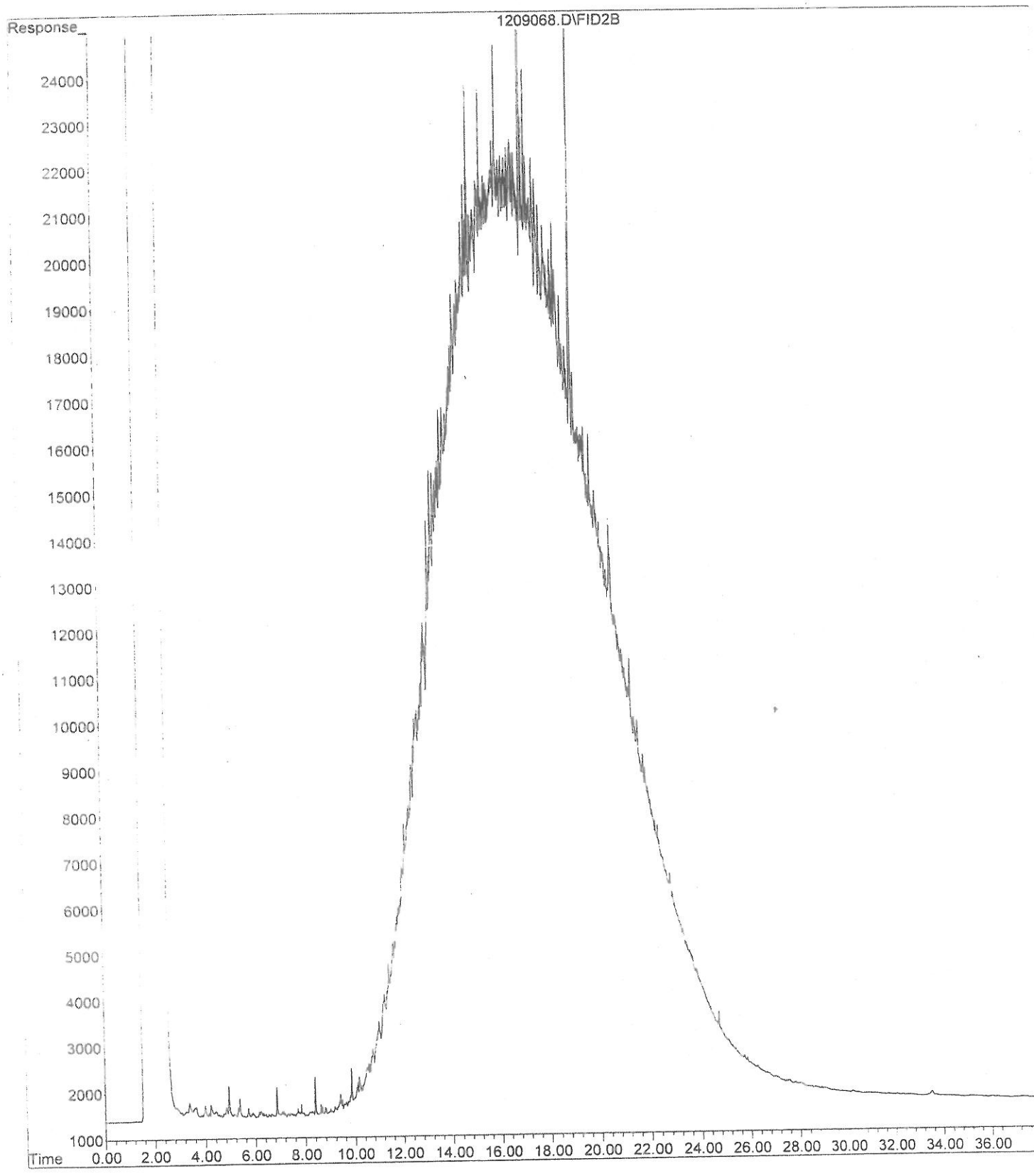
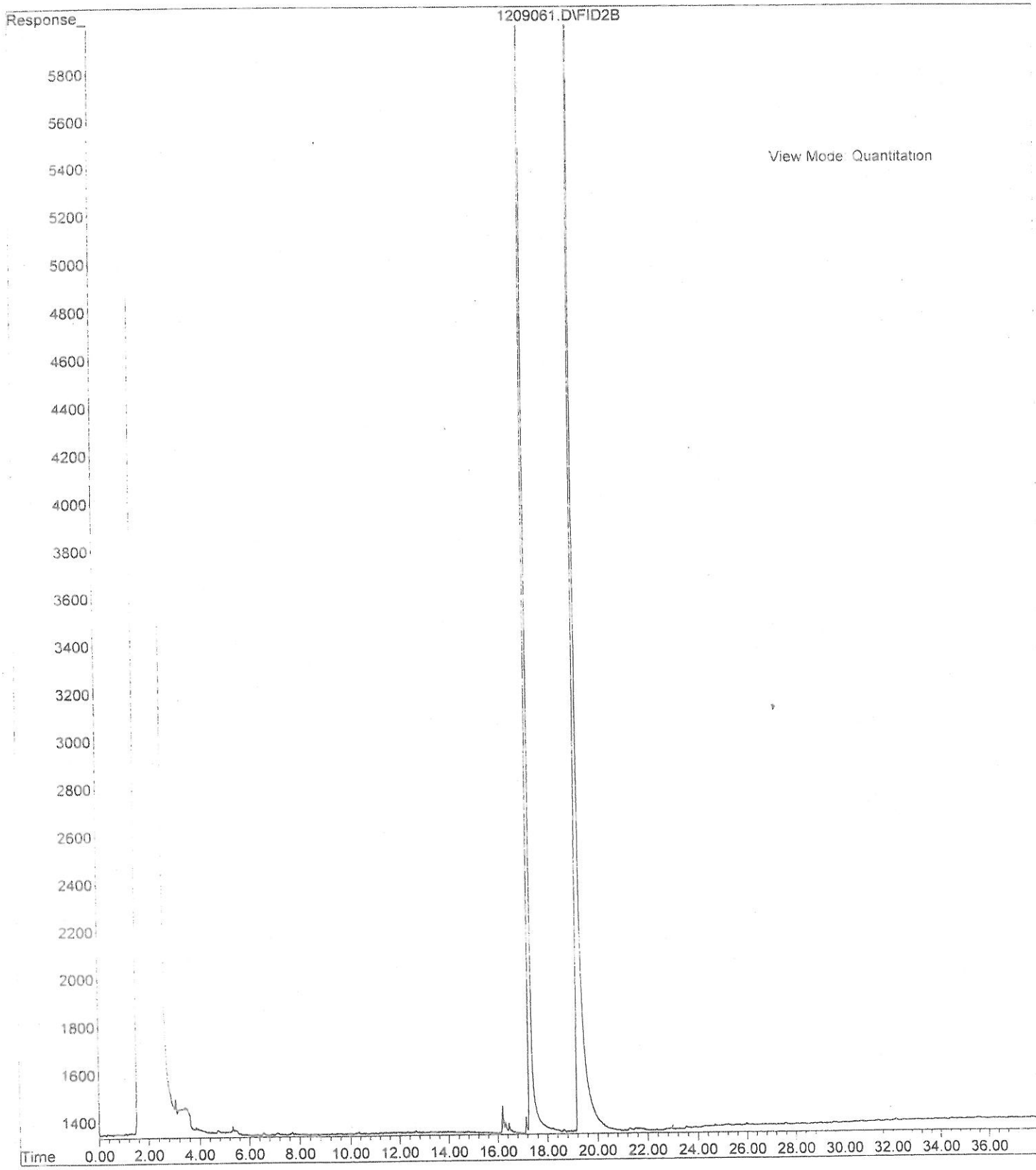
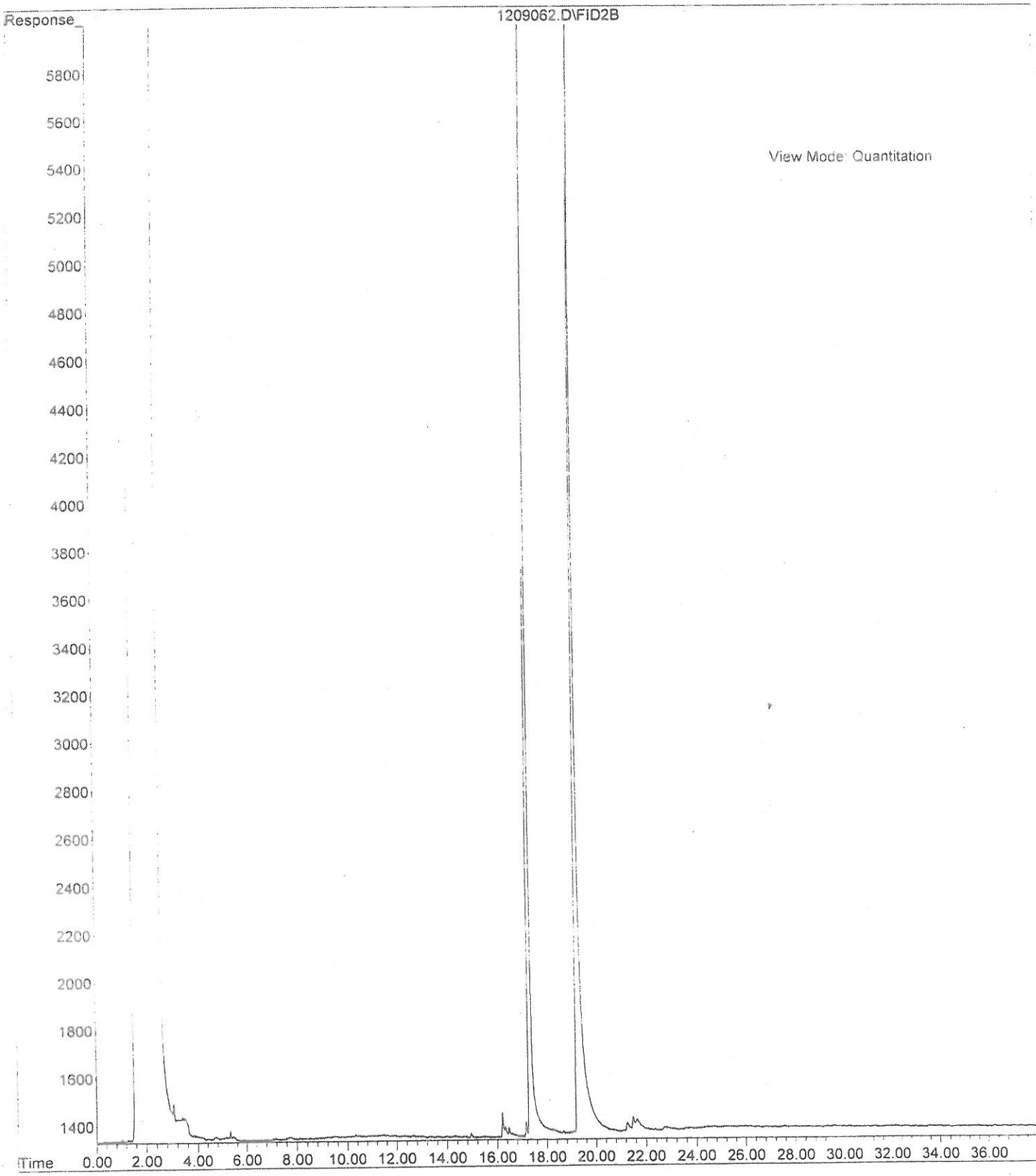
File : D:\HPCHEM\1\DATA\991209\1209068.D
Operator : JAW
Acquired : 10 Dec 1999 7:46 using AcqMethod COLUMN1.M
Instrument : Lucy
Sample Name: 12-058-01 HC
Misc Info : 2
Vial Number: 68



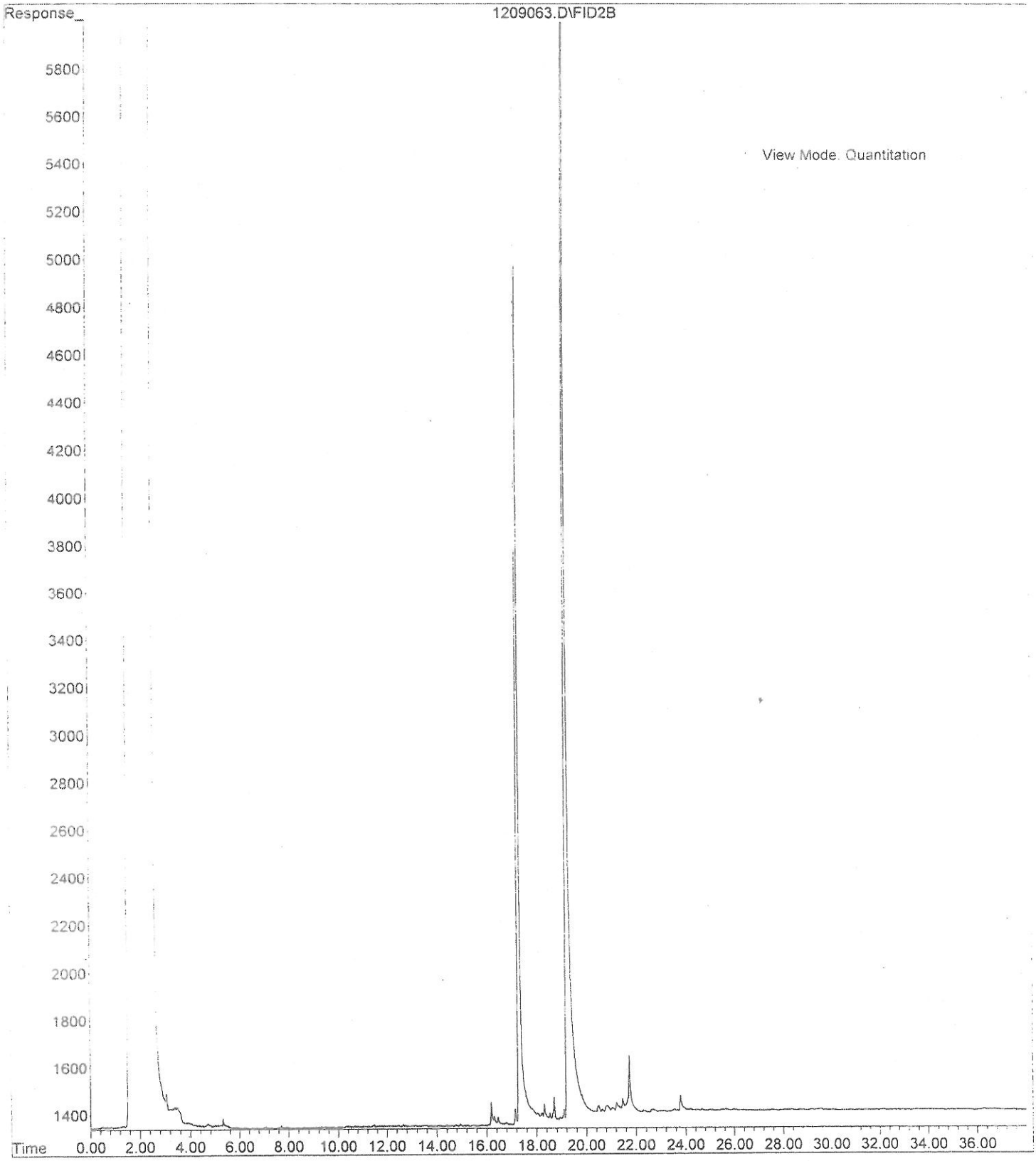
File : D:\HPCHEM\1\DATA\991209\1209061.D
Operator : JAW
Acquired : 10 Dec 1999 1:30 using AcqMethod FUN1.M
Instrument : Lucy
Sample Name: 12-058-02 HC
Misc Info : 2
Vial Number: 61



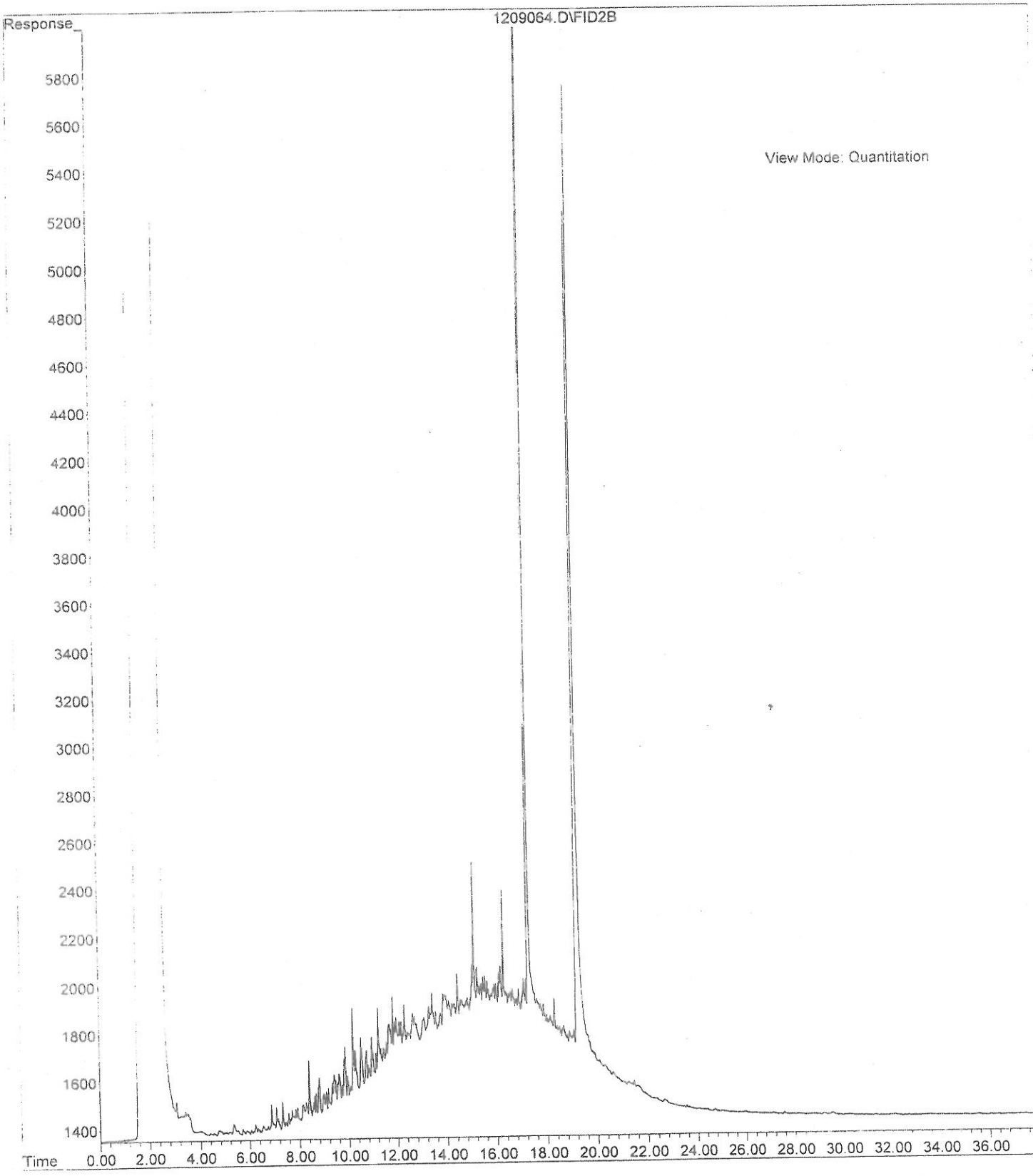
File : D:\HPCHEM\1\DATA\991209\1209062.D
Operator : JAW
Acquired : 10 Dec 1999 2:30 using AcqMethod FUN1.M
Instrument : Lucy
Sample Name: 12-058-03 HC
Misc Info : 2
Vial Number: 62



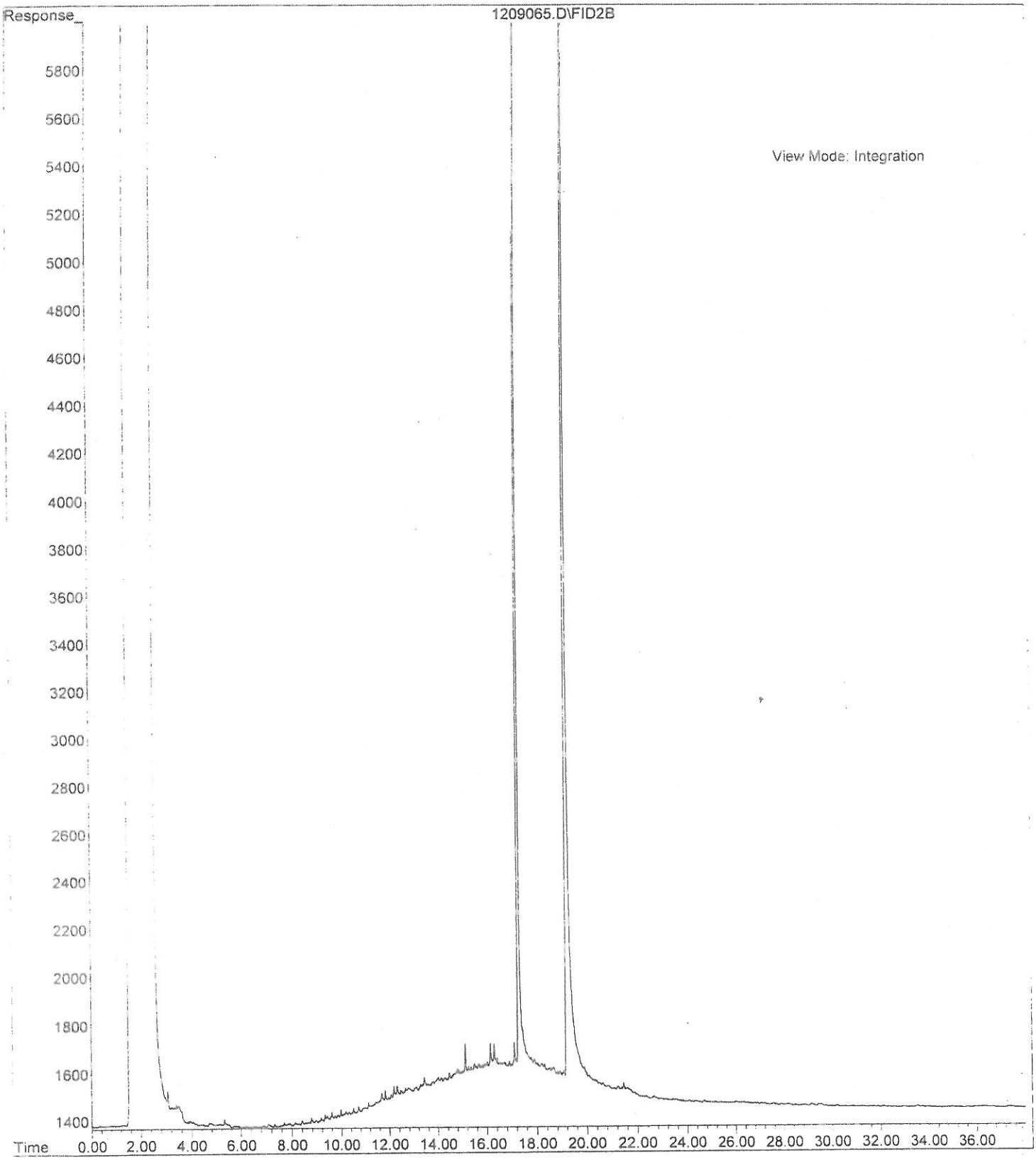
File : D:\HPCHEM\1\DATA\991209\1209063.D
Operator : JAW
Acquired : 10 Dec 1999 3:29 using AcqMethod FUN1.M
Instrument : Lucy
Sample Name: 12-058-04 HC
Misc Info : 2
Vial Number: 63



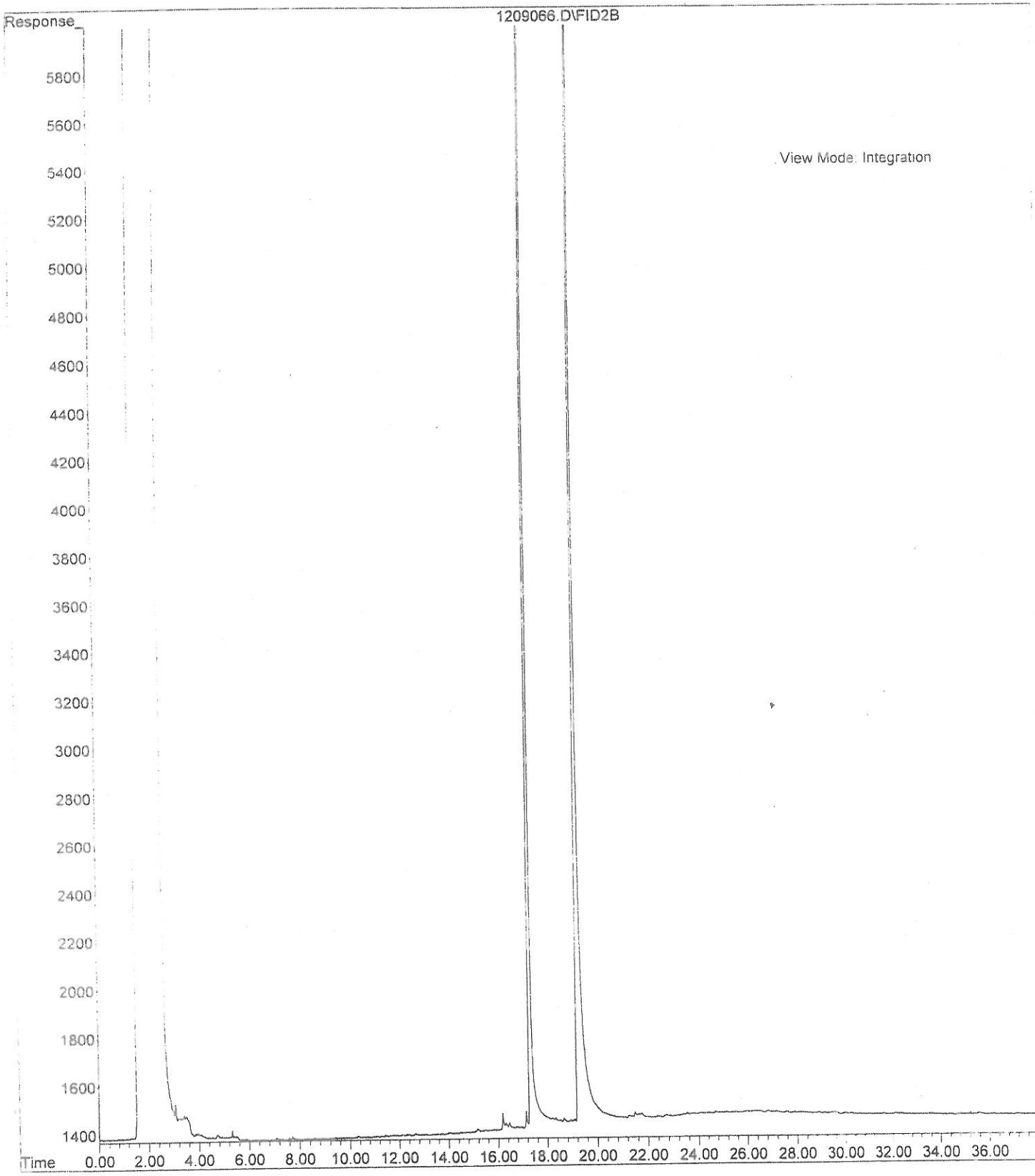
File : D:\HPCHEM\1\DATA\991209\1209064.D
Operator : JAW
Acquired : 10 Dec 1999 4:29 using AcqMethod FUN1.M
Instrument : Lucy
Sample Name: 12-058-05 HC
Misc Info : 2
Vial Number: 64



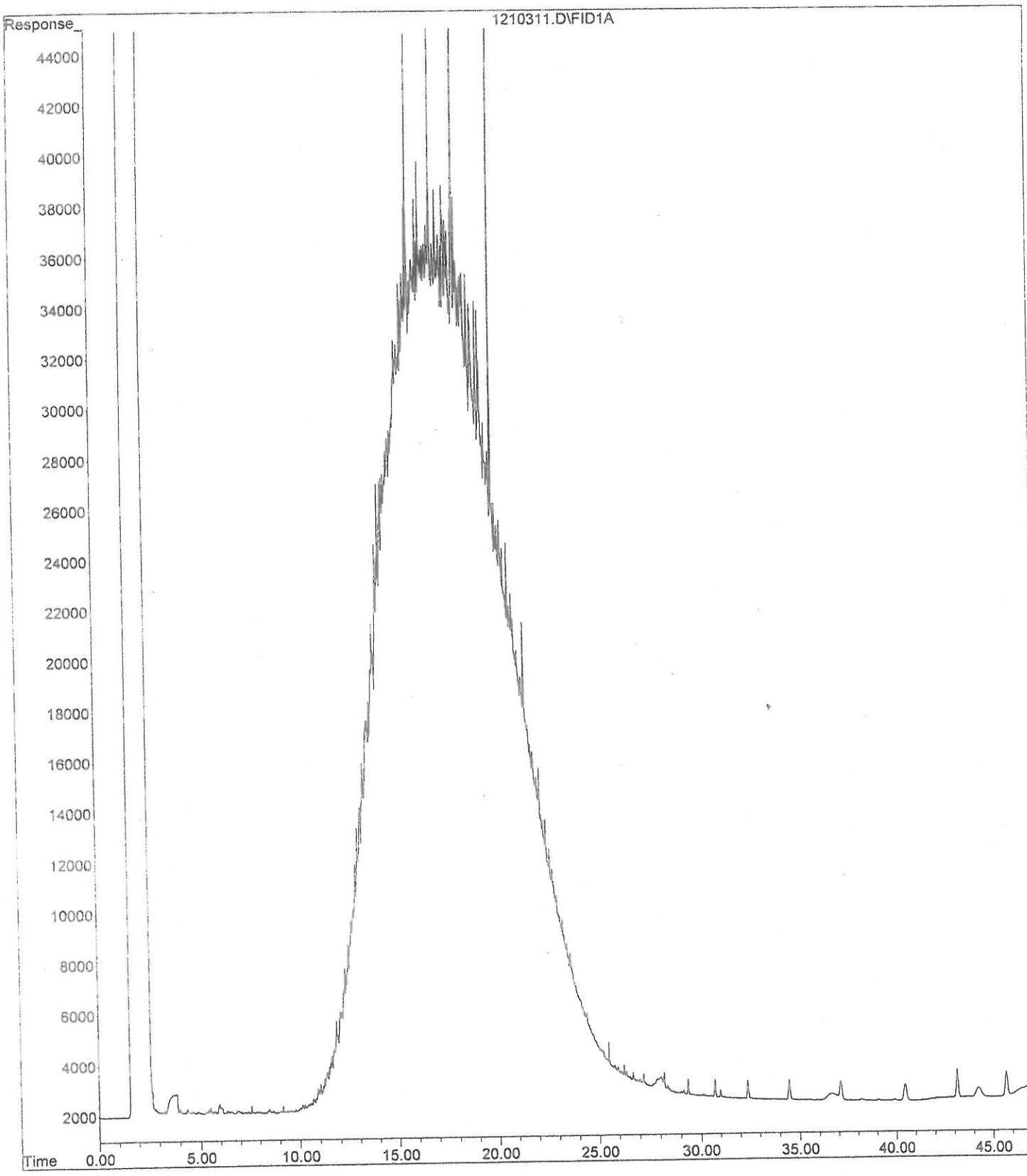
File : D:\HPCHEM\1\DATA\991209\1209065.D
Operator : JAW
Acquired : 10 Dec 1999 5:28 using AcqMethod COLUMN1.M
Instrument : Lucy
Sample Name: 12-058-06 HC
Misc Info : 2
Vial Number: 65



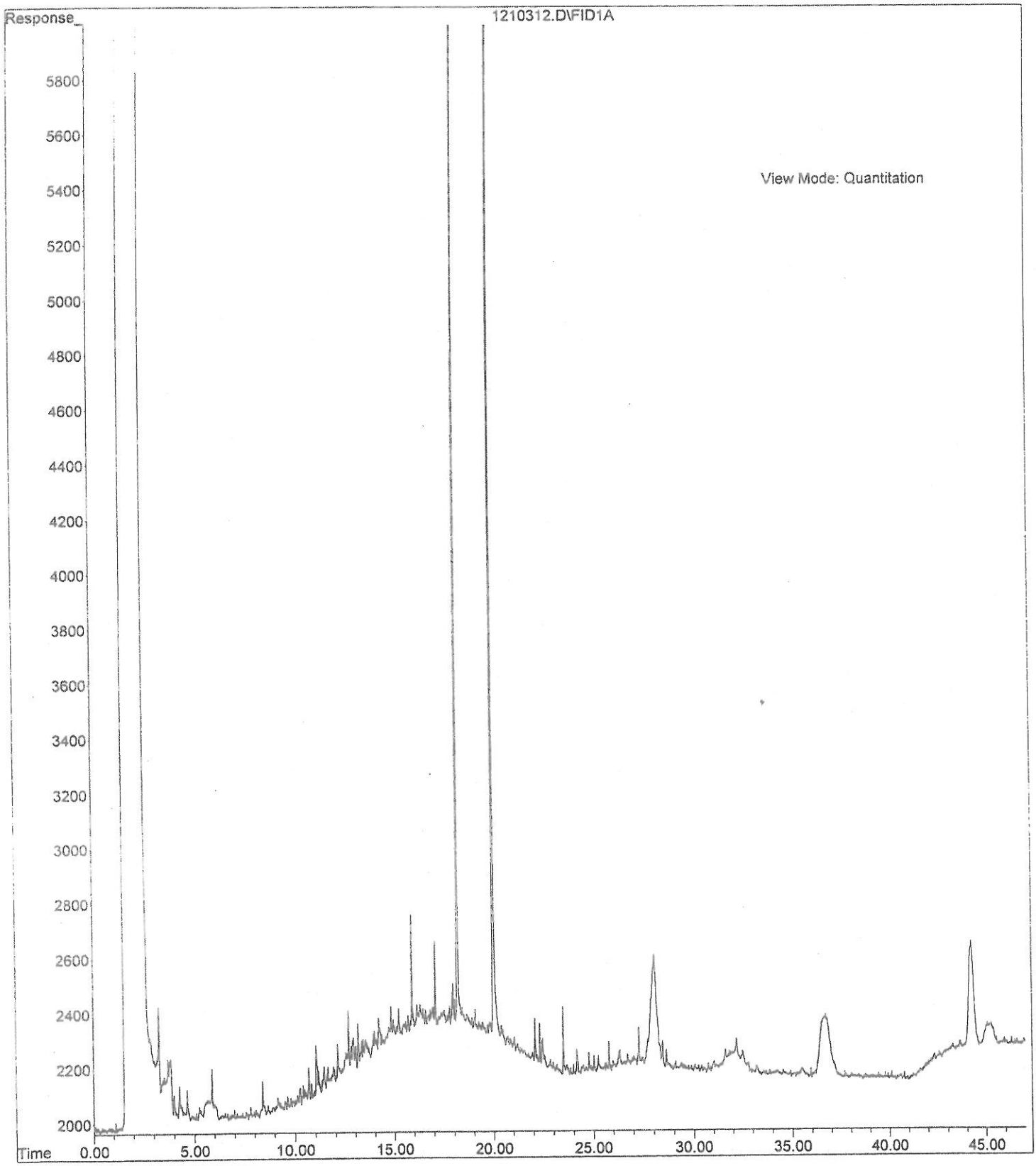
File : D:\HPCHEM\1\DATA\991209\1209066.D
Operator : JAW
Acquired : 10 Dec 1999 6:14 using AcqMethod COLUMN1.M
Instrument : Lucy
Sample Name: 12-058-07 HC
Misc Info : 2
Vial Number: 66



File : D:\HPCHEM\3\DATA\991210\1210311.D
Operator : JAW
Acquired : 10 Dec 1999 22:08 using AcqMethod COL3EPH.M
Instrument : Isaac
Sample Name: 12-058-01 SG
Misc Info : 3
Vial Number: 11



File : D:\HPCHEM\3\DATA\991210\1210312.D
Operator : JAW
Acquired : 10 Dec 1999 23:03 using AcqMethod COL3EPH.M
Instrument : Isaac
Sample Name: 12-058-05
Misc Info : 3
Vial Number: 12



Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Fax: (425) 885-4603 • Phone: (425) 883-3881

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☒ 1 Day
- ☒ 2 Day
- ☐ 3 Day
- ☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☐ 12/10/95 (other)

Project Chemist: DB

Laboratory No. 12-058

Company: GSA INC

Project No.: 95-044 PHASE 5 JOB 12

Project Name: SEA-UST. FINAL

Project Manager: FIELD WORK

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Total RCRA Metals (8)	TCLP Metals	VPH	EPH	% Moisture
1	FS06 DISP1	12/9/95	1020	S	1	X		X											X
2	FS06 B07		1105		1	X													X
3	FS06 BR 5.5		1112		1	X													X
4	FS06SG5.5		1118		1	X													X
5	FS06SPNE		1121		1	X		X											X
6	FS06SPNW		1122		1	X													X
7	FS06SPS	12/9/95	1123	S	1	X													X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
[signature]	12/9/95	[signature]	12/9/95
FIRM GSA INC	TIME 1215	FIRM OSE	TIME 12:15
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME

REVIEWED BY

DATE REVIEWED

COMMENTS:
P.O. 2041
RUN SPIKE BLANK
(X) Received 12/10/95

Chromatographs with final report ☒

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

GARRY STRUTHERS ASSOCIATES, INC.

3150 Richards Road, Suite 100
Bellevue, WA 98005-4446
(425) 519-0300 (phone)
(425) 519-0309 (fax)

Memorandum

Date: January 7, 2000

To: Fred Luck
Engineer

From: MikeWebb
Chemist

Subject: Chemical Data QC Report
OnSite Environmental Report #9912-153

Project Name: Seattle UST-Final Group

Project No.: 95-044 P: 5 T: 12

Analytical Methods:

- NWTPH-Dx for quantitation of diesel and heavy oil range hydrocarbons.

Data Use Intended:

- To provide information for site assessment.

Discussion:

The laboratory quality control and analytical data show acceptable accuracy and precision. No data were rejected due to quality control problems.

Results

mg/kg	FS06 DISP 3.5A	FS06 DISP 2.0
Diesel	180	690
Heavy oil	ND	ND

Overall Conclusions:

These data are usable for the intended purpose.

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

December 30, 1999

Fred Luck
Garry Struthers Associates, Inc.
3150 Richards Road, Suite 100
Bellevue, WA 98005-4446

Re: Analytical Data for Project 95-044
Laboratory Reference No. 9912-153

Dear Fred:

Enclosed are the analytical results and associated quality control data for samples submitted on December 23, 1999.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 30, 1999
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-Dx

Date Extracted:	12-27-99
Date Analyzed:	12-27-99
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	FS06 DISP 3.5 A	FS06 DISP 2.0
Lab ID:	12-153-01	12-153-03
Diesel Fuel:	180	690
PQL:	29	29
Heavy Oil:	ND	ND
PQL:	58	57
Surrogate Recovery:		
o-Terphenyl	98%	95%
Flags:		M,X

Date of Report: December 30, 1999
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-27-99
Date Analyzed:	12-27-99
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB1227S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	85%

Flags:

Date of Report: December 30, 1999
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-27-99
Date Analyzed:	12-29-99
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB1227S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	86%
Flags:	X

Date of Report: December 30, 1999
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	12-27-99
Date Analyzed:	12-27-99
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	12-152-01	12-152-01 DUP
Diesel Fuel:	1240	980
PQL:	25	25
RPD:	23	
Surrogate Recovery:		
o-Terphenyl	88%	88%
Flags:	Z	Z

Date of Report: December 30, 1999
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-Dx
SPIKE BLANK QUALITY CONTROL

Date Extracted:	12-27-99
Date Analyzed:	12-27-99
Matrix:	Soil
Units:	mg/Kg (ppm)
Spike Level:	100 ppm
Lab ID:	SB1227S1
Diesel Fuel:	99.1
PQL:	25
Percent Recovery:	99
Surrogate Recovery:	
o-Terphenyl	106%

Flags:

Date of Report: December 30, 1999
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

Date Analyzed: 12-27-99

% MOISTURE

Client ID	Lab ID	% Moisture
FS06 DISP 3.5 A	12-153-01	14
FS06 DISP 2.0	12-153-03	13

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

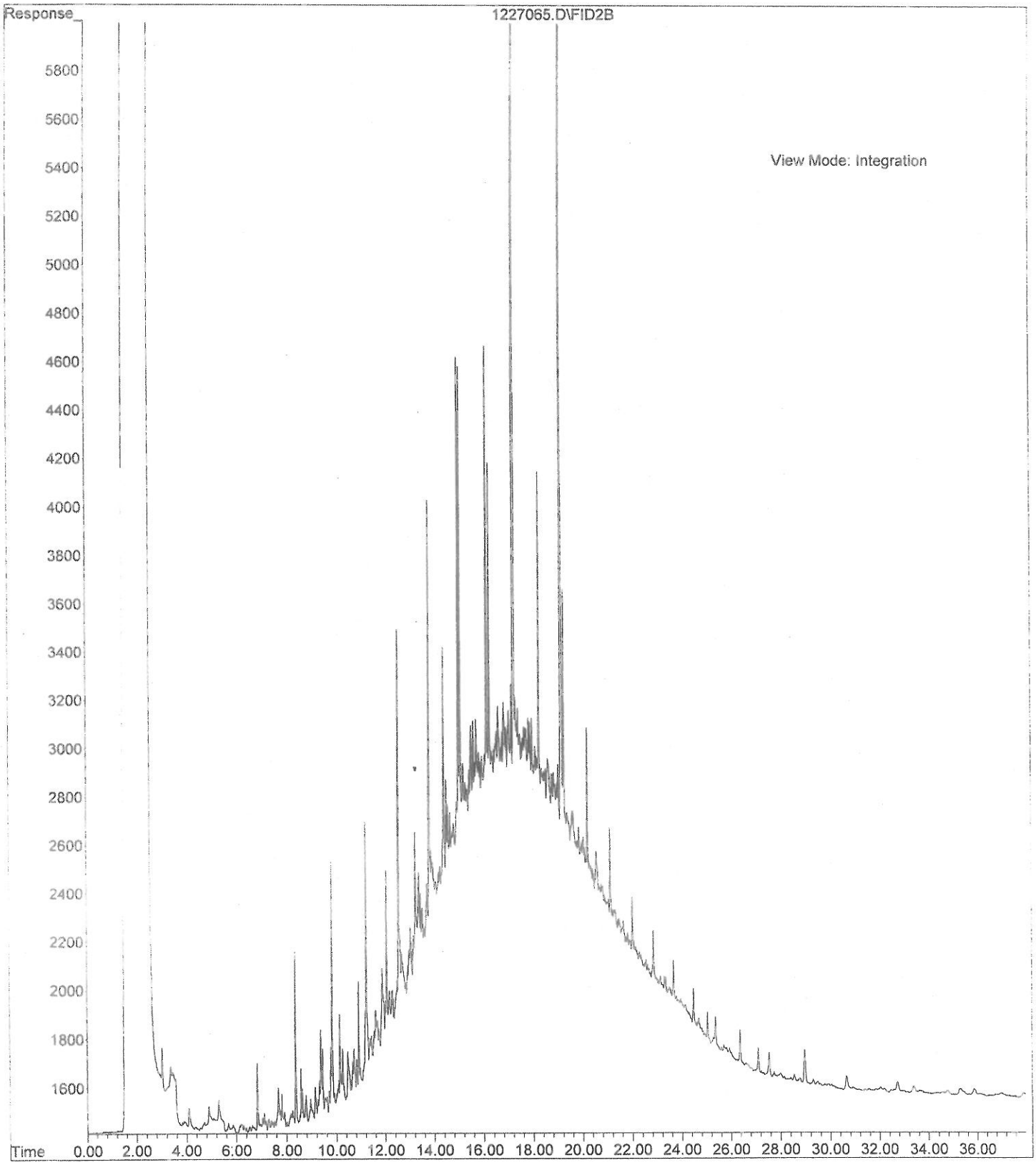
X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

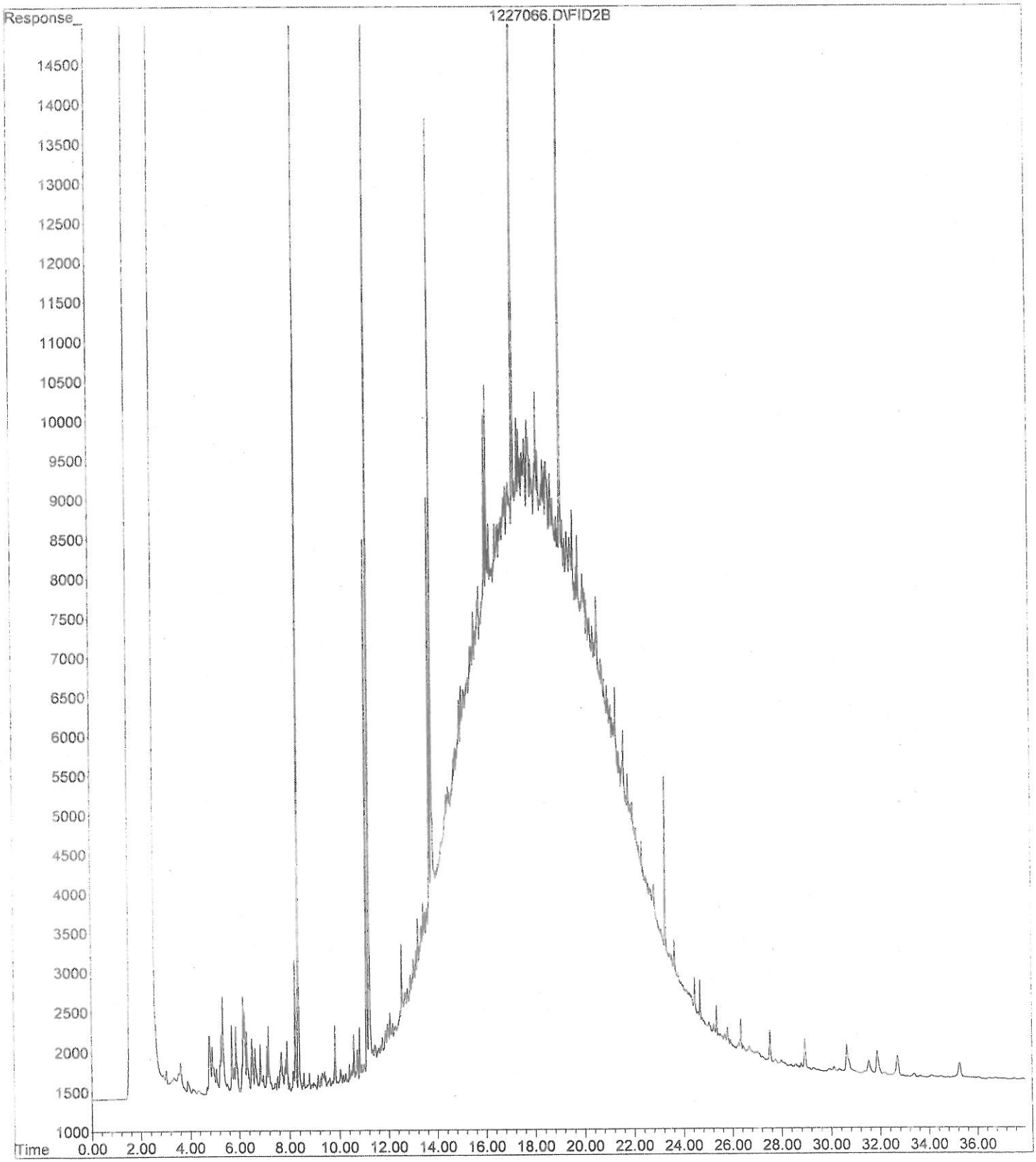
Z – Diesel Fuel quantitated as Diesel Fuel #1.

ND - Not Detected
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

File : D:\HPCHEM\1\DATA\991227\1227065.D
Operator : JAW
Acquired : 27 Dec 1999 20:59 using AcqMethod COLUMN1.M
Instrument : Lucy
Sample Name: 12-153-01
Misc Info : 2
Vial Number: 65



File : D:\HPCHEM\1\DATA\991227\1227066.D
Operator : JAW
Acquired : 27 Dec 1999 21:44 using AcqMethod COLUMN1.M
Instrument : Lucy
Sample Name: 12-153-03 SG
Misc Info : 2
Vial Number: 66



Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Fax: (425) 885-4603 • Phone: (425) 883-3881

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
☒ ~~Hardcopy~~ by 1/3
☐ (other)

Project Chemist: DAVID BAUMEISTER

Laboratory No.

Company: GARY STRUTHERS ASSOC

Project No.: 95-044

Project Name: SEATTLE UST

Project Manager: FRED LUCK

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Total RCRA Metals (8)	TCLP Metals	VPH	EPH					% Moisture
	FSO6 DISP 3.5 A	12-22-99	10:52	SOIL	1			X															X
	FSO6 DISP 3.5 B	↓	10:53	SOIL	1														ON HOLD				
	FSO6 DISP 2.0	↓	10:54	SOIL	1			X															X
	SAMPLED BY FRED LUCK, DELIVERED TO GSA OFFICE 12/23																						

RELINQUISHED BY	DATE	RECEIVED BY	DATE
[signature]	12/23/99	[signature] Chin	12/23/99
FIRM GSA, INC.	TIME 12:00	FIRM GSH	TIME 12:00
RELINQUISHED BY [signature] Chin	DATE 12/22/99	RECEIVED BY [signature]	DATE 12-23-99
FIRM GSH	TIME 15:35	FIRM OSE	TIME 15:35
REVIEWED BY		DATE REVIEWED	

COMMENTS: PO# 2041

Chromatographs with final report ☒

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

GARRY STRUTHERS ASSOCIATES, INC.

3150 Richards Road, Suite 100
Bellevue, WA 98005-4446
(425) 519-0300 (phone)
(425) 519-0309 (fax)

Memorandum

Date: January 14, 2000

Project Name: Seattle UST-Final Group

To: Fred Luck
Engineer

Project No.: 95-044 P: 5 T: 12

From: MikeWebb
Chemist

Subject: Chemical Data QC Report
OnSite Environmental Report #9912-153B

Analytical Methods:

- NWTPH-G/BTEX for quantitation of gasoline range hydrocarbons, benzene, toluene, ethylbenzene, and total xylenes.
- Extractable Petroleum Hydrocarbons (EPH).

Data Use Intended:

- To provide information for waste disposal.
- To provide information for interim TPH calculations.

Discussion:

The laboratory quality control and analytical data show acceptable accuracy and precision. No data were rejected due to quality control problems.

Overall Conclusions:

These data are usable for the intended purpose.

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

January 10, 2000

Fred Luck
Garry Struthers Associates, Inc.
3150 Richards Road, Suite 100
Bellevue, WA 98005-4446

Re: Analytical Data for Project 95-044
Laboratory Reference No. 9912-153 B

Dear Fred:

Enclosed are the analytical results and associated quality control data for samples submitted on December 23, 1999.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: January 10, 2000
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-G/BTEX

Date Extracted: 1-5-00
Date Analyzed: 1-5-00

Matrix: Soil
Units: mg/Kg (ppm)

Client ID: **FS06 DISP 2.0**
Lab ID: 12-153-03

	Result	Flags	PQL
Benzene	**ND**		0.057
Toluene	**ND**		0.057
Ethyl Benzene	**ND**		0.057
m,p-Xylene	**ND**		0.057
o-Xylene	**ND**		0.057
TPH-Gas	**ND**		5.7
Surrogate Recovery:			
Fluorobenzene	64%		

Date of Report: January 10, 2000
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-G/BTEX
METHOD BLANK QUALITY CONTROL

Date Extracted: 1-5-00
Date Analyzed: 1-5-00

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: MB0105S1

	Result	Flags	PQL
Benzene	ND		0.050
Toluene	ND		0.050
Ethyl Benzene	ND		0.050
m,p-Xylene	ND		0.050
o-Xylene	ND		0.050
TPH-Gas	ND		5.0

Surrogate Recovery:
Fluorobenzene 97%

Date of Report: January 10, 2000
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-G/BTEX
DUPLICATE QUALITY CONTROL

Date Extracted: 1-5-00
Date Analyzed: 1-5&6-00

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID:	12-163-01 Original	12-163-01 Duplicate	RPD	Flags
Benzene	ND	ND	NA	
Toluene	ND	ND	NA	
Ethyl Benzene	ND	ND	NA	
m,p-Xylene	0.0520	0.0610	16	
o-Xylene	ND	ND	NA	
TPH-Gas	15.3	20.5	29	
Surrogate Recovery:				
Fluorobenzene	82%	90%		

Date of Report: January 10, 2000
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

NWTPH-G/BTEX
MS/MSD QUALITY CONTROL

Date Extracted: 1-5-00
Date Analyzed: 1-5&6-00

Matrix: Soil
Units: mg/Kg (ppm)

Spike Level: 1.00 ppm

Lab ID:	12-163-01 **MS**	Percent Recovery	12-163-01 **MSD**	Percent Recovery	RPD
Benzene	**0.885**	**89**	**0.915**	**92**	3.3
Toluene	**0.870**	**87**	**0.985**	**99**	12
Ethyl Benzene	**0.790**	**79**	**0.995**	**100**	23
m,p-Xylene	**0.885**	**83**	**0.970**	**92**	9.2
o-Xylene	**0.740**	**74**	**0.995**	**100**	29
Surrogate Recovery:					
Fluorobenzene	83%		87%		

Date of Report: January 10, 2000
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

EXTRACTABLE PETROLEUM HYDROCARBONS

Date Extracted:	12-27-99
Date Analyzed:	1-5-00
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	12-153-03
Client ID:	**FS06 DISP 2.0**

	Results	PQL
Aliphatic C10-C12	ND	5.7
Aliphatic C12-C16	37	5.7
Aliphatic C16-C18	72	5.7
Aliphatic C18-C21	130	5.7
Aliphatic C21-C28	90	5.7
Aliphatic C28-C36	12	5.7
Total Aliphatic	340	
Aromatic C10-C12	ND	5.7
Aromatic C12-C16	ND	5.7
Aromatic C16-C18	ND	5.7
Aromatic C18-C21	71	5.7
Aromatic C21-C28	28	5.7
Aromatic C28-C36	ND	5.7
Total Aromatic	99	

Surrogate	Percent Recovery	Control Limits
o-Terphenyl	69	50 - 150
1-Chlorooctadecane	--	50 - 150

Flags: F

Date of Report: January 10, 2000
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

EXTRACTABLE PETROLEUM HYDROCARBONS
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-27-99
Date Analyzed:	1-5-00
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB1227S1

	Results	PQL
Aliphatic C10-C12	ND	5.0
Aliphatic C12-C16	ND	5.0
Aliphatic C16-C18	ND	5.0
Aliphatic C18-C21	ND	5.0
Aliphatic C21-C28	ND	5.0
Aliphatic C28-C36	ND	5.0
Total Aliphatic	NA	
Aromatic C10-C12	ND	5.0
Aromatic C12-C16	ND	5.0
Aromatic C16-C18	ND	5.0
Aromatic C18-C21	ND	5.0
Aromatic C21-C28	ND	5.0
Aromatic C28-C36	ND	5.0
Total Aromatic	NA	

Surrogate	Percent Recovery	Control Limits
o-Terphenyl	117	50 - 150
1-Chlorooctadecane	88	50 - 150

Flags:

Date of Report: January 10, 2000
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

EXTRACTABLE PETROLEUM HYDROCARBONS
DUPLICATE QUALITY CONTROL

Date Extracted:	12-27-99	
Date Analyzed:	1-5-00	
Matrix:	Soil	
Units:	mg/Kg (ppm)	
Lab ID:	12-152-01	12-152-01 DUP

	Results	Results	PQL	RPD
Aliphatic C10-C12	274	206	5.0	28
Aliphatic C12-C16	414	305	5.0	30
Aliphatic C16-C18	49.0	35.5	5.0	32
Aliphatic C18-C21	16.5	11.3	5.0	37
Aliphatic C21-C28	7.33	5.07	5.0	36
Aliphatic C28-C36	ND	ND	5.0	NA
Aromatic C10-C12	55.8	70.0	5.0	23
Aromatic C12-C16	128	145	5.0	12
Aromatic C16-C18	23.8	26.6	5.0	11
Aromatic C18-C21	25.7	29.7	5.0	14
Aromatic C21-C28	ND	ND	5.0	NA
Aromatic C28-C36	ND	ND	5.0	NA
Total Aromatic				

Surrogate	Percent Recovery		Control Limits
o-Terphenyl	87	103	50 - 150
1-Chlorooctadecane	86	73	50 - 150

Flags:

Date of Report: January 10, 2000
Samples Submitted: December 23, 1999
Lab Traveler: 12-153
Project: 95-044

EXTRACTABLE PETROLEUM HYDROCARBONS
SPIKE BLANK QUALITY CONTROL

Date Extracted:	12-27-99
Date Analyzed:	1-5-00
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	SB1227S1
Spike Amount	100 mg/Kg (ppm)

	Results	PQL
Aliphatic C10-C12	8.03	5.0
Aliphatic C12-C16	28.0	5.0
Aliphatic C16-C18	13.8	5.0
Aliphatic C18-C21	14.7	5.0
Aliphatic C21-C28	6.73	5.0
Aliphatic C28-C36	ND	5.0
Total Aliphatic	71.2	
Aromatic C10-C12	ND	5.0
Aromatic C12-C16	10.1	5.0
Aromatic C16-C18	ND	5.0
Aromatic C18-C21	11.7	5.0
Aromatic C21-C28	ND	5.0
Aromatic C28-C36	ND	5.0
Total Aromatic	21.8	
Percent Recovery	93	

Surrogate	Percent Recovery	Control Limits
o-Terphenyl	128	50 - 150
1-Chlorooctadecane	81	50 - 150

Flags:

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Fax: (425) 885-4603 • Phone: (425) 883-3881

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard
(Hydrocarbon analyses: 5 days, All other analyses: 7 days)
☒ HARDCOPY BY 1/3
☐ (other)

Project Chemist: DAVID BAUMEISTER

Laboratory No. 12-153

Company: GARY STRUTHERS ASSOC.
Project No.: 95-044
Project Name: SEATTLE UST
Project Manager: FRED LUCK

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Total RCRA Metals (8)	TCLP Metals	VPH	EPH						% Moisture
	FSO6 DUP 3.5 A	12-22-99	10:52	SOIL	1			X																X
	FSO6 DUP 3.5 B	"	10:53	SOIL	1																	OH HOLD		
	FSO6 DUP 2.0	"	10:54	SOIL	1		⊗	X										⊗						X
	SAMPLED BY FRED LUCK, DELIVERED TO GSA OFFICE 12/23																							

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Mike Bellehumeur	12/23/99	Elizabeth Chien	12/23/99
FIRM GSA, Inc.	TIME 12:00	FIRM GSA	TIME 12:20
RELINQUISHED BY Elizabeth Chien	DATE 12/23/99	RECEIVED BY	DATE 12.23.99
FIRM GSA	TIME 15:35	FIRM OSE	TIME 15:35
REVIEWED BY		DATE REVIEWED	

COMMENTS: POH 2041
⊗ Added 1/4 DB.

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

APPENDIX D

Washington State Department of Ecology
Interim TPH Policy Calculations

Calculations for Using the Interim Interpretive TPH Policy
Site: Fire Station 6
Sample No: FS06DISP2.0

1	2	3	4	5	6	7	8	9	10	11	12	13
	Soil Conc.	RfD	OCPF	Residential		Commercial		Industrial		Mol. Frac.	Effect. Sol.	Conc.@ well
Compound	(mg/kg)	(mg/kg-day)	(kg-day/mg)	HQ	Risk	HQ	Risk	HQ	Risk	(percent)	(mg/L)	(mg/L)
NWTPH-HCID, -G, Dx:												
Gas-range	<5.7											
Diesel-range	690											
Oil-range	<60											
Aliphatics												
EC 5 - 6												
EC >6 - 8												
EC >8 -10												
EC >10 -12	<5									0.02	0.0005	0.00003
EC >12 -16	37									0.12	0.00007	0.00000
EC >16 - 21	202									0.50	0.0000005	0.000000
Total aliphatic	244	0.06		0.05		0.01		0.00				
Aromatics												
EC >8 - 10												
EC >10 - 12												
EC >12 - 16	<5									0.02	0.13	0.006
EC >16 - 21	71									0.25	0.128	0.0064
EC >21 - 35	28									0.08	0.00052	0.0000
Total aromatic	104	0.03										
Benzene	<0.057		0.029		1.65E-09		4.13E-10		1.26E-10	0.00	0.9	0.04
c-PAHs	<0.70*		7.3		<5.11E-06		1.28E-06		3.89E-07			
Ethylbenzene	<0.057	0.10		0.00		0.00		0.00				
Toluene	<0.057	0.20		0.00		0.00		0.00		0.00	0.2	0.011
Xylenes	<0.114	2.00		0.00		0.00		0.00				
Total aromatic, + B-E-X	104	0.03		0.04		0.01		0.00				
Total				0.09	<5.11E-06**	0.02	1.28E-06	0.00	3.90E-07	1.00000		0.0674
Risk-Level Criteria				1.0	1.00E-06	1.0	1.00E-05	1.0	1.00E-05			1.0

Explanation of Risk-Level Criteria:

a) Hazard quotients for individual substances or fractions cannot exceed 1.0
b) The hazard index (sum of the hazard quotients) cannot exceed 1.0
c) The risk for individual substance or fractions cannot exceed 1x10E-06 for residential land use or 1x10E-05 for commercial or industrial.
d) The risk for the total cannot exceed 1x10E-05 for any land use.
e) The "concentration at the well" cannot exceed 1.0 mg/L for total TPH or individual substances.

Symbols:

__ = A blank or a value with "*" in the "Soil Conc." column indicates that the analysis for that paramenter was not performed.
* = A value estimated from NWTPH, VPH, or EPH results.
** = Exceedance of risk-level criteria

ENTERED 4/7/00

Department of Ecology – Northwest Regional Office
Underground Storage Tank Notice of Confirmed Release

Release ID (LUST #): 531949 Site ID (UST #): 7909

SITE SUMMARY	OWNER (PARTY)
Name: Seattle Fire Station # 6	Name: City of Seattle
Address: 101 23rd Ave S	Address: 618 2nd Ave 14th Floor
City: Seattle	City: Seattle
County: King Zip + 4: 98144-2301	Zip + 4: 98104
Phone: (206-386-1406	Phone: 206-684-0422
Contact: Paul Berry	Contact: Paul Berry

Release Detail:

Alternate Name: Station 6 (= Ecy. file name)
TCP Name: (= VCP #)
ERTS #: N511057 ✓
Date Ecy. Notified: 2/28/00
Call (Report) Receiver: Bremer
Free Product First Observed: (date)
Free Product Last Observed: (date)
Spread Off Site? (yes/no)

Release Status:	Date:
☐ Awaiting Cleanup	
☒ Cleanup Started	12/9/99
☐ Monitoring	
☒ Reported Cleaned Up	2/23/00
☐ Unknown	
☐ No Further Action	
☐ Other	

Comments (include remediation methods, PCS status): ~~PCS~~ Shallow PCS remains under concrete ramp @ 2600 ppm TPH-D. Likely source is dispenser runoff. 500 diesel UST removed. Closure sampler cleanfs sidewall through bottom sample @ 7' was not analyzed.

Cause of Release
Technologies Used

Consultant / Other Contacts

Contact Name	Affiliation	Phone #
Fred Luck	Gary Struthers Assoc.	425-519-0300

TANK INFORMATION

	Tank #	Substance	Status	Status Date	Capacity
1	F6-1	diesel	removed	12/9/99	500
2					
3					
4					
5					
6					

Media Affected

☒ Soil ☐ GW ☐ DW ☐ SW ☐ Sed

Amount Removed
☐ Cubic Yards
☐ Gallons
☐ Tons

COORDINATOR: GARBUSH, GAYLE REPORT 1 OF 1

DATE/TIME REC'D: 04/12/2000 REPORT TYPE: INITIAL
ACTUAL DATE: 12/09/1999

CALLER NAME: WRITTEN REPORT ANONYMOUS?: N
GARRY STRUTHERS ASSOC

CONTACT 1:

COUNTY: KING CITY: SEATTLE

LOCATION INFO: 101 23RD AVE S, FS#6

MEDIUM: SOIL
MATERIAL: OIL/PETROLEUM QTY: 0 UNIT: HAZARDOUS: Y
DIESEL FUEL OTHER:

CAUSE: LEAKING UNDERGROUND STORAGE TANK
EQUIPMENT FAILURE
IMPACT: SOIL CONTAMINATION
SOURCE: UNDERGROUND STORAGE TANK ACTIVITY: ROUTINE/NORMAL OPERATIONS

ALLEGED VIOLATOR 1: SEATTLE FIRE STATION # 6
CITY OF SEATTLE
ADDRESS: 101 23RD AVE S

SEATTLE WA 98144

CONTACT 1: PAUL BERRY
PHONE: 206-386-1406 EXT: TYPE:

ADDITIONAL INFO:

ADDITIONAL INFORMATION ON INCIDENT:

MINIMAL RELEASE TO SHALLOW SOIL.

PROGRAM/ORGANIZATION: TOXICS CLEANUP
TCP LUST
CONTACT: J WIETFELD
REFERRAL DATE: 02/28/2000 PRIMARY?: Y

ADDITIONAL INFO:

INVESTIGATOR: BREMER / GARBUSH
DATE STARTED: 04/12/2000 DATE COMPLETED: 05/05/2000
ACTION: VOLUNTARY COMPLIANCE DATE: 05/05/2000

NARRATIVE TEXT: BREMER REVIEWED REPORT & DETERMINED THAT IT SHOULD BE LUST LISTED.

GARBUSH LUST LISTED - LUST# 531949, UST# 7909

COUNTY: KING CITY: SEATTLE

LOCATION INFO: 101 23RD AVE S, FS#6

MEDIUM: SOIL
MATERIAL: OIL/PETROLEUM QTY: 0 UNIT: HAZARDOUS: Y
DIESEL FUEL OTHER:

CAUSE: EQUIPMENT FAILURE
LEAKING UNDERGROUND STORAGE TANK
IMPACT: SOIL CONTAMINATION
SOURCE: UNDERGROUND STORAGE TANK ACTIVITY: ROUTINE/NORMAL OPERATIONS

NONPOINT: POINT: LUST: Y

CONTRACTOR INFO:

ACTUAL VIOLATOR 1: **SEATTLE FIRE STATION # 6** ENFORCEMENT SENSITIVE:
CITY OF SEATTLE
ADDRESS: 101 23RD AVE S

SEATTLE WA 98144

CONTACT 1: PAUL BERRY
PHONE: 206-386-1406 EXT: TYPE:

ADDITIONAL INFO:

APPENDIX F

ENVIRONMENTAL PROFESSIONAL QUALIFICATIONS

Ryan J. Kerrigan, Ph.D., L.G. Geologist/Environmental Scientist

Dr. Kerrigan received his Ph.D. in geology from the University of Maryland in January of 2011. Dr. Kerrigan's main field of research has been the phase equilibria, kinetics and textural development exhibited by chemical reactions during fluid-rock interactions both in the field and in the laboratory. Dr. Kerrigan began conducting Phase I and Phase II Environmental Site Assessments in February of 2011. Dr. Kerrigan is a certified Washington State UST Site Assessor and a Washington State Licensed Geologist. Dr. Kerrigan is also an adjunct faculty member at Green River Community College.

Daryl S. Petrarca, L.H.G., Principal

Managed investigations and the application of environmental characterization methodologies including the evaluation of potential environmental liabilities associated with property undergoing transfer actions. Performed Phase I and II studies and environmental assessments for industrial, commercial and residential properties including railroad properties, oil company facilities, schools, municipal facilities and marinas. Designed and implemented offshore sediment sampling and chemical analysis including acting as a liaison between the marina, The Corps of Engineers and Washington State Department of Ecology. Mr. Petrarca has served as technical advisor to the Skykomish Environmental Coalition since 1996 during the continuing multimillion dollar clean up of the BNSF/ Skykomish site.