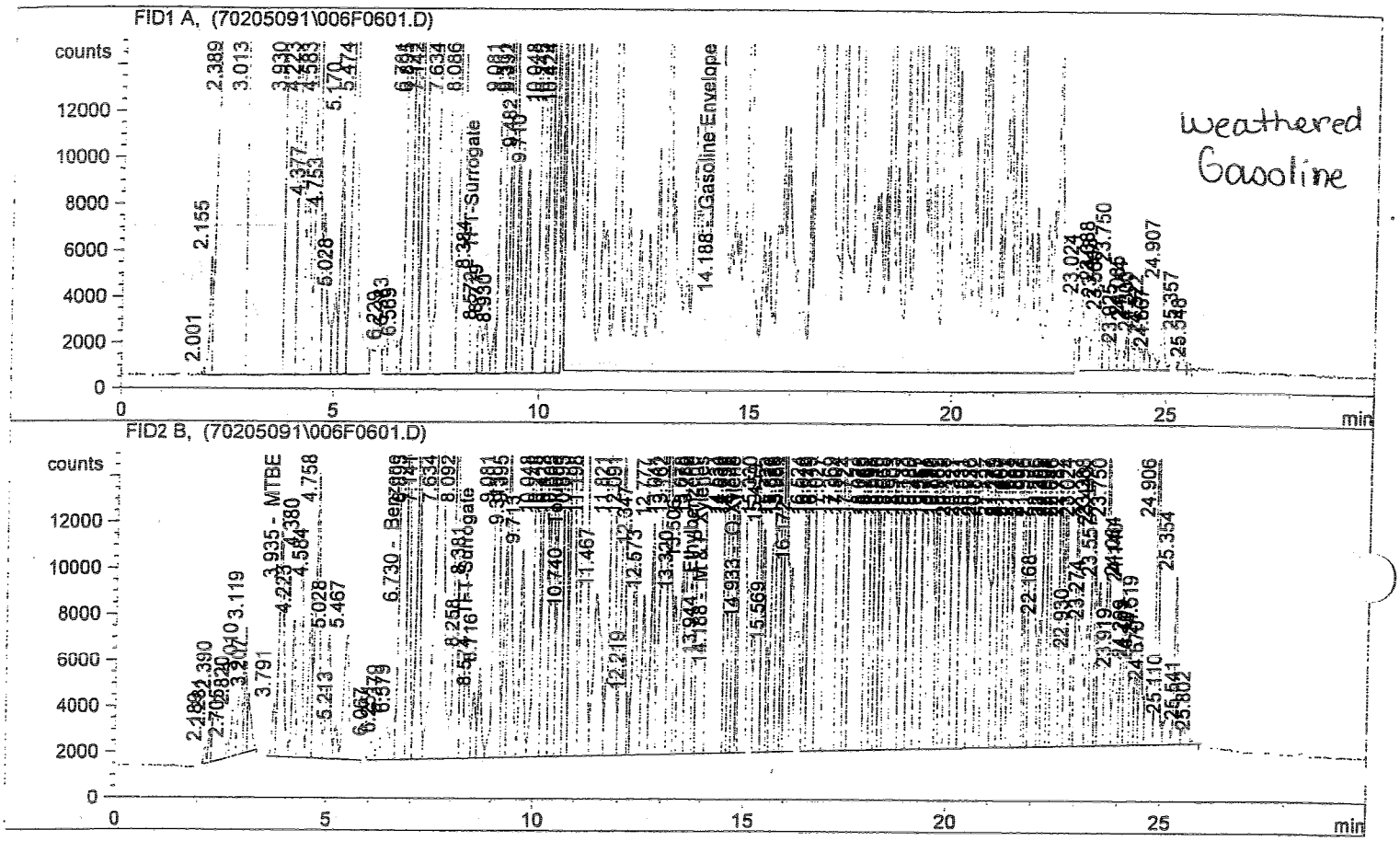
Data file : D:\HPCHEM\2\DATA\70205091\006F0601.D
Gas/BTEX 2 Report Created on 5/9/02 11:38:49 AM
Injection Date & Time: Thu, 9. May. 2002 11:04:18 AM
Sample Name : 205019-39 2UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Ret.	Compound Name	Area	Amount ug/L
8.572	TFT-Surrogate	13526.284	1.029
14.188	Gasoline Envelope	9456025.000	1257.837

* low due to dilution

$$Gas = 1257.837 ug/L \times \frac{5mL}{0.002mL} \times \frac{.01L}{13.02g} = 2400 mg/kg$$

5-9-02

Ret.	Compound Name	Area	Amount ug/L
3.935	MTBE	74437.867	2.745
6.730	Benzene	239639.187	2.715
8.574	TFT-Surrogate	18154.246	0.534
10.740	Toluene	83690.734	0.893
13.944	Ethylbenzene	1068143.875	16.198
14.188	M & P Xylenes	6095734.000	77.557
14.933	O-Xylene	343522.812	4.867
			82.929

* low due to dilution

MTBE = 5.3 mg/kg < 5 T = < 2.5 mg/kg

External Standard Report

Data File Name : D:\HPCHEM\1\DATA\12050701\031F1201.D
Operator : AB
Instrument : DIESEL #1
Sample Name : 205019-39 SG
Run Time Bar Code:
Acquired on : 09 May 02 05:39 AM
Report Created on: 09 May 02 10:20 AM
Last Recalib on : 25 APR 02 09:20 AM
Multiplier : 1

Page Number : 1
Vial Number : 31
Injection Number : 1
Sequence Line : 12
Instrument Method: TDMOB402.MTH
Analysis Method : TDMOB402.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\12050701\031F1201.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
9.912	1124143	MM	0.550	1	282.609	Diesel #2
21.315	220936	MM R	0.167	1	147.136	Motor Oil
22.522	38229	MM T	0.030	1	8.140	nC-25 surrogate 81%
27.721	117979	MM	3.136	1	72.134	Motor Oil {2}

User Modified

$\bar{x}_{MO} = 109.635$

Dry Wt = 26.23 g

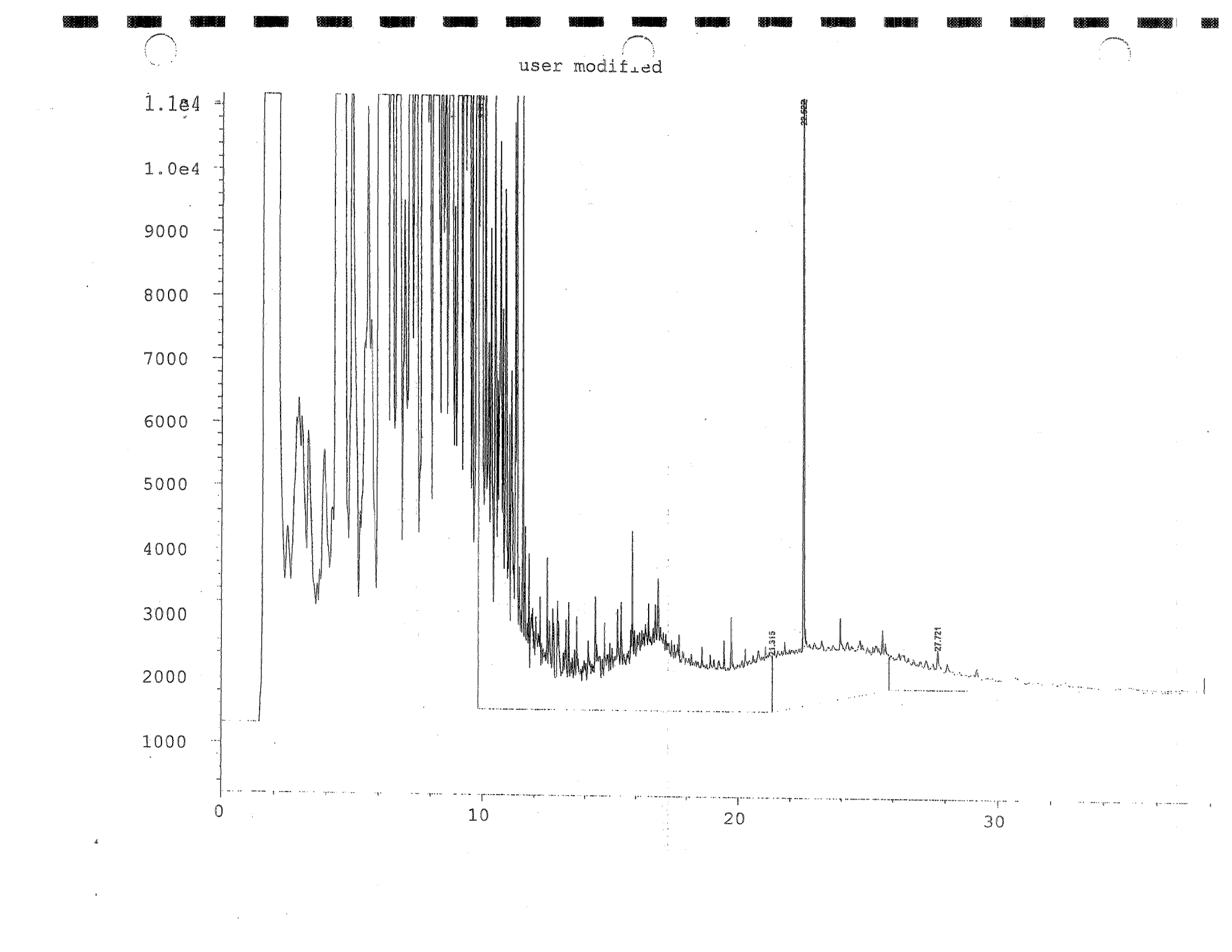
$D = 282.609\ \mu g/mL \times \frac{10\ mL}{26.23\ g} = 110\ mg/kg$ Diesel #2*

* diesel range biased high due to volatile range overlap

$MO = 109.635\ \mu g/mL \times \frac{10\ mL}{26.23\ g} < 50\ mg/kg$

05/09/02 AB

REVIEWED BY & DATE 5/9/02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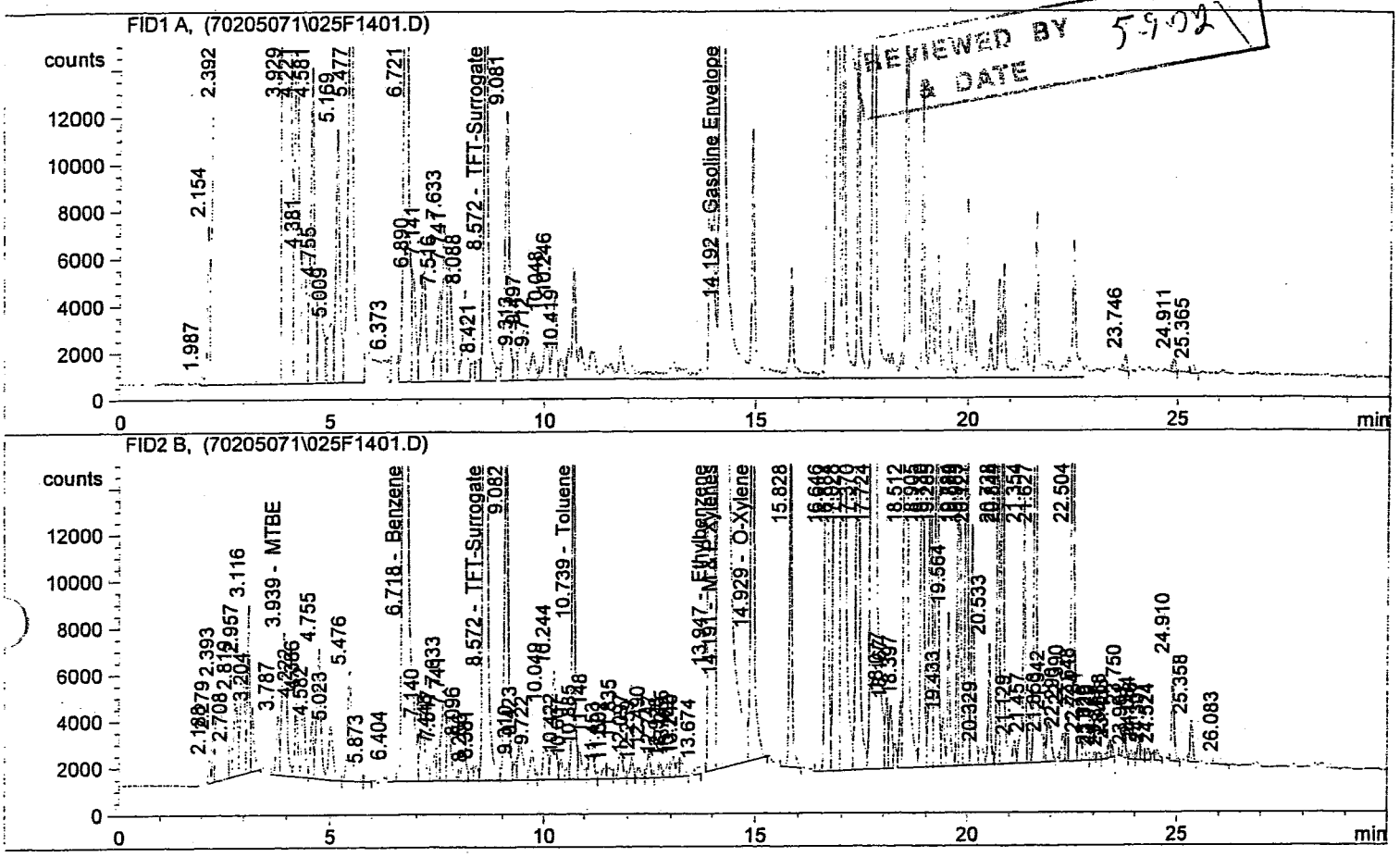
22.622
21.315
27.721

Data file : D:\HPCHEM\2\DATA\70205071\025F1401.D
Gas/BTEX 2 Report Created on 5/8/02 10:26:50 AM
Injection Date & Time: Wed, 8. May. 2002 2:32:33 AM
Sample Name : 204019-41 50ul (X100)
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.

REVIEWED BY & DATE 5-9-02



Ret.	Compound Name	Area	Amount ug/L
8.572	TFT-Surrogate	127000.141	10.907 ÷10x100 = 109%
14.192	Gasoline Envelope	2432450.750	319.108

Gas = 319.108ug/L x 100 = 32,000 ~~ug~~ ug/L weathered gasoline

Ret.	Compound Name	Area	Amount ug/L
3.939	MTBE	47956.070	1.563
6.718	Benzene	442277.000	5.343
8.572	TFT-Surrogate	276116.125	9.905 =99%
10.739	Toluene	77887.898	0.831
13.947	Ethylbenzene	1039389.875	15.757
14.191	M & P Xylenes	3224052.250	40.957
14.929	O-Xylene	167044.641	2.343
			~~43.300~~

MTBE = <300ug/L T = <100ug/L

B = 530ug/L E = 1600ug/L X = 4300ug/L

External Standard Report

Data File Name : D:\HPCHEM\1\DATA\12050701\024F0801.D
Operator : AB
Instrument : DIESEL #1
Sample Name : 205019-41 H20 SG
Run Time Bar Code:
Acquired on : 08 May 02 11:04 PM
Report Created on: 09 May 02 08:54 AM
Last Recalib on : 25 APR 02 09:20 AM
Multiplier : 1

Page Number : 1
Vial Number : 24
Injection Number : 1
Sequence Line : 8
Instrument Method: TDMOB402.MTH
Analysis Method : TDMOB402.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\12050701\024F0801.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
11.326	1056866	MM	0.289	1	264.712	Diesel #2
21.319	215298	MM R	0.052	1	141.384	Motor Oil
22.528	121443	MM T	0.030	1	25.669	nC-25 surrogate 46x100 = 64%
26.232	174045	MM	3.324	1	108.440	Motor Oil (2)

User Modified

$\bar{x}_{mo} = 124.912$

$D = 264.712\ \mu g/mL \times \frac{1.0\ mL}{400\ mL} = 0.66\ mg/L$ Diesel #2*

* diesel range biased high due to volatile and lube oil overlap

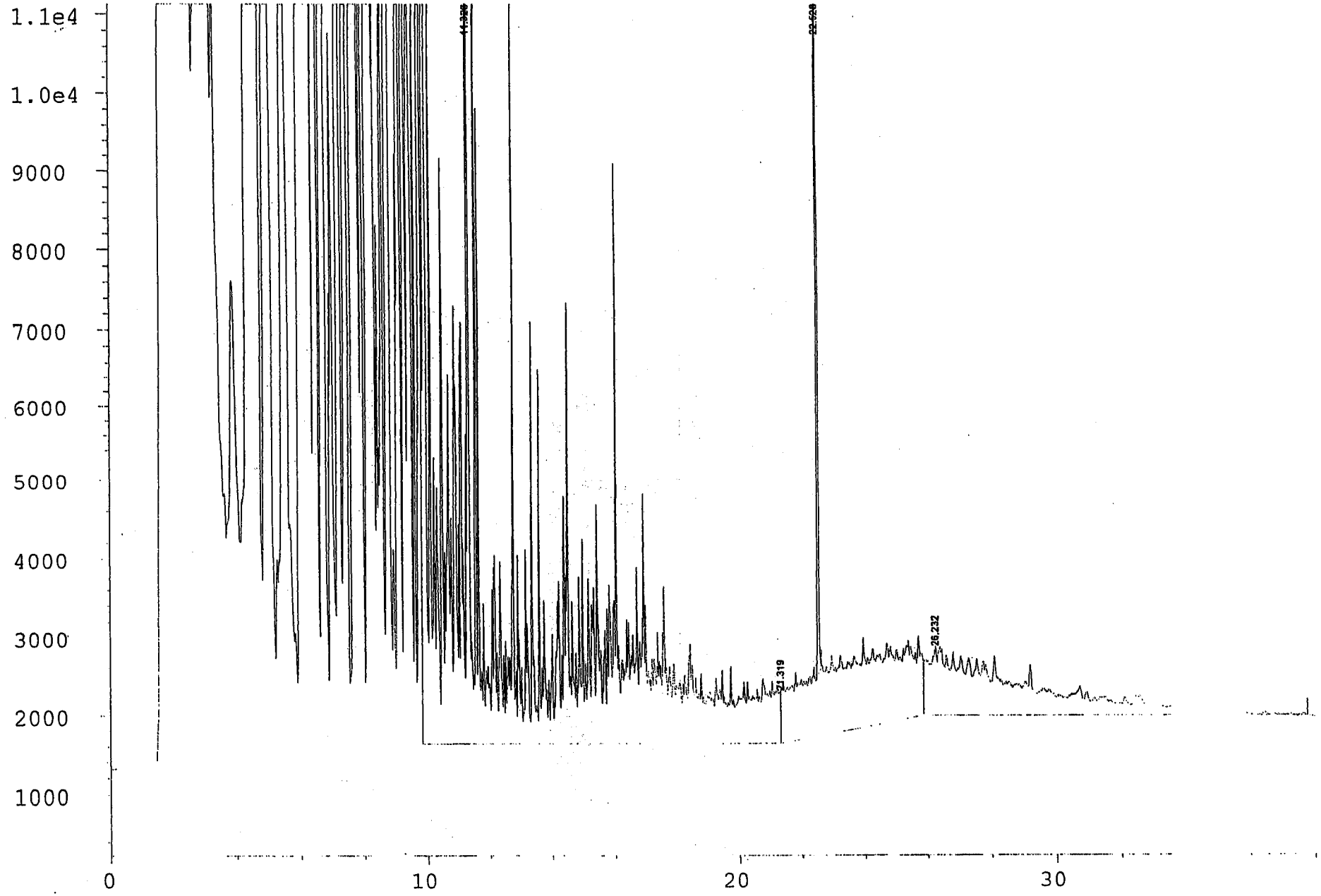
$MO = 124.912\ \mu g/mL \times \frac{1.0\ mL}{400\ mL} = 0.31\ mg/L$ Lube Oil ⊛

⊛ Lube oil range biased high due to diesel range overlap (not significant)

REVIEWED BY & DATE 5-9-02

05/09/02 AB

user modified



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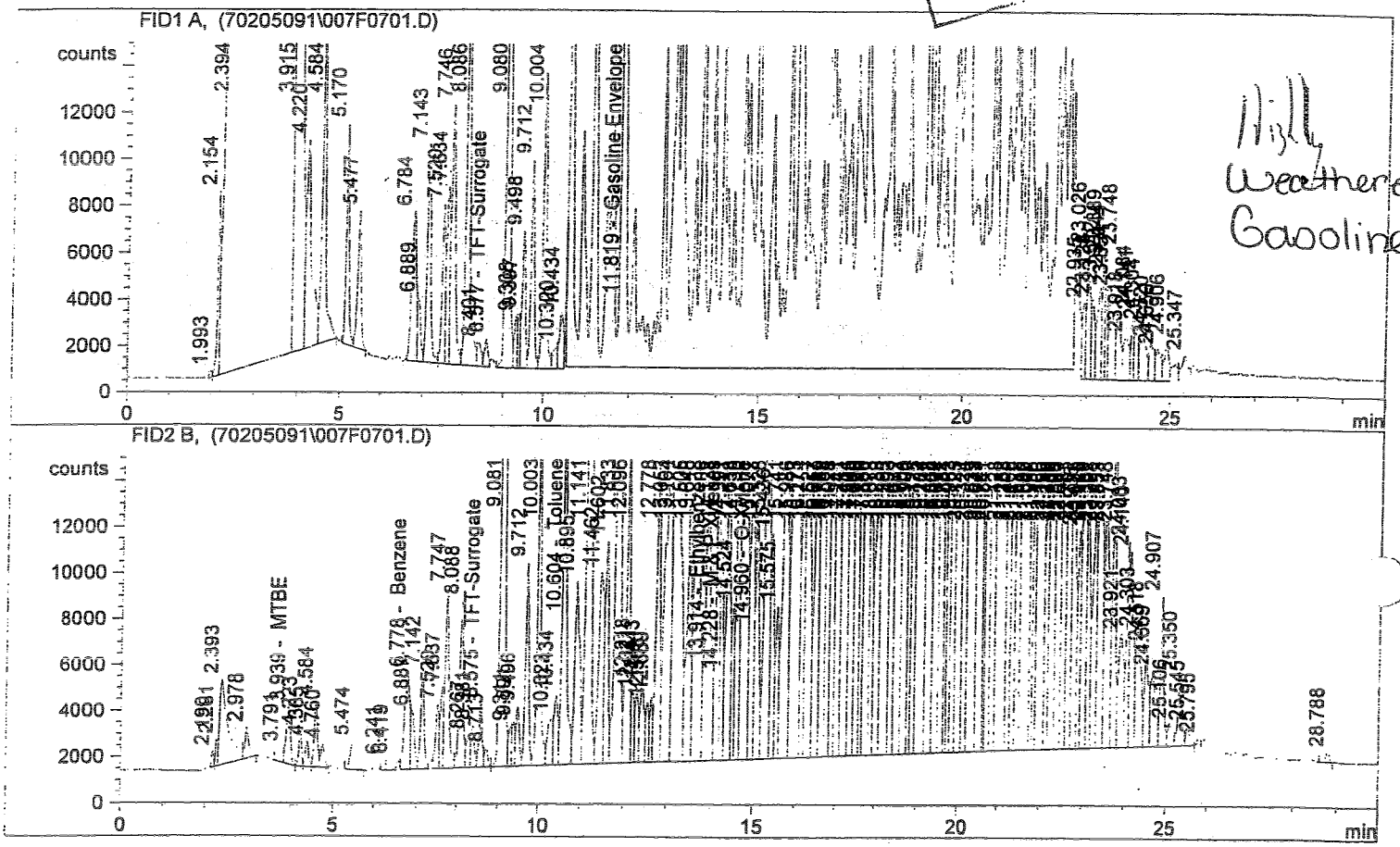
Data file : D:\HPCHEM\2\DATA\70205091\007F0701.D
Gas/BTEX 2 Report Created on 5/9/02 12:13:49 PM
Injection Date & Time: Thu, 9. May. 2002 11:39:40 AM
Sample Name : 205019-43 5UL
Acq Operator : LAH
Acq. Method : 70GB0301.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.

RE... 5.9.02



Weathered Gasoline

Ret.	Compound Name	Area	Amount ug/L
8.577	TFT-Surrogate	7511.225	0.571 *low due to dilution
11.819	Gasoline Envelope	5909816.000	783.872

$GAO = 783.872 ug/L \times \frac{5mL}{0.005mL} \times \frac{0.01L}{10.46g} = 750 mg/kg$

Ret.	Compound Name	Area	Amount ug/L
3.939	MTBE	15998.101	0.521
6.778	Benzene	36303.379	0.338
8.575	TFT-Surrogate	15762.066	0.464 *low due to dilution
10.604	Toluene	103638.742	1.132
13.914	Ethylbenzene	116901.953	1.616
14.228	M & P Xylenes	48069.453	0.574
14.960	O-Xylene	125000.109	1.742
			2.316

MTBE = 220 mg/kg T = 1.1 mg/kg

External Standard Report

Data File Name : D:\HPCHEM\1\DATA\12050701\032F1201.D
Operator : AB
Instrument : DIESEL #1
Sample Name : 205019-43 SG
Run Time Bar Code:
Acquired on : 09 May 02 06:22 AM
Report Created on: 09 May 02 09:39 AM
Last Recalib on : 06 MAY 02 01:24 PM
Multiplier : 1

Page Number : 1
Vial Number : 32
Injection Number : 1
Sequence Line : 12
Instrument Method: TDMOB402.MTH
Analysis Method : DSL104O2.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\12050701\032F1201.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
9.909	1545162	MM	1.131	1	208.240	Diesel #1
22.521	35120	MM T	0.031	1	7.485	nC-25 surrogate 75%

User Modified

Dry wt = 23.07 g

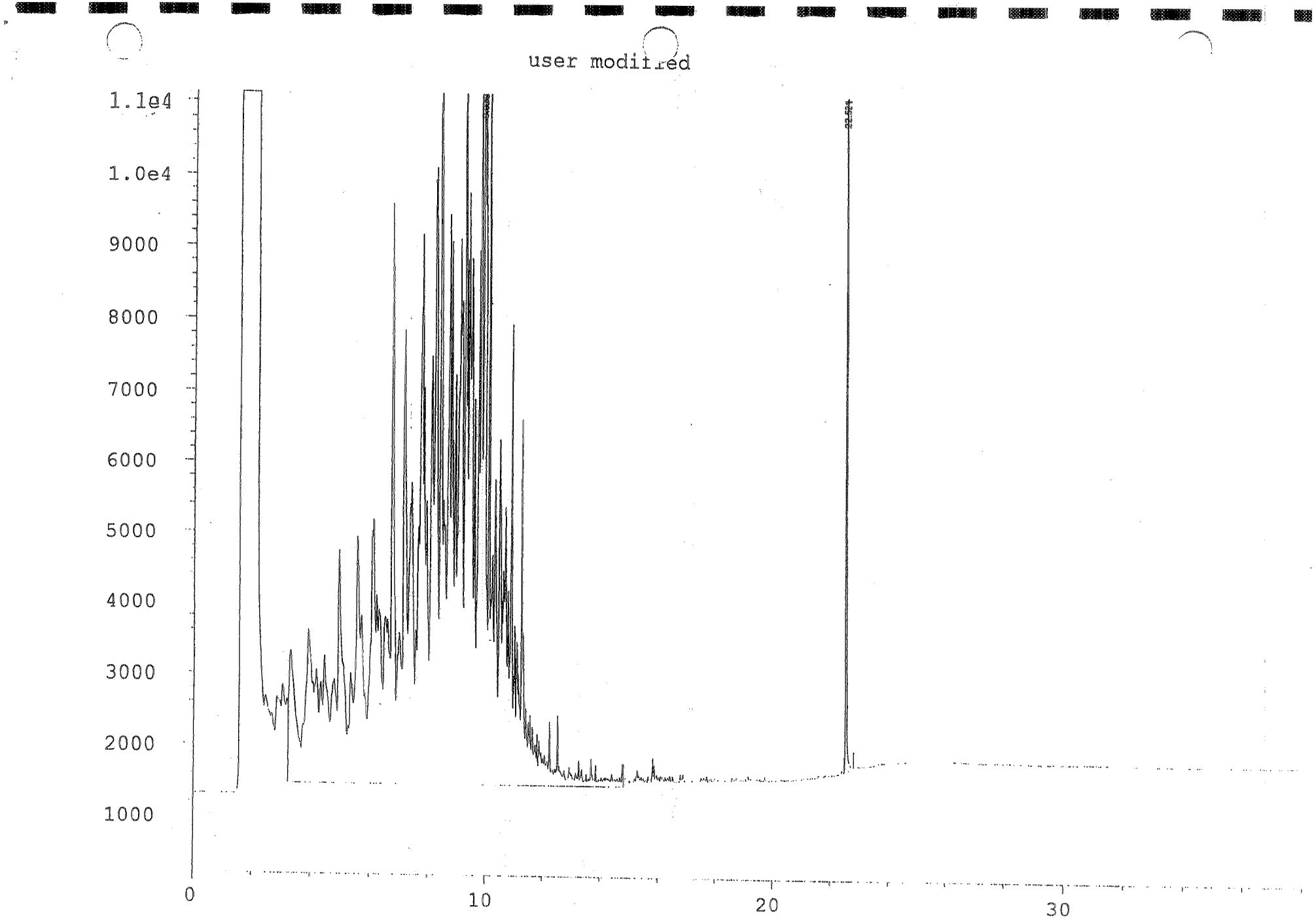
$D = 208.240\ \mu g/mL \times \frac{10mL}{23.07g} = 90\ mg/kg$ volatile range product

Reporting D < 25 mg/kg. Could see 50 ppm Std.

ND < 50 mg/kg

05/09/02 AB

REVIEWED BY
& DATE 5-9-02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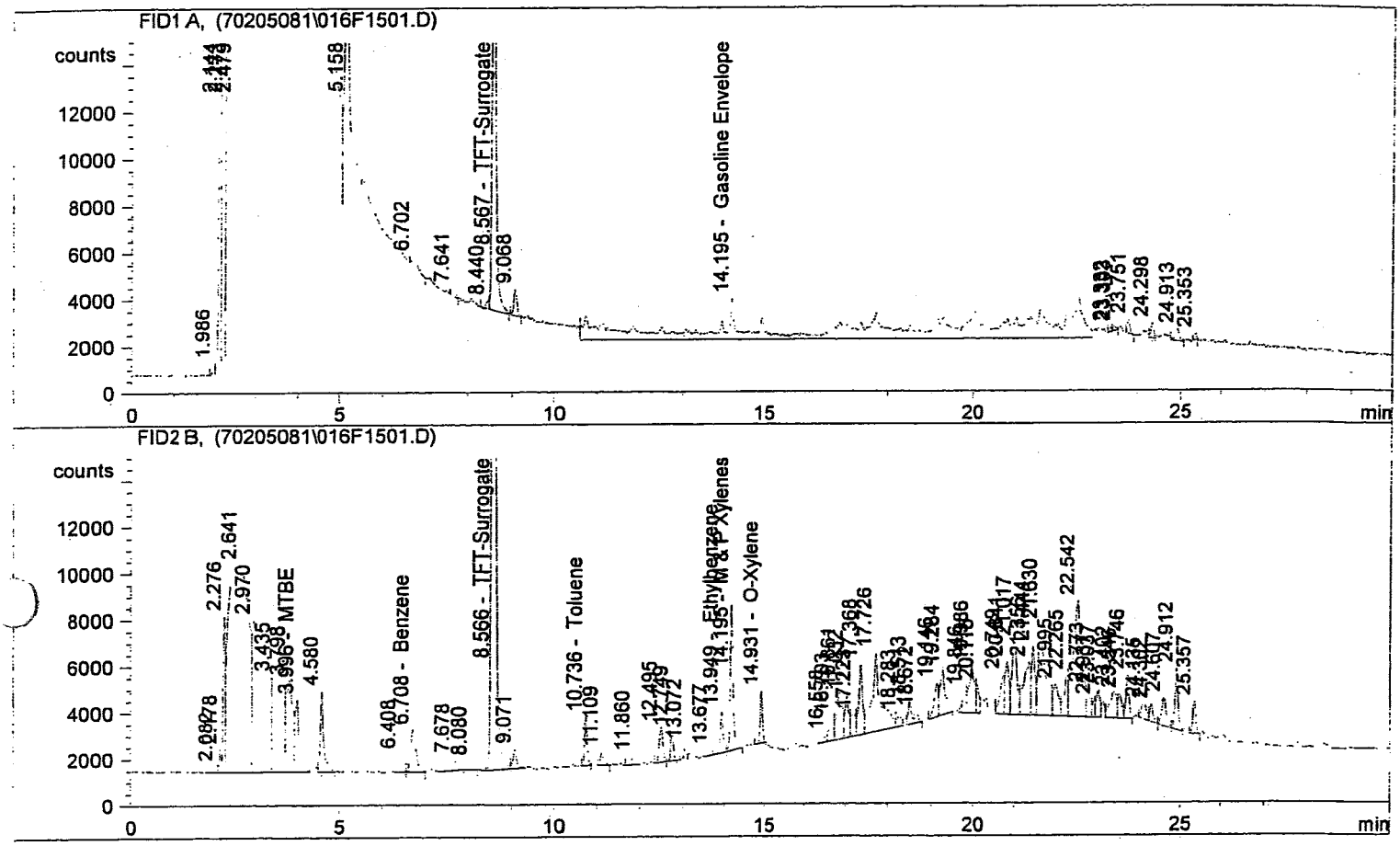
Data file : D:\HPCHEM\2\DATA\70205081\016F1501.D
Gas/BTEX 2 Report Created on 5/9/02 8:38:07 AM
Injection Date & Time: Wed, 8. May. 2002 8:17:15 PM
Sample Name : 205019-45 100UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Ret.	Compound Name	Area	Amount ug/L	
8.567	TFT-Surrogate	112175.211	9.477	= 95%
14.195	Gasoline Envelope	348288.094	41.564	

Dry Wt. = 13.26g

Gas = <3.0 mg/kg

REVIEWED BY & DATE 5-9-02

Ret.	Compound Name	Area	Amount ug/L	
3.996	MTBE	19035.281	0.620	
6.708	Benzene	16112.669	0.150	
8.566	TFT-Surrogate	261176.781	9.355	= 94%
10.736	Toluene	9494.437	0.101	
13.949	Ethylbenzene	8871.379	0.116	
14.195	M & P Xylenes	30320.008	0.362	
14.931	O-Xylene	8567.881	0.117	

MTBE = <0.1 mg/kg T, E = <0.05 mg/kg

B = <0.03 mg/kg X = <0.2 mg/kg

External Standard Report

Data File Name : D:\HPCHEM\1\DATA\12050701\033F1201.D
Operator : AB
Instrument : DIESEL #1
Sample Name : 205019-45 SG
Run Time Bar Code:
Acquired on : 09 May 02 07:06 AM
Report Created on: 09 May 02 09:40 AM
Last Recalib on : 25 APR 02 09:20 AM
Multiplier : 1

Page Number : 1
Vial Number : 33
Injection Number : 1
Sequence Line : 12
Instrument Method: TDMOB402.MTH
Analysis Method : TDMOB402.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\12050701\033F1201.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
12.532	* not found *			1		Diesel #2
21.323	* not found *			1		Motor Oil
22.520	36282	MM	T 0.030	1	7.729	nC-25 surrogate 77%
25.899	* not found *			1		Motor Oil {2}

Not all calibrated peaks were found

User Modified

Dry wt = 25.25 g

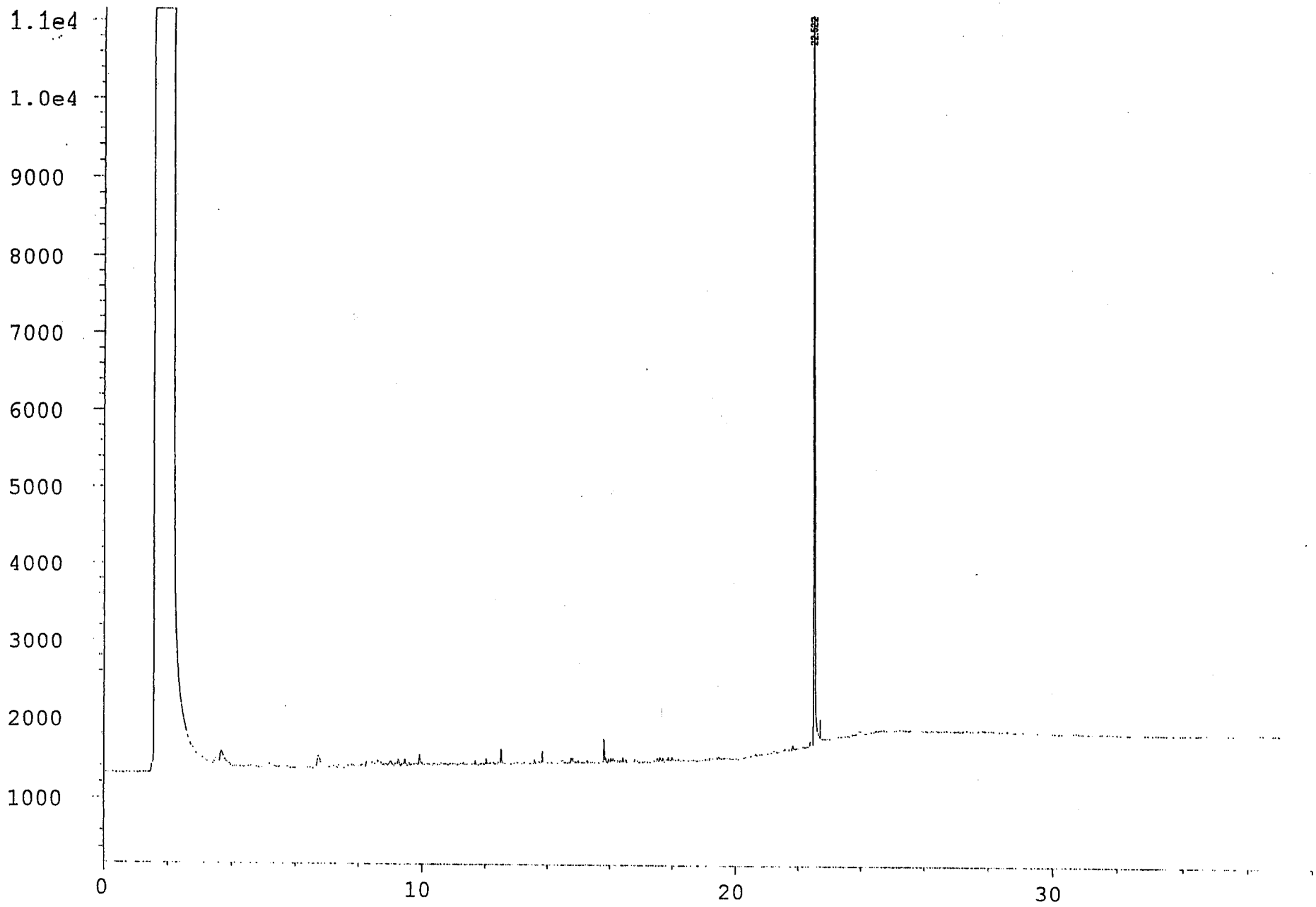
D < 25 mg/kg

MO < 50 mg/kg

05/09/02 AS

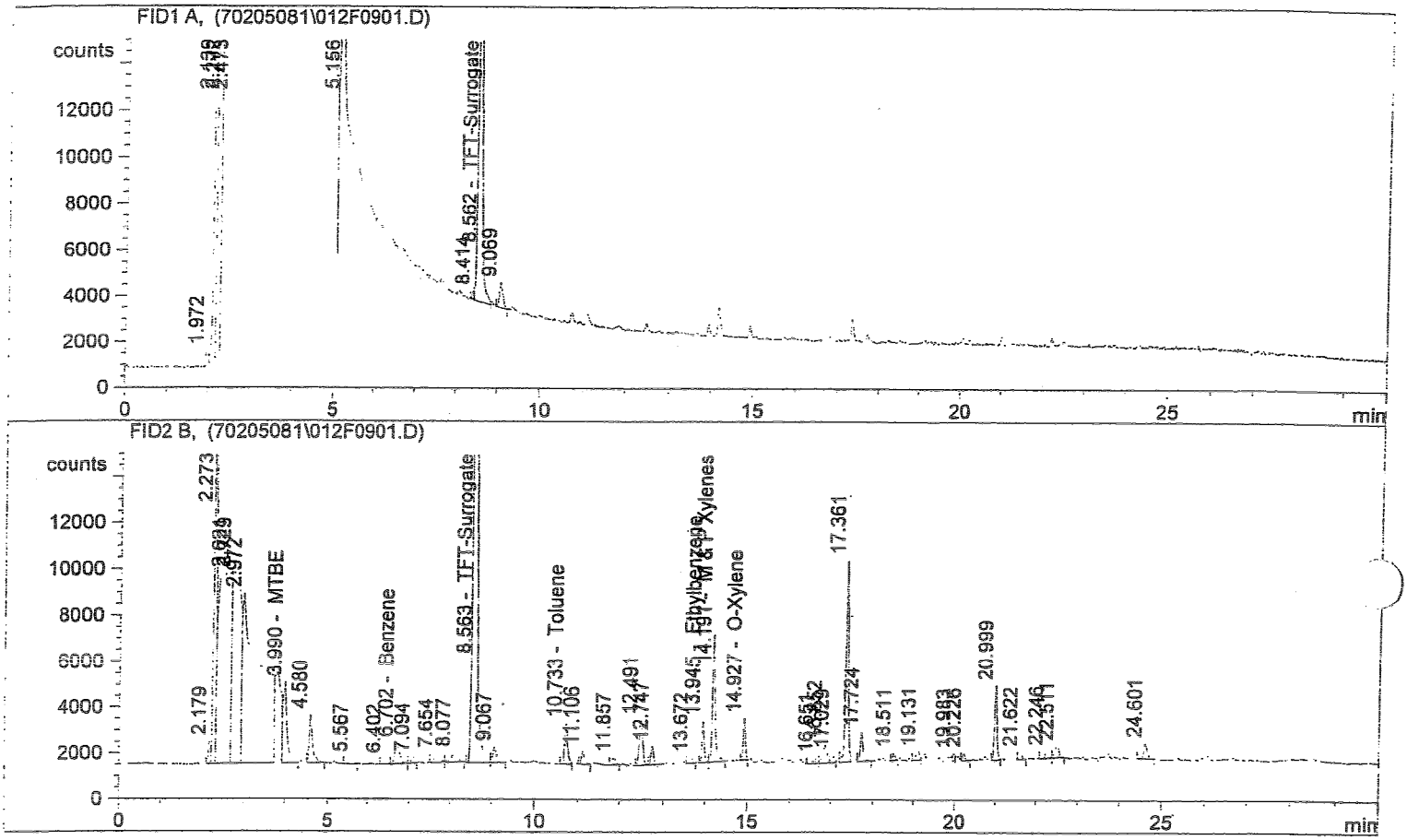
REVIEWED BY & DATE 5/9/02

user modified



Sig. 1 in D:\HPCHEM\1\DATA\12050701\029F1201.D

Data file : D:\HPCHEM\2\DATA\70205081\012F0901.D
Gas/BTEX 2 Report Created on 5/8/02 5:15:00 PM
Injection Date & Time: Wed, 8. May. 2002 4:44:53 PM
Sample Name : 205019-20 100UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Ret.	Compound Name	Area	Amount ug/L
8.562	TFT-Surrogate	106440.867	8.924 = 89%
0.000	Gasoline Envelope	0.000	0.000

Gas = <3.0 mg/kg

REVIEWED BY & DATE 5/9/02

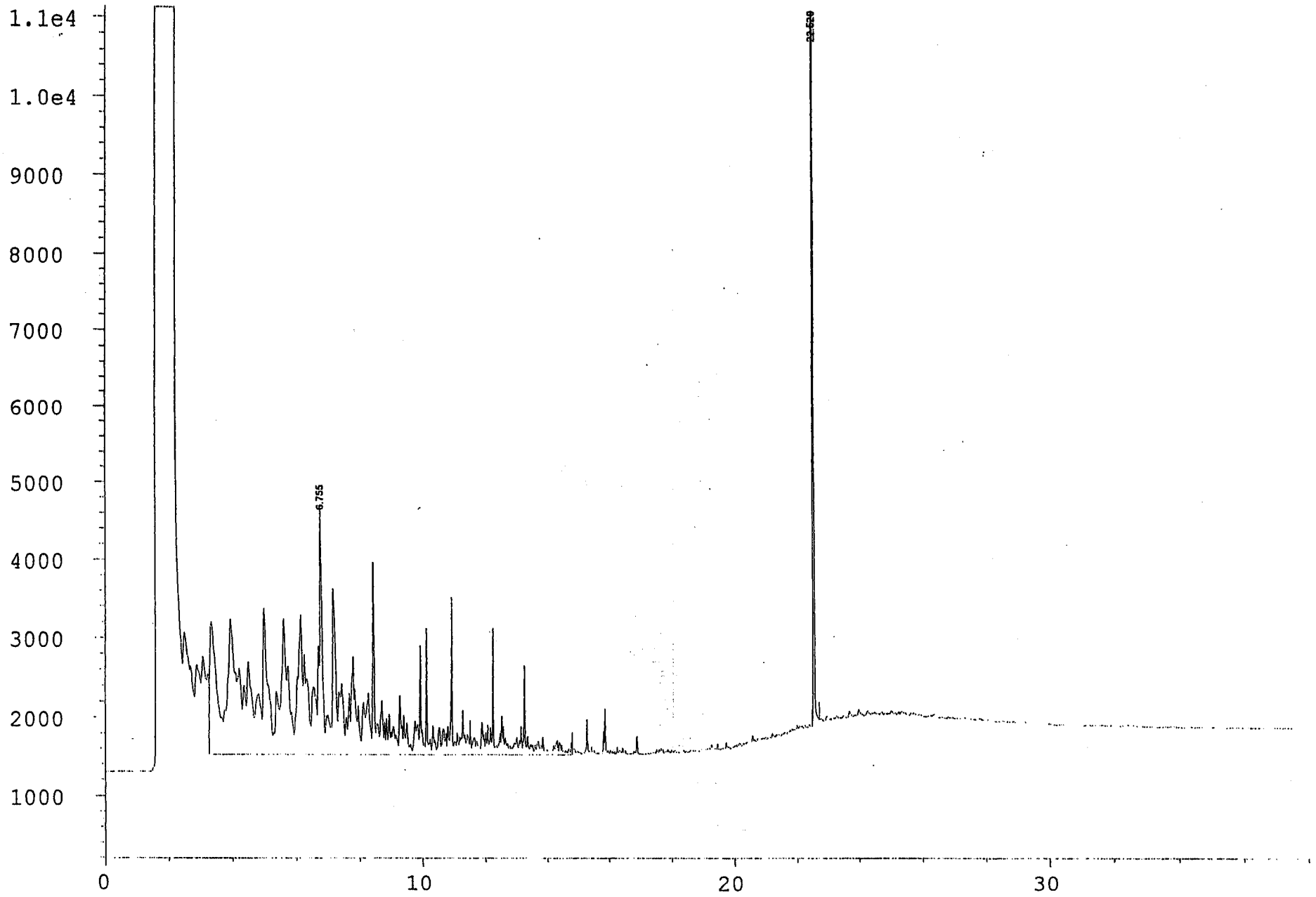
Dry wt = 11.62g

Ret.	Compound Name	Area	Amount ug/L
3.990	MTBE	22115.697	0.721
6.702	Benzene	7723.742	0.072
8.563	TFT-Surrogate	247704.781	8.860 = 89%
10.733	Toluene	8180.763	0.087
13.945	Ethylbenzene	7442.878	0.097
14.191	M & P Xylenes	25898.654	0.310
14.927	O-Xylene	6652.118	0.091

MTBE = <0.1 mg/kg

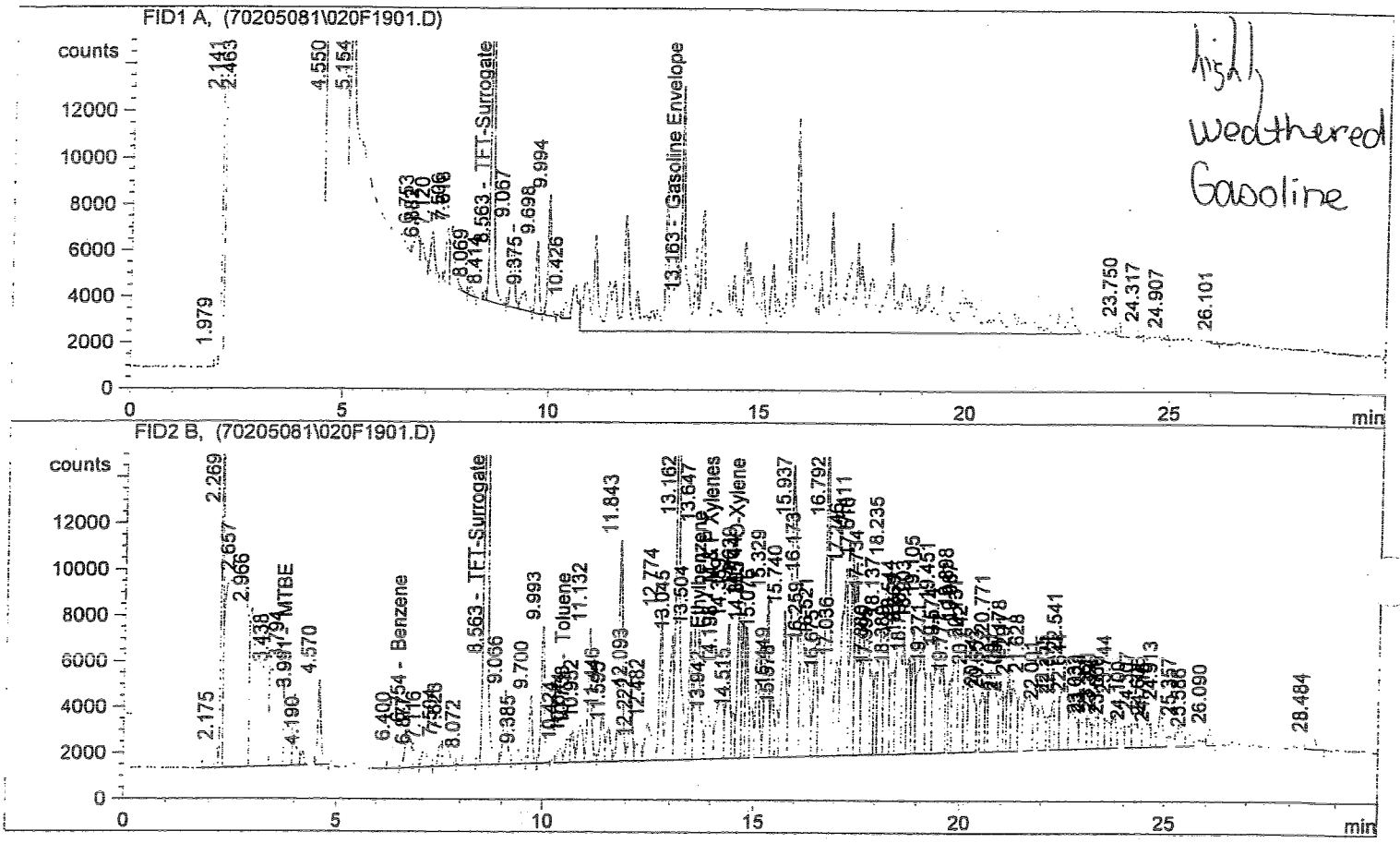
T, E = <0.05 mg/kg

user modified



Sig. 1 in D:\HPCHEM\1\DATA\12050701\036F1201.D

Data file : D:\HPCHEM\2\DATA\70205081\020F1901.D
Gas/BTEX 2 Report Created on 5/9/02 8:43:31 AM
Injection Date & Time: Wed, 8. May. 2002 10:37:59 PM
Sample Name : 205019-53 100UL
Acq Operator : LAH
Acq. Method : 70GB0302.M
Analysis Method : D:\HPCHEM\5\METHODS\70GB0302.M
FID1 A equivalent to FID analysis.
FID2 B equivalent to PID analysis.



Ret.	Compound Name	Area	Amount ug/L
8.563	TFT-Surrogate	107279.992	9.005 = 90%
13.163	Gasoline Envelope	1073235.500	137.444

Gas = 6.8 mg/kg

REVIEWED BY & DATE 5/9/02

Drywt = 10.17g

Ret.	Compound Name	Area	Amount ug/L
3.991	MTBE	15932.809	0.519
6.754	Benzene	17430.488	0.162
8.563	TFT-Surrogate	248895.047	8.904 = 89%
10.738	Toluene	7464.682	0.080
13.942	Ethylbenzene	18547.699	0.242
14.198	M & P Xylenes	38563.691	0.461
14.805	O-Xylene	27575.523	0.377
			0.838

MTBE = <0.1 mg/kg T, E = <0.05 mg/kg

External Standard Report

Data File Name : D:\HPCHEM\1\DATA\12050701\037F1201.D
Operator : AB
Instrument : DIESEL #1
Sample Name : 205019-53 SG
Run Time Bar Code:
Acquired on : 09 May 02 09:59 AM
Report Created on: 09 May 02 10:43 AM
Last Recalib on : 25 APR 02 09:20 AM
Multiplier : 1

Page Number : 1
Vial Number : 37
Injection Number : 1
Sequence Line : 12
Instrument Method: TDMOB402.MTH
Analysis Method : TDMOB402.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\12050701\037F1201.D

Ret Time	Area	Type	Width	Ref#	ug/ml	Name
9.912	* not found *			1		Diesel #2
21.315	* not found *			1		Motor Oil
22.520	35538	MM	T 0.030	1	7.573	nC-25 surrogate 76%
27.721	* not found *			1		Motor Oil (2)

Not all calibrated peaks were found

User Modified

Dry wt = 20.67g

D < 25 mg/kg

MO < 50 mg/kg

REVIEWED BY & DATE 5/9/02

05/09/02 AB

CHAIN OF CUSTODY RECORD

205019

GEOENGINEERS, INC.
8410 154TH AVENUE N.E.
REDMOND, WASHINGTON 98052
(425) 861-6000

Geo Engineers

DATE 5/1/02
PAGE 1 OF 6
LAB CCL
LAB NO.

PROJECT NAME/LOCATION SHA / MUKILTEO
PROJECT NUMBER 0241-012-00
PROJECT MANAGER LISA BOND
SAMPLED BY GSA

SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF	ANALYSIS REQUIRED				NOTES/COMMENTS
LAB	GEOENGINEERS	DATE	TIME	MATRIX	JARS	Gx, BTEX-MTBE	Dx cleanup	HCID		(Preserved, filtered, etc.)
1	B-1-2.5	5/1/02		S	1	X	X			Hold
2	B-1-4.5				1					
3	B-1-7.5				1					
4	Blank				Blank					
5	B-2-2.5			S	1					
6	B-2-5.0				1	X	X			
7	B-2-7.0				1					
8	B-2			W	3			X		
9	B-3-3.0			S	1					
10	B-3-5.5				1					
11	B-3-8.0				1					

RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM
SIGNATURE	GEI	SIGNATURE		SIGNATURE	
PRINTED NAME	GREG ANDERSON	PRINTED NAME		PRINTED NAME	
DATE 5/2/02	TIME 0500	DATE	TIME	DATE	TIME
RECEIVED BY	FIRM CCL	RECEIVED BY	FIRM	RECEIVED BY	FIRM
SIGNATURE		SIGNATURE		SIGNATURE	
PRINTED NAME	Rick Bagan	PRINTED NAME		PRINTED NAME	
DATE 5/2/02	TIME 1400	DATE	TIME	DATE	TIME

ADDITIONAL COMMENTS:

+ 5 3 7 8 1 0

CHAIN OF CUSTODY RECORD

205014

GEOENGINEERS, INC.
8410 154TH AVENUE N.E.
REDMOND, WASHINGTON 98052
(425) 861-6000

GeoEngineers

DATE 5/2/02
PAGE 1 OF 1
LAB CCI
LAB NO.

PROJECT NAME/LOCATION SHA / MLK Way
PROJECT NUMBER 0241-012-00
PROJECT MANAGER LISA BOND
SAMPLED BY LSA

	SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF	ANALYSIS REQUIRED			NOTES/COMMENTS
	LAB	GEOENGINEERS	DATE	TIME	MATRIX	JARS	Gx BTEX MTBE	Dx Clean		(Preserved, filtered, etc.)
11	~~12~~	B-3-11.0	5/1/02		S	1				
12	~~13~~	~~B-3~~ B-3			W	3				
13	~~14~~	B-4-3.0			S	1	X	X		
14	~~15~~	B-4-6.0				1				
15	~~16~~	B-4-8.5				1				
16	~~17~~	B-4-10.0				1				
17	~~18~~	B-5-3.0				1				
18	~~19~~	B-5-6.0				1				
19	~~20~~	B-5-7.0				1				
		~~B-5~~								
20	~~21~~	B-6-3.0			S	1	X	X		

Hold

RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM
SIGNATURE	GeoE	SIGNATURE		SIGNATURE	
PRINTED NAME	Grant Andrews	PRINTED NAME		PRINTED NAME	
DATE 5/2/02	TIME 0500	DATE	TIME	DATE	TIME
RECEIVED BY	FIRM CCIAL	RECEIVED BY	FIRM	RECEIVED BY	FIRM
SIGNATURE		SIGNATURE		SIGNATURE	
PRINTED NAME	Rick Bagan	PRINTED NAME		PRINTED NAME	
DATE 5/2/02	TIME 1400	DATE	TIME	DATE	TIME

ADDITIONAL COMMENTS: ~~* Missing~~ ID
** ID on Container B-4-10.5'

CHAIN OF CUSTODY RECORD

205019

GEOENGINEERS, INC.
8410 154TH AVENUE N.E.
REDMOND, WASHINGTON 98052
(425) 861-6000

GeoEngineers

DATE 5/1/02
PAGE 4 OF 6
LAB CCT
LAB NO.

PROJECT NAME/LOCATION SHA/MUK WOOD
PROJECT NUMBER 0241-012-00
PROJECT MANAGER LISA BUND
SAMPLED BY GJA

	SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF	ANALYSIS REQUIRED				NOTES/COMMENTS
	LAB	GEOENGINEERS	DATE	TIME	MATRIX	JARS	Gx BTEX MTBE	Dx - Cleanup	PAHs - 8270 SIM		(Preserved, filtered, etc.)
31	~~32~~	B-9-5.5	5		5/1/02	1					HOLD
32	~~33~~	B-9-8.0	↓		↓	1	X	X			
33	~~34~~	B-9-10.0				1					
34	~~35~~	B-9-12.0				1					
35	~~36~~	B-9	W			3					
36	~~37~~	B-9-3.0	S			1					
37	~~38~~	B-9-5.5				1					
38	~~39~~	B-9-8.0				1					
39	~~40~~	B-9-11.0				1	X	X			
40	~~41~~	B-9-13.5	↓			1					
41	~~42~~	B-9	W		↓	3	X	X	X		

RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM
SIGNATURE	GEE	SIGNATURE		SIGNATURE	
PRINTED NAME	GREG J ANDREWS	PRINTED NAME		PRINTED NAME	
DATE 5/2/02	TIME 0800	DATE	TIME	DATE	TIME
RECEIVED BY	**FIRM**	**RECEIVED BY**	**FIRM**	**RECEIVED BY**	**FIRM**
SIGNATURE	CCIAL	SIGNATURE		SIGNATURE	
PRINTED NAME	Rick Bogan	PRINTED NAME		PRINTED NAME	
DATE 5/2/02	TIME 1400	DATE	TIME	DATE	TIME

ADDITIONAL COMMENTS:

CHAIN OF CUSTODY RECORD

205019

GEOENGINEERS, INC.
8410 154TH AVENUE N.E.
REDMOND, WASHINGTON 98052
(425) 861-6000

Geo Engineers

DATE 5/1/02
PAGE 5 OF 6
LAB CCI
LAB NO.

PROJECT NAME/LOCATION SHA/MLK WSY
PROJECT NUMBER 0241-012-00
PROJECT MANAGER LISA BOND
SAMPLED BY GJA

SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF	ANALYSIS REQUIRED												NOTES/COMMENTS
LAB	GEOENGINEERS	DATE	TIME	MATRIX	JARS	Gx BTEX MTBE	Dx cleanup	EDB EDC	Total lead	PAHs 8270 SIM								(Preserved, filtered, etc.)
43	B-10-3.0	5/1/02		S	1													
44	B-10-6.0				1	X	X	X	X									
45	B-10-7.5				1													
46	B-10-9.0				1	X	X											
47	B-10-12.0				1													
48	B-10			W	3	X	X	X										
49	B-11-3.0			S	1	X	X			X								
50	B-11-6.5				1	X	X											
51	B-11-9.0				1													
52	B-12-3.0				1													
53	B-12-6.0				1	X	X											

HOLD

RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM
SIGNATURE		SIGNATURE		SIGNATURE	
PRINTED NAME GREG ANDREWS		PRINTED NAME		PRINTED NAME	
DATE 5/1/02 TIME 0300		DATE TIME		DATE TIME	
RECEIVED BY	FIRM CCI	RECEIVED BY	FIRM	RECEIVED BY	FIRM
SIGNATURE		SIGNATURE		SIGNATURE	
PRINTED NAME Rob Bagan		PRINTED NAME		PRINTED NAME	
DATE 5/2/02 TIME 1400		DATE TIME		DATE TIME	

ADDITIONAL COMMENTS:

CHAIN OF CUSTODY RECORD

205017

GEOENGINEERS, INC.
8410 154TH AVENUE N.E.
REDMOND, WASHINGTON 98052
(425) 861-6000

GeoEngineers

DATE 5/1/02
PAGE 6 OF 6
LAB CCI
LAB NO.

PROJECT NAME/LOCATION SHA / MLK WAY
PROJECT NUMBER 0241-012-00
PROJECT MANAGER LISA BUNS
SAMPLED BY GJA

	SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF	ANALYSIS REQUIRED			NOTES/COMMENTS
	LAB	GEOENGINEERS	DATE	TIME	MATRIX	JARS	Gx BTEX MTBE	Dx Cleanup		(Preserved, filtered, etc.)
53	~~54~~	B-12-9.0	5/1/02		S	1	X	X		HOLD
54	~~55~~	B-12-17.0	"		S	1				
55	~~56~~	B-12-13.5	"		S	1				
		Extra Samples	Received	10						
56		~~B-3-16.0~~	~~5/1/02~~							
57		~~B-5-8.0~~	"							

RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM
SIGNATURE	GEE	SIGNATURE		SIGNATURE	
PRINTED NAME GREG J ANDREWS		PRINTED NAME		PRINTED NAME	
DATE 5/2/02 TIME 0500		DATE TIME		DATE TIME	
RECEIVED BY	**FIRM** CCI AL	**RECEIVED BY**	**FIRM**	**RECEIVED BY**	**FIRM**
SIGNATURE		SIGNATURE		SIGNATURE	
PRINTED NAME Rita Bagan		PRINTED NAME		PRINTED NAME	
DATE 5/2/02 TIME 1400		DATE TIME		DATE TIME	

ADDITIONAL COMMENTS:

APPENDIX D

REPORT LIMITATIONS AND GUIDELINES FOR USE

APPENDIX D

REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This Appendix provides information to help you manage your risks with respect to the use of this report.

ENVIRONMENTAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

This report has been prepared for the exclusive use of Seattle Housing Authority, their authorized agents and regulatory agencies. This report may be made available to the current site owners for review. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Seattle Housing Authority should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

THIS ENVIRONMENTAL REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

This report has been prepared for the 7301 Martin Luther King Jr. Way South property in Seattle, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

RELIANCE CONDITIONS FOR THIRD PARTIES

Our report was prepared for the exclusive use of Seattle Housing Authority. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions.

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[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

ENVIRONMENTAL REGULATIONS ARE ALWAYS EVOLVING

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

UNCERTAINTY MAY REMAIN EVEN AFTER THIS PHASE II ESA IS COMPLETED

No ESA can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely-spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

SUBSURFACE CONDITIONS CAN CHANGE

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

SOIL AND GROUNDWATER END USE

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other sites or for other on-site uses of the affected media (soil and/or groundwater). Note that hazardous substances may be present in some of the site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject site or reuse of the affected media on site to evaluate the potential for associated environmental liabilities. We cannot be responsible for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject site to another location or its reuse on site in instances that we were not aware of or could not control.

MOST ENVIRONMENTAL FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface