

# Monitoring Well Sampling Results

May 2010

Delta Western Station  
900 Main St.  
Haines, AK.

Prepared for:



Delta Western, Inc  
P.O. Box 79018  
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Prepared by:



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June 9, 2010

## **Background**

Sampling of eight groundwater monitoring wells began in August of 2009 at the Delta Western Station in Haines. The next sampling event occurred November of 2009 for two wells not sampled in the previous event with the others obstructed by snow and not sampled. The next monitoring event was conducted in April of 2010 by Chilkat Environmental. This report provides results for the May 2010 monitoring event.

A sampling plan was submitted by Chilkat Environmental on April 28 and approved by ADEC for the April monitoring event. The May event was conducted following the same plan with one addition requested by ADEC. PAH testing was added for MW-1, MW-7 and MW-8 to address surface water migration concerns.

## **Introduction**

The May 2010 monitoring well sampling event was conducted on May 26. Sampling was conducted by Principal Investigator Elijah Donat and Environmental Scientist William Prisciandaro. Samples were contained in two ice chests and sent May 27 by air to Seattle and picked up by Friedman & Bruya May 28. The final laboratory report was received June 7 and provided to ADEC and Delta Western the same day. This report presents results.

## **Field Observations**

Gasoline odor was observed in water from MW-2, MW-5 and MW-6 but no odor was observed in other wells. No free product was observed in any of the wells. The depth of groundwater had receded as much as 1 foot since the April event representing 4 weeks of dry weather. Field sampling data is included as Table 1 below.

Well	Depth	Depth to Water April	Depth to Water May	change	Depth of Cap
1	4.97	3.50	3.65	-0.15	14 inches bgs
2	4.70	1.95	2.82	-0.87	8 inches bgs
3	5.02	1.24	1.76	-0.52	16 inches bgs
4	5.33	2.10	2.69	-0.59	12 inches bgs
5	5.29	1.68	2.44	-0.76	12 inches bgs
6	5.22	1.73	2.75	-1.02	12 inches bgs
7	5.33	2.09	3.09	-1.0	ground level
8	5.33	2.84	3.4	-0.56	5 inches bgs

Table 1: Field sampling data

## Data Reconciliation

Two sampling events were conducted prior to the April 2010 event though each monitoring well was only sampled once. The first event occurred on August 6, 2009 and included wells 1-6. Wells 7 and 8 did not produce any water for this event. Wells 7 and 8 were sampled during the second sampling event on November 6, 2009. The results presented in this report for the May 2010 sampling event include all 8 wells and are compared to the results of the previous sampling results and Method II migration to groundwater standard. All methods used for laboratory analyses in the May 2010 event use the same ADEC approved laboratory methods as previous sampling events and results are presented in the same metrics for comparison. Similar to the April 2010 event all DRO and RRO samples were analyzed before and after silica gel reduction to remove biogenic interference. Analyses of PAH by EPA Method 8270 was added for MW-1, MW-3 and MW-8.

## Data Quality

The laboratory quality assurance requirements for this project are documented in the attached laboratory report and the Data Quality Objectives Checklist. No anomalies in laboratory data quality were observed. A field duplicate was performed to measure the quality of field data. The duplicate was performed on MW-3 denoted MW-3d with similar results. Field duplicate

results indicate that field methods were reliable and that data meets usability requirements. No specific Relative Percent Difference goal was set for this data by the workplan.

## Results

The results demonstrate that GRO and BTEX levels are increasing for MW-2, MW-5 and MW-6 and that MW-8 at Sawmill Creek now has Benzene above clean-up levels. Analyses of PAH by EPA Method 8270 was conducted for MW-1, MW-3 and MW-8 with no significant results. Data is presented in Parts per Million (ppm) for DRO and RRO in Table 2 and for GRO and BTEX in Table 3.

- MW-1 is located behind and to the north of the station along the ditch and was found to have 0.16 ppm Benzene in 8.6.2009 and 0.032 ppm in April of 2010. This indicates a 5 fold decrease but is still 6.4 times above the clean-up standards. This well is located 6 feet from the ditch where the water daylight and exits into the drainage ditch.

Results from the May event were 0.12 ppm for Benzene, presenting a significant increase from April but still less than the results in 2009.

- MW-2 is located on the west side of the station. It was first analyzed 8.6.2009 and found to contain Benzene at 3.36 ppm, Toluene of 0.26 ppm, Ethylbenzene 0.649 and GRO of 16.3 ppm. The April 2010 sampling event found a 2 fold increase in Benzene to 8.7 ppm, over 10 fold increase in Toluene to 2.8ppm, an increase in Ethylbenzene to 1 ppm and an over 3 fold increase of GRO to 51 ppm. These levels are 1740 times over the clean-up level for Benzene, 2.8 times over for Toluene, 1.4 times over for Ethyl Benzene and 23 times over for GRO. MW-2 also had DRO of 2.2 ppm which is 1.5 times the clean-up level. Previous RRO sampling in August 2009 yielded 1.16 ppm and 1.26 ppm with a duplicate, each above the clean-up level of 1.1 ppm. April 2010 sampling yielded 0.29 ppm after silica gel reduction which is below the clean-up level.

Results from the May event demonstrate increasing contamination level. GRO is almost twice the April event at 100 ppm and significant increases were observed for BTEX.

- MW-3 is also located on the east side of the station along the ditch. A significant increasing trend is observed for this well including an over 15 fold increase for Benzene, 535 fold increase for Toluene, over 61 fold increase in Ethylbenzene, 33 fold increase in total Xylenes and a 28.6 fold increase in GRO. The data for MW-3 shows that April 2010 data is 162 times over the Benzene clean-up level and 1.6 times over the GRO level.

May 2010 sampling presented similar Benzene and GRO levels to the April event.

- MW-4 is located on the east side of the property near the highway and was first analyzed on 8.6.2009 and found to contain Benzene 0.0639 ppm. During the April 2010 event the level was 0.012 ppm which is a 5.4 fold decrease. Despite the decreasing trend the well is still 2.4 times above the clean-up standard. DRO results from the 8.6.2009 sampling event found DRO above the 1.5 ppm clean up level at 1.94 ppm but did not conduct silica gel reduction to remove biogenic interference. Results for DRO in the April 2010 event were below clean-up standards at 0.14 ppm for each MW-4 and duplicate MW-4d.

May 2010 sampling encountered an over doubled level of Benzene compared to the previous month.

- MW-5 is adjacent to the pump island on the south side of the station along the highway. It was first analyzed 8.6.2009 and found to contain Benzene at 1.63 ppm, Toluene at 2.18 ppm and GRO of 11.8 ppm. An increasing trend was observed in the April 2010 sampling event. The level of Benzene increased 2 fold to 3.1 ppm, Toluene increased a small amount to 2.5 ppm and GRO almost doubled to 21 ppm. The data for MW-5 shows that April 2010 data is 620 times over the Benzene clean-up level, 2.5 times over for Toluene and 10 times over the GRO level. DRO results from the 8.6.2009 sampling event found DRO above the 1.5 ppm clean up level at 1.63 ppm but did not conduct silica gel clean-up to remove biogenic interference. Results for the April 2010 event were 2.4 ppm before silica gel reduction and 0.34 ppm after for DRO indicating the prior result above clean-up standard may have been influenced by biogenic interference.

The May 2010 sampling discovered significant increase in GRO and BTEX contamination.

- MW-6 is on the south side of the station along the highway and west of MW-5. It was first analyzed 8.6.2009 and found to contain Benzene at 2.12 ppm, Toluene at 5.27 ppm, Ethylbenzene of 0.21 ppm, total Xylenes of 1.57 ppm and GRO of 15.4 ppm. An increasing trend was observed in the April 2010 sampling event. Though the level of Benzene decreased to 2 ppm, Toluene increased over 4 times to 22 ppm, Ethylbenzene increased over 12 fold to 2.6 ppm, total Xylenes increased 9 fold to 14 ppm, GRO increased over 7 fold to 110 ppm. MW-6 also had DRO of 3.1 ppm which is twice the clean-up level.

The May 2010 sampling discovered significant increase in GRO and BTEX contamination.

- MW-7 across the highway at the Alaska Department of Fish and Game (ADFG) property was non-detect in the November 2009 event for all analytes. In April of 2010, RRO was discovered at 1.2 ppm. The clean-up level is 1.1 ppm. Many potential sources of this contamination include the highway which drains toward the well, the ADFG property which houses equipment or the RV Park which recently underwent an environmental action to address contaminated soil.

The May event encountered an increasing trend in RRO.

- MW-8 is located adjacent to Sawmill Creek and found Benzene of 0.00358 ppm in 11.6.2009 and 0.0049 ppm in April of 2010. While this shows an increasing trend it is still below ADEC clean-up levels.

An increasing trend was observed in the May results with Benzene above the clean-up level.

## **Biogenic Interference**

All DRO and RRO samples were analyzed before and after silica gel reduction to remove biogenic interference. Significant biogenic interference was observed and the results for samples after silica gel reduction are used for analyses as per ADEC Technical Memorandum 06-001 published May of 2006. Only two DRO results, including MW-2 and MW-6, were above clean-up levels. These results are similar to the April results and may partially result from Gas range overlap.

Biogenic interference was also observed in MW-7 where results for RRO were 2.0 ppm before and 1.5 ppm after reduction. Future sampling should continue to use silica gel to eliminate interference.

## Investigation Derived Waste

The purge water was collected and disposed of at Bigfoot Auto where they process it in compliance with ADEC. Bailers used for purging and sampling were disposed of as solid waste. Rinse water from decontamination of the interface probe was dispelled on site.

## Conclusions

DRO and RRO levels are stable and could be considered non-target analytes for management of the site. GRO and BTEX levels indicate contamination is mobile and aqueous. Chilkat Environmental recommends containment and management of shallow groundwater water at the site to address the exposure pathways.

## Signature of Environmental Professional

The fieldwork for this sampling event was managed by Elijah Donat MS PMP who authored this May Monitoring Well report with attached lab results and data quality for Delta Western Inc.



Elijah Donat MS PMP

	Event	DRO	DRO after Silica	RRO	RRO after Silica
<b>ADEC Clean-up Level</b>		<b>1.5</b>	<b>1.5</b>	<b>1.1</b>	<b>1.1</b>
MW1	8/6/09	NA		NA	
	4/28/10	0.2700	<0.05	1.9000	0.3000
	5/26/10	0.16	<0.05	<0.25	<0.25
MW2	8/6/09	<b>2.57</b>		<b>1.26</b>	
	8/6/09	<b>2.05</b>		<b>1.16</b>	
	4/28/10	5.1	<b>2.2</b>	2.7	0.29
	5/26/10	4.9	<b>1.5</b>	2.1	<0.25
MW3	8/6/09	0.435		0.434	
	4/28/10	0.78	<0.05	0.64	<0.25
	5/26/10	0.51	<0.05	0.49	<0.25
	5/26/10	0.42	<0.05	0.39	<0.25
MW4	8/6/09	<b>1.94</b>		0.548	
	4/28/10	0.14	<0.05	0.35	<0.25
	4/28/10	0.14	<0.05	0.35	<0.25
	5/26/10	0.094	<0.05	<0.25	<0.25
MW5	8/6/09	<b>1.63</b>		0.661	
	4/28/10	2.4	0.34	1.1	<0.25
	5/26/10	2.9	0.4	1.2	<0.25
MW6	8/6/09	<b>2.6</b>		0.71	
	4/28/10	4.5	<b>3.1</b>	0.68	<0.25
	5/26/10	5.4	<b>1.8</b>	1.0	<0.25
MW7	11/6/09	ND		ND	
	4/28/10	0.28	0.21	1.5	<b>1.2</b>
	5/26/10	0.39	0.21	2.0	<b>1.5</b>
MW8	11/6/09	ND		ND	
	11/6/09	ND		ND	
	4/28/10	0.21	0.063	0.56	0.29
	5/26/10	0.19	<0.05	0.36	<0.25

Table 2: Presentation of Diesel Range Organics (DRO) and Residual Range Organics (RRO) ADEC clean-up levels, prior data with duplicates, current data with duplicates, results before and after silica gel clean-up to remove biogenic interference and results above clean-up level are larger and bolded. Data is presented in parts per million (ppm) which is the same as milligrams per Liter (mg/L)



	Event	GRO	Benzene	Toluene	Ethylbenzene	Xylenes
ADEC Clean-up Level		<b>2.2</b>	<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>10</b>
MW1	8/6/09	0.293	<b>0.16</b>	0.0062	0.009	0.0592
	4/28/10	0.1100	<b>0.0320</b>	0.0019	<0.0005	0.004
	5/26/10	1.0	<b>0.12</b>	0.031	<0.01	<0.03
MW2	8/6/09	<b>16.3</b>	<b>3.36</b>	0.259	0.649	3.728
Duplicate	8/6/09	<b>14.8</b>	<b>2.86</b>	0.208	0.583	3.486
	4/28/10	<b>51</b>	<b>8.7</b>	<b>2.8</b>	<b>1</b>	5.4
	5/26/10	<b>100</b>	<b>12</b>	<b>4.4</b>	<b>1.5</b>	8.4
MW3	8/6/09	0.126	<b>0.052</b>	0.00086	0.0006	0.00424
	4/28/10	<b>3.6</b>	<b>0.81</b>	0.46	0.037	0.14
	5/26/10	<b>3.0</b>	<b>0.75</b>	0.057	0.016	0.081
Duplicate	5/26/10	<b>2.2</b>	<b>0.72</b>	0.055	0.015	0.073
MW4	8/6/09	0.0384	<b>0.064</b>	0.15	ND	0.0362
	4/28/10	<0.1	<b>0.011</b>	<0.001	<0.001	<0.003
Duplicate	4/28/10	<0.1	<b>0.012</b>	<0.001	<0.001	<0.003
	5/26/10	<0.1	<b>0.027</b>	<0.001	<0.001	<0.003
MW5	8/6/09	<b>11.8</b>	<b>1.64</b>	<b>2.18</b>	0.319	1.894
	4/28/10	<b>21</b>	<b>3.1</b>	<b>2.5</b>	0.33	1.8
	5/26/10	<b>36</b>	<b>5</b>	<b>3.7</b>	0.49	2.6
MW6	8/6/09	<b>15.4</b>	<b>2.12</b>	<b>5.27</b>	0.21	1.572
	4/28/10	<b>110</b>	<b>2</b>	<b>22</b>	<b>2.6</b>	<b>14</b>
	5/26/10	<b>170</b>	<b>6.1</b>	<b>30</b>	<b>2.7</b>	<b>16</b>
MW7	11/6/09	ND	ND	ND	ND	ND
	4/28/10	<0.1	<0.001	<0.001	<0.001	<0.003
	5/26/10	<0.1	<0.001	0.0028	<0.001	<0.003
MW8	11/6/09	ND	0.00241	ND	ND	ND
Duplicate	11/6/09	ND	0.00358	ND	ND	ND
	4/28/10	<0.1	0.0049	<0.001	<0.001	<0.003
	5/26/10	<0.1	<b>0.0054</b>	<0.001	<0.001	<0.003

Table 3: Presentation of Gasoline Range Organics (GRO) and 'Benzene – Toluene – Ethylbenzene – Xylenes' (BTEX). ADEC clean-up levels, prior data with duplicates, current data with duplicates and results above clean-up level are bolded. Data is presented in parts per million (ppm) which is the same as milligrams per Liter (mg/L).

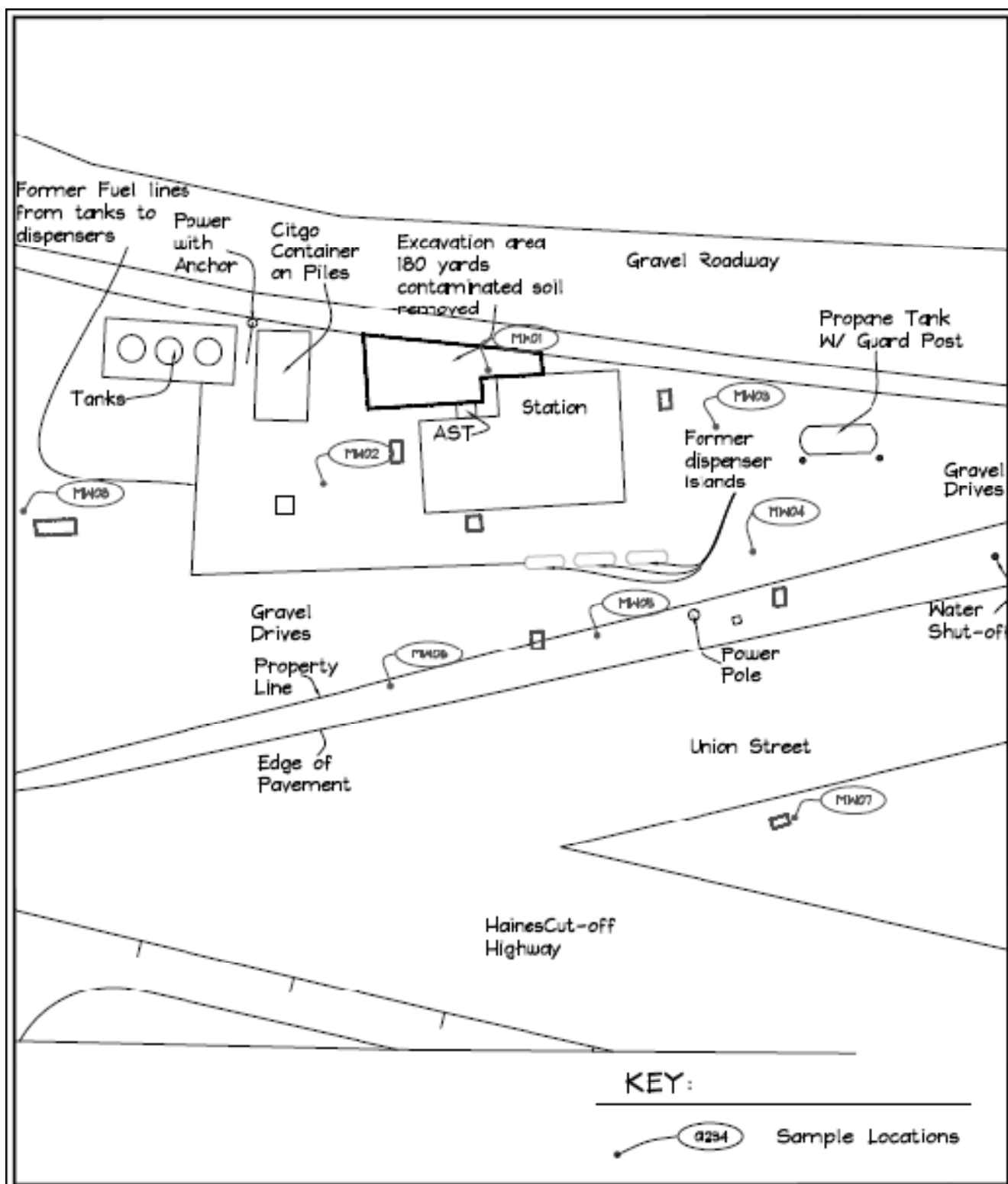


Figure 1: Location of Monitoring Wells. Photographs of each well with measurements to locate them are included in the photolog. Figure is an excerpt from the Site Assessment Report October 6, 2009

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

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June 7, 2010

Elijah Donat, Project Manager  
Chilkat Environmental  
PO Box 865  
Haines, AK 99827

Dear Mr. Donat:

Included are the results from the testing of material submitted on May 28, 2010 from the Delta Western, F&BI 005260 project. There are 19 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
CHL0607R.DOC

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ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 28, 2010 by Friedman & Bruya, Inc. (ADEC laboratory approval number UST-007) from the Chilkat Environmental Delta Western, F&BI 005260 project. The samples were received at 4 °C in good condition and were refrigerated upon receipt. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Chilkat Environmental</u>	<u>Date Sampled</u>
005260-01	MW-1	05/26/10
005260-02	MW-2	05/26/10
005260-03	MW-3	05/26/10
005260-04	MW-3d	05/26/10
005260-05	Trip Blank	05/26/10
005260-06	MW-4	05/26/10
005260-07	MW-5	05/26/10
005260-08	MW-6	05/26/10
005260-09	MW-7	05/26/10
005260-10	MW-8	05/26/10
005260-11	Trip Blank	05/26/10

The samples were analyzed as follows.

GRO (water) - Analysis Method AK 101, Extraction Method 5030B

All quality control requirements were acceptable.

DRO/RRO (water) - Analysis Method AK 102/103, Extraction Method 3510C

All quality control requirements were acceptable.

BTEX (water) - Analysis Method 8260C, Extraction Method 5030B

All quality control requirements were acceptable.

PNAs (water) - Analysis Method 8270D SIM, Extraction Method 3510C

The laboratory and laboratory control sample duplicate relative percent difference failed the acceptance criteria for several analytes. The analytes were not detected in the samples, therefore the data were acceptable. All other quality control requirements were acceptable.

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ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

Date Extracted: 06/02/10 and 06/03/10

Date Analyzed: 06/02/10 and 06/03/10

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND AK 101**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u> (C <sub>6</sub> -C <sub>10</sub> )	<u>Surrogate</u> (% Recovery) (Limit 60-120)
MW-1 005260-01 1/10	120	31	<10	<30	1,000	73
MW-2 005260-02 1/400	12,000	4,400	1,500	8,400	100,000	82
MW-3 005260-03 1/10	750	57	16	81	3,000	85
MW-3d 005260-04	720	55	15	73	2,200	68
Trip Blank 005260-05	<1	<1	<1	<3	<100	78
MW-4 005260-06	27	<1	<1	<3	<100	83
MW-5 005260-07 1/100	5,000	3,700	490	2,600	36,000	85
MW-6 005260-08 1/400	6,100	30,000	2,700	16,000	170,000	71
MW-7 005260-09	<1	2.8	<1	<3	<100	82
MW-8 005260-10	5.4	<1	<1	<3	<100	70

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

Date Extracted: 06/02/10 and 06/03/10

Date Analyzed: 06/02/10 and 06/03/10

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND AK 101**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u> (C <sub>6</sub> -C <sub>10</sub> )	<u>Surrogate (% Recovery)</u> (Limit 60-120)
Method Blank 00-811 MB	<1	<1	<1	<3	<100	80
Method Blank 00-0811 MB2	<1	<1	<1	<3	<100	92

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10  
 Date Received: 05/28/10  
 Project: Delta Western, F&BI 005260  
 Date Extracted: 06/03/10  
 Date Analyzed: 06/03/10

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
 FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL  
 USING METHOD AK 102**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Surrogate</u> (% Recovery) (Limit 50-150)
MW-1 005260-01	160 x	82
MW-2 005260-02	4,900 x	84
MW-3 005260-03	510 x	106
MW-3d 005260-04	420 x	91
MW-4 005260-06	94 x	86
MW-5 005260-07	2,900 x	90
MW-6 005260-08	5,400 x	93
MW-7 005260-09	390 x	94
MW-8 005260-10	190 x	91
Method Blank 00-826 MB	<50	97

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ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10  
 Date Received: 05/28/10  
 Project: Delta Western, F&BI 005260  
 Date Extracted: 06/01/10  
 Date Analyzed: 06/04/10

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
 FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL  
 USING METHOD AK 102**

**Sample Extracts Passed Through a  
 Silica Gel Column Prior to Analysis**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Surrogate</u> (% Recovery) (Limit 50-150)
MW-1 005260-01	<50	53
MW-2 005260-02	1,500 x	55
MW-3 005260-03	<50	76
MW-3d 005260-04	<50	63
MW-4 005260-06	<50	66
MW-5 005260-07	400 x	75
MW-6 005260-08	1,800 x	70
MW-7 005260-09	210 x	68
MW-8 005260-10	<50	59
Method Blank 00-826 MB	<50	62



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ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

Date Extracted: 06/03/10

Date Analyzed: 06/03/10

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL  
USING METHOD AK 103**

Results Reported as ug/L (ppb)

<u>Sample ID</u>	<u>Motor Oil Range</u>	<u>Surrogate</u> <u>(% Recovery)</u>
Laboratory ID	(C <sub>25</sub> -C <sub>36</sub> )	(Limit 50-150)
MW-1 005260-01	<250	128
MW-2 005260-02	2,100 x	136
MW-3 005260-03	490 x	109
MW-3d 005260-04	390 x	ip
MW-4 005260-06	<250	147
MW-5 005260-07	1,200 x	ip
MW-6 005260-08	1,000 x	ip
MW-7 005260-09	2,000	134
MW-8 005260-10	360 x	150
Method Blank 00-826 MB	<250	97

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10  
 Date Received: 05/28/10  
 Project: Delta Western, F&BI 005260  
 Date Extracted: 06/01/10  
 Date Analyzed: 06/04/10

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
 FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL  
 USING METHOD AK 103**

**Sample Extracts Passed Through a  
 Silica Gel Column Prior to Analysis**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Motor Oil Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
MW-1 005260-01	<250	87
MW-2 005260-02	<250	92
MW-3 005260-03	<250	120
MW-3d 005260-04	<250	100
MW-4 005260-06	<250	107
MW-5 005260-07	<250	133
MW-6 005260-08	<250	115
MW-7 005260-09	1,500	118
MW-8 005260-10	<250	98
Method Blank 00-826 MB	<250	115

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: MW-1	Client: Chilkat Environmental
Date Received: 05/28/10	Project: Delta Western, F&BI 005260
Date Extracted: 06/01/10	Lab ID: 005260-01
Date Analyzed: 06/02/10 14:56	Data File: 060205.D
Matrix: Water	Instrument: GCMS6
Units: ug/L (ppb)	Operator: YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	71	50	150
Benzo(a)anthracene-d12	75	50	129

Compounds:	Concentration ug/L (ppb)
Naphthalene	1.1
Acenaphthylene	<0.1
Acenaphthene	<0.1
Fluorene	<0.1
Phenanthrene	<0.1
Anthracene	<0.1
Fluoranthene	<0.1
Pyrene	<0.1
Benz(a)anthracene	<0.1
Chrysene	<0.1
Benzo(a)pyrene	<0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	<0.1
Indeno(1,2,3-cd)pyrene	<0.1
Dibenz(a,h)anthracene	<0.1
Benzo(g,h,i)perylene	<0.1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	MW-3	Client:	Chilkat Environmental
Date Received:	05/28/10	Project:	Delta Western, F&BI 005260
Date Extracted:	06/01/10	Lab ID:	005260-03
Date Analyzed:	06/02/10 15:32	Data File:	060206.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	75	50	150
Benzo(a)anthracene-d12	71	50	129

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.37
Acenaphthylene	<0.1
Acenaphthene	<0.1
Fluorene	<0.1
Phenanthrene	0.10
Anthracene	<0.1
Fluoranthene	<0.1
Pyrene	<0.1
Benz(a)anthracene	<0.1
Chrysene	<0.1
Benzo(a)pyrene	<0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	<0.1
Indeno(1,2,3-cd)pyrene	<0.1
Dibenz(a,h)anthracene	<0.1
Benzo(g,h,i)perylene	<0.1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: MW-3d	Client: Chilkat Environmental
Date Received: 05/28/10	Project: Delta Western, F&BI 005260
Date Extracted: 06/01/10	Lab ID: 005260-04
Date Analyzed: 06/02/10 16:07	Data File: 060207.D
Matrix: Water	Instrument: GCMS6
Units: ug/L (ppb)	Operator: YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	75	50	150
Benzo(a)anthracene-d12	68	50	129

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.24
Acenaphthylene	<0.1
Acenaphthene	<0.1
Fluorene	<0.1
Phenanthrene	<0.1
Anthracene	<0.1
Fluoranthene	<0.1
Pyrene	<0.1
Benz(a)anthracene	<0.1
Chrysene	<0.1
Benzo(a)pyrene	<0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	<0.1
Indeno(1,2,3-cd)pyrene	<0.1
Dibenz(a,h)anthracene	<0.1
Benzo(g,h,i)perylene	<0.1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	MW-8	Client:	Chilkat Environmental
Date Received:	05/28/10	Project:	Delta Western, F&BI 005260
Date Extracted:	06/01/10	Lab ID:	005260-10
Date Analyzed:	06/02/10 16:43	Data File:	060208.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	73	50	150
Benzo(a)anthracene-d12	79	50	129

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.1
Acenaphthylene	<0.1
Acenaphthene	<0.1
Fluorene	<0.1
Phenanthrene	<0.1
Anthracene	<0.1
Fluoranthene	<0.1
Pyrene	<0.1
Benz(a)anthracene	<0.1
Chrysene	<0.1
Benzo(a)pyrene	<0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	<0.1
Indeno(1,2,3-cd)pyrene	<0.1
Dibenz(a,h)anthracene	<0.1
Benzo(g,h,i)perylene	<0.1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	Chilkat Environmental
Date Received:	NA	Project:	Delta Western, F&BI 005260
Date Extracted:	06/01/10	Lab ID:	00-825 mb
Date Analyzed:	06/01/10	Data File:	060121.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	75	50	150
Benzo(a)anthracene-d12	88	50	129

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.1
Acenaphthylene	<0.1
Acenaphthene	<0.1
Fluorene	<0.1
Phenanthrene	<0.1
Anthracene	<0.1
Fluoranthene	<0.1
Pyrene	<0.1
Benz(a)anthracene	<0.1
Chrysene	<0.1
Benzo(a)pyrene	<0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	<0.1
Indeno(1,2,3-cd)pyrene	<0.1
Dibenz(a,h)anthracene	<0.1
Benzo(g,h,i)perylene	<0.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR MTBE, BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES, AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND AK 101**

Laboratory Code: 005260-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	ug/L (ppb)	120	117	3
Toluene	ug/L (ppb)	31	31	2
Ethylbenzene	ug/L (ppb)	<10	<10	0
Xylenes	ug/L (ppb)	<10	<10	0
Gasoline	ug/L (ppb)	1,000	1,000	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	50	79	91	65-118	14
Toluene	ug/L (ppb)	50	83	96	72-122	15
Ethylbenzene	ug/L (ppb)	50	80	92	73-126	14
Xylenes	ug/L (ppb)	150	83	96	74-118	15
Gasoline	ug/L (ppb)	1,000	107	111	69-134	4



FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL  
USING METHOD AK 102**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel	ug/L (ppb)	2,500	85	83	75-125	2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL  
USING METHOD AK 102**

Laboratory Code: Laboratory Control Sample Silica Gel

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel	ug/L (ppb)	2,500	84	89	75-125	6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER  
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL  
USING METHOD AK 103**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Motor Oil	ug/L (ppb)	2,500	91	96	60-120	5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER  
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL  
USING METHOD AK 103**

Laboratory Code: Laboratory Control Sample Silica Gel

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Motor Oil	ug/L (ppb)	2,500	88	103	60-120	16

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/07/10

Date Received: 05/28/10

Project: Delta Western, F&BI 005260

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	79	88	68-101	11
2-Methylnaphthalene	ug/L (ppb)	5	80	88	48-116	10
1-Methylnaphthalene	ug/L (ppb)	5	80	88	61-105	10
Acenaphthylene	ug/L (ppb)	5	78	86	68-102	10
Acenaphthene	ug/L (ppb)	5	78	88	69-104	12
Fluorene	ug/L (ppb)	5	77	86	63-109	11
Phenanthrene	ug/L (ppb)	5	77	86	66-106	11
Anthracene	ug/L (ppb)	5	72	80	67-112	11
Fluoranthene	ug/L (ppb)	5	79	89	69-116	12
Pyrene	ug/L (ppb)	5	78	89	68-115	13
Benz(a)anthracene	ug/L (ppb)	5	71	82	65-102	14
Chrysene	ug/L (ppb)	5	73	86	66-103	16
Benzo(b)fluoranthene	ug/L (ppb)	5	70	87	66-112	22 vo
Benzo(k)fluoranthene	ug/L (ppb)	5	67	87	64-116	26 vo
Benzo(a)pyrene	ug/L (ppb)	5	64	81	61-108	23 vo
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	58	75	50-120	26 vo
Dibenz(a,h)anthracene	ug/L (ppb)	5	56	76	51-115	30 vo
Benzo(g,h,i)perylene	ug/L (ppb)	5	60	78	50-113	26 vo

**Data Qualifiers & Definitions**

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 - More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

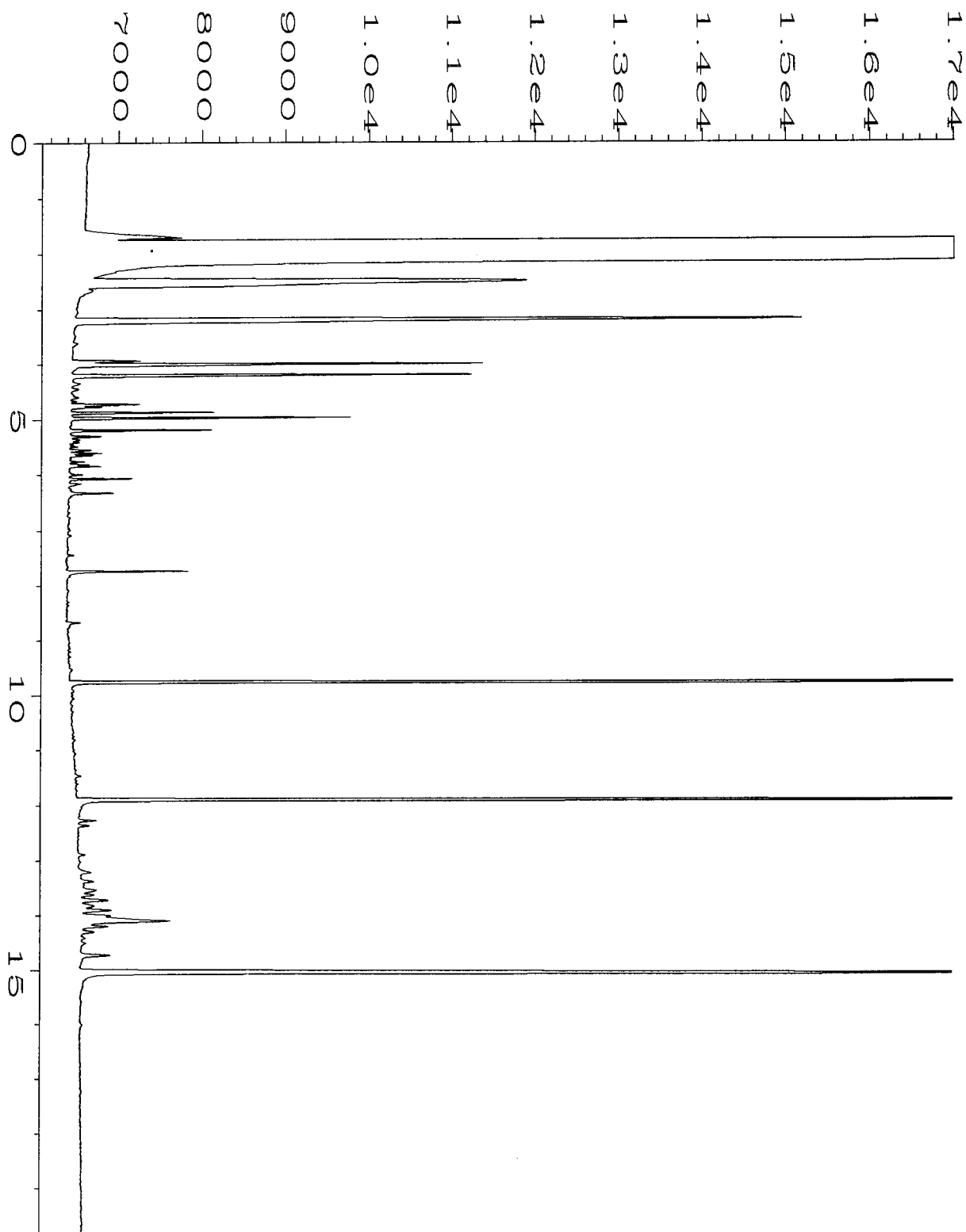
pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

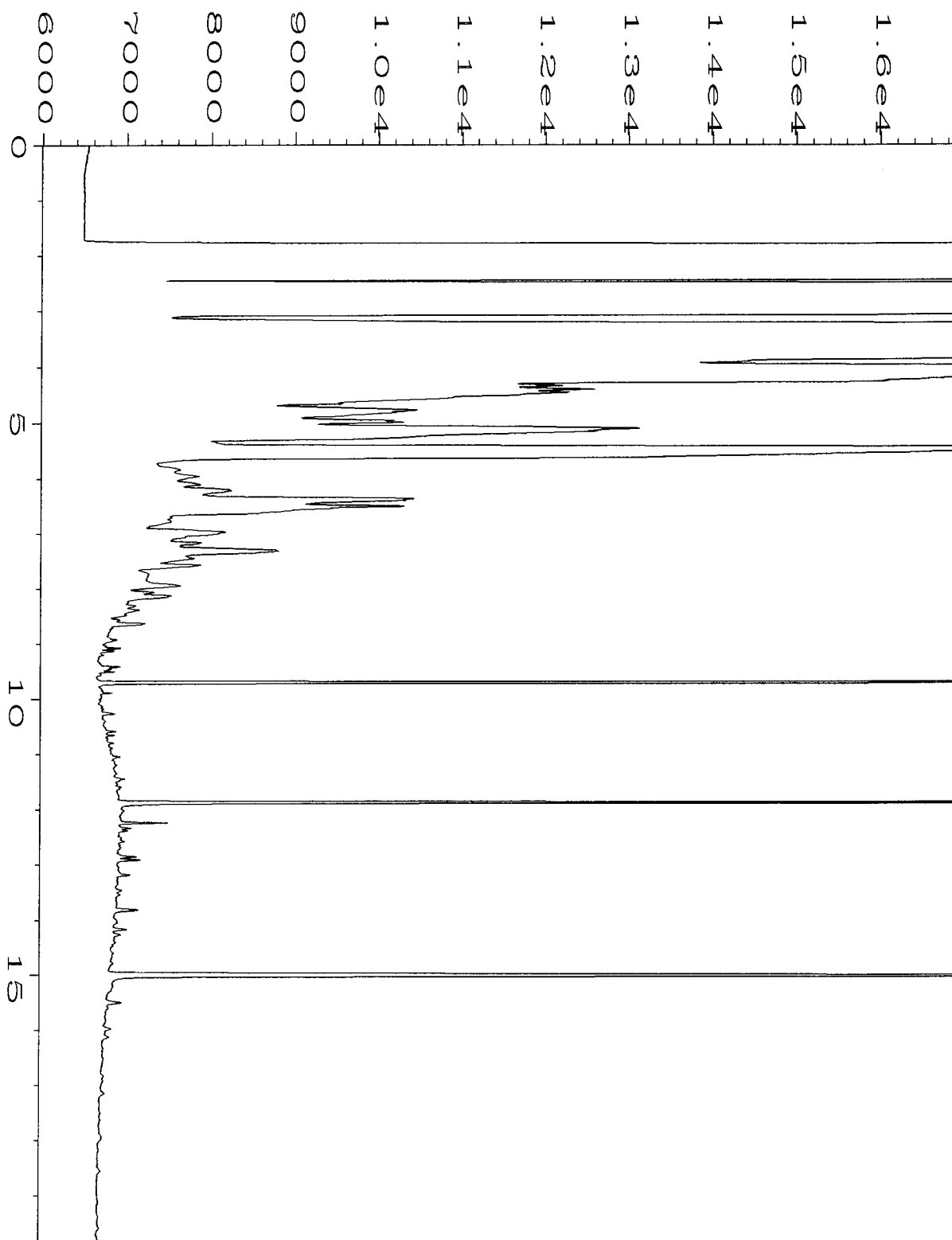
ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

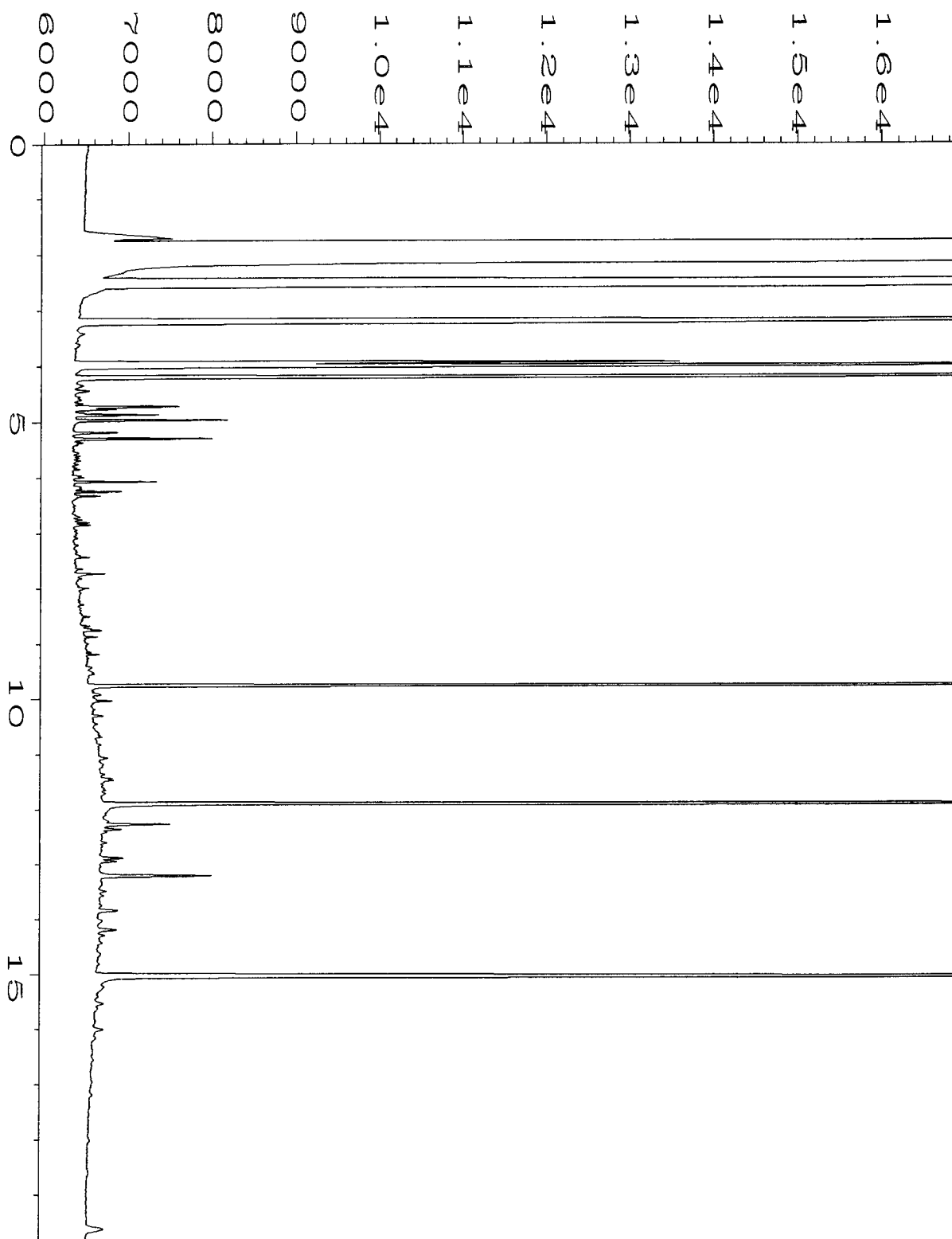


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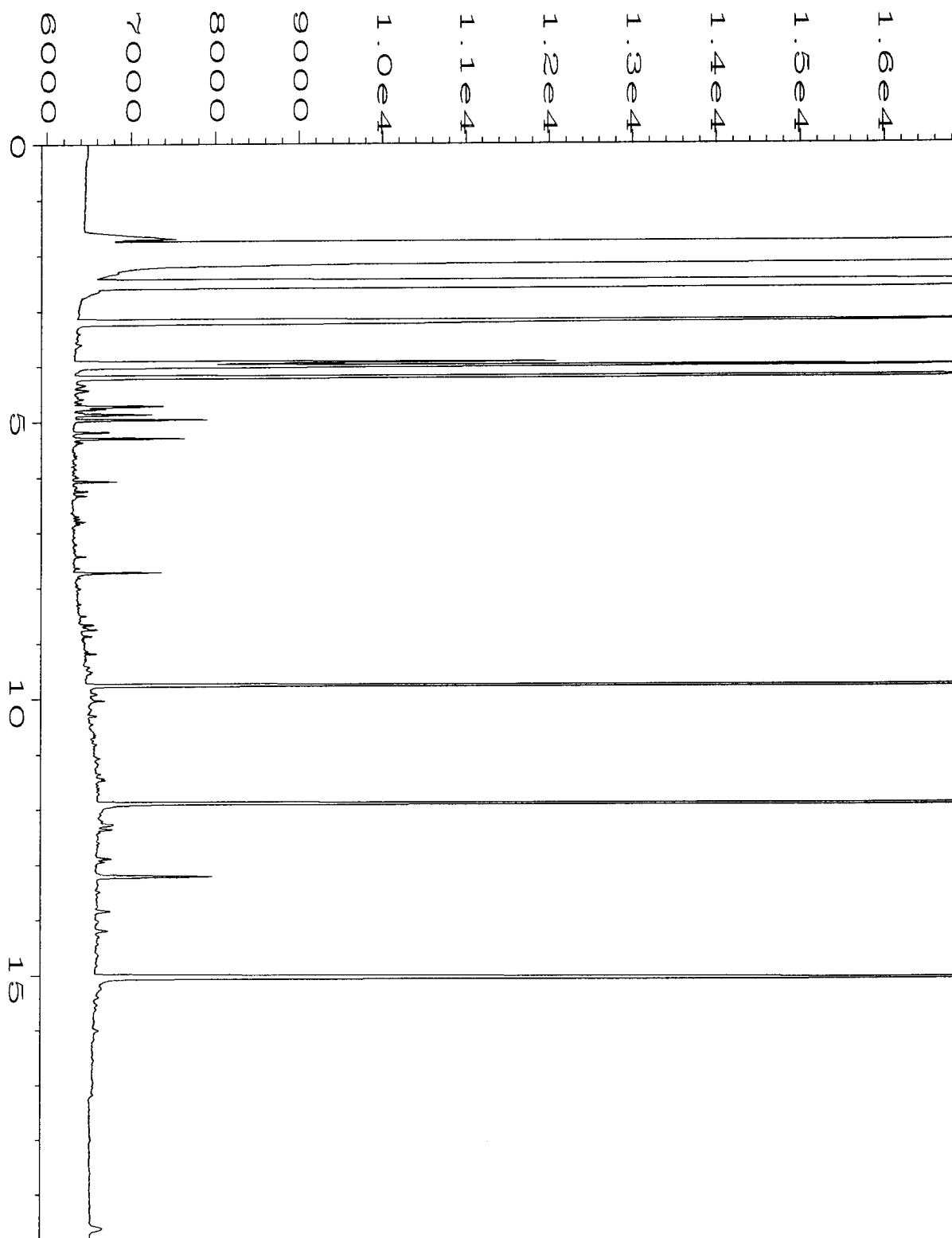


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Instrument	: GC1	Injection Number	: 1
Sample Name	: 005260-02 sg	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	TPHD.MTH
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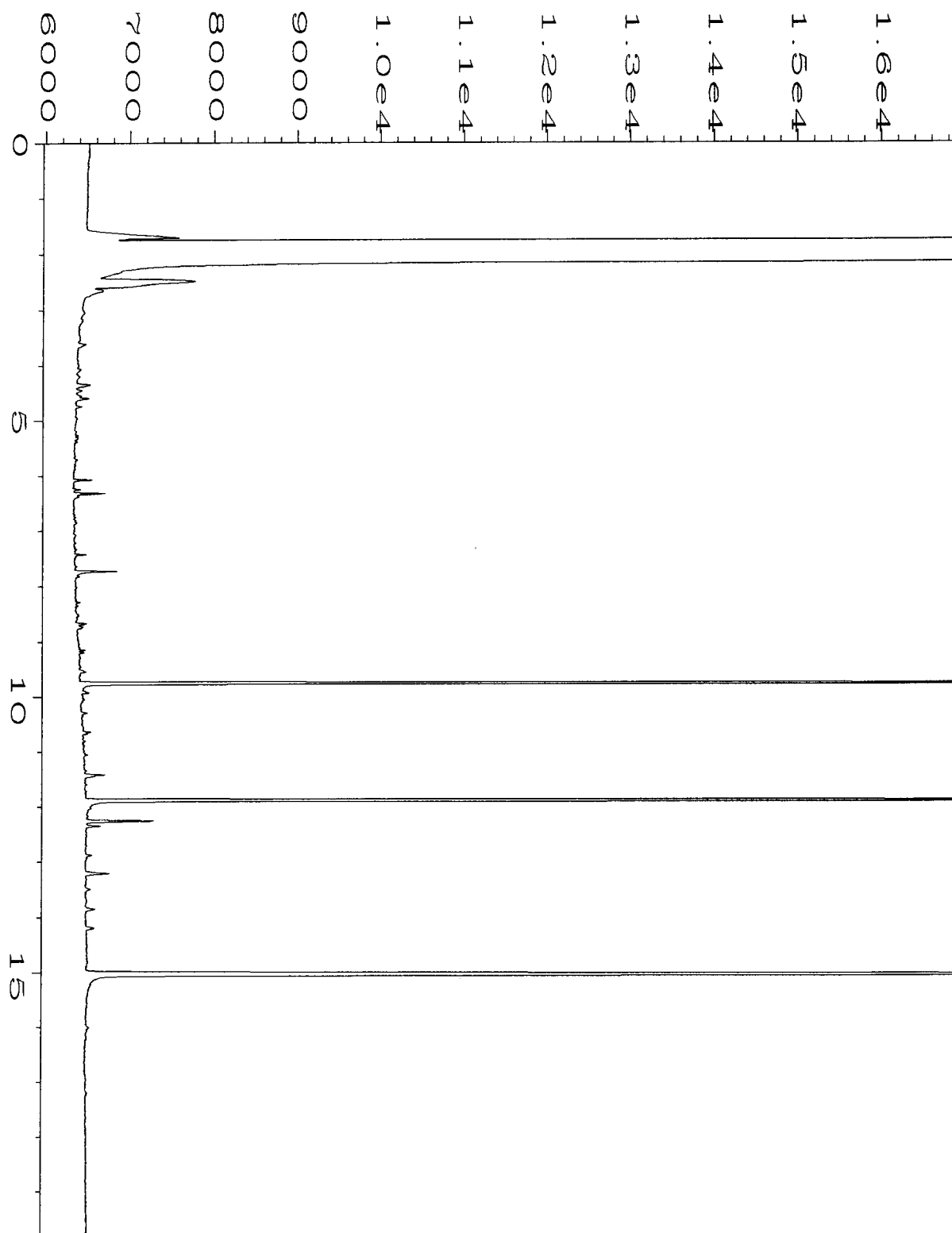




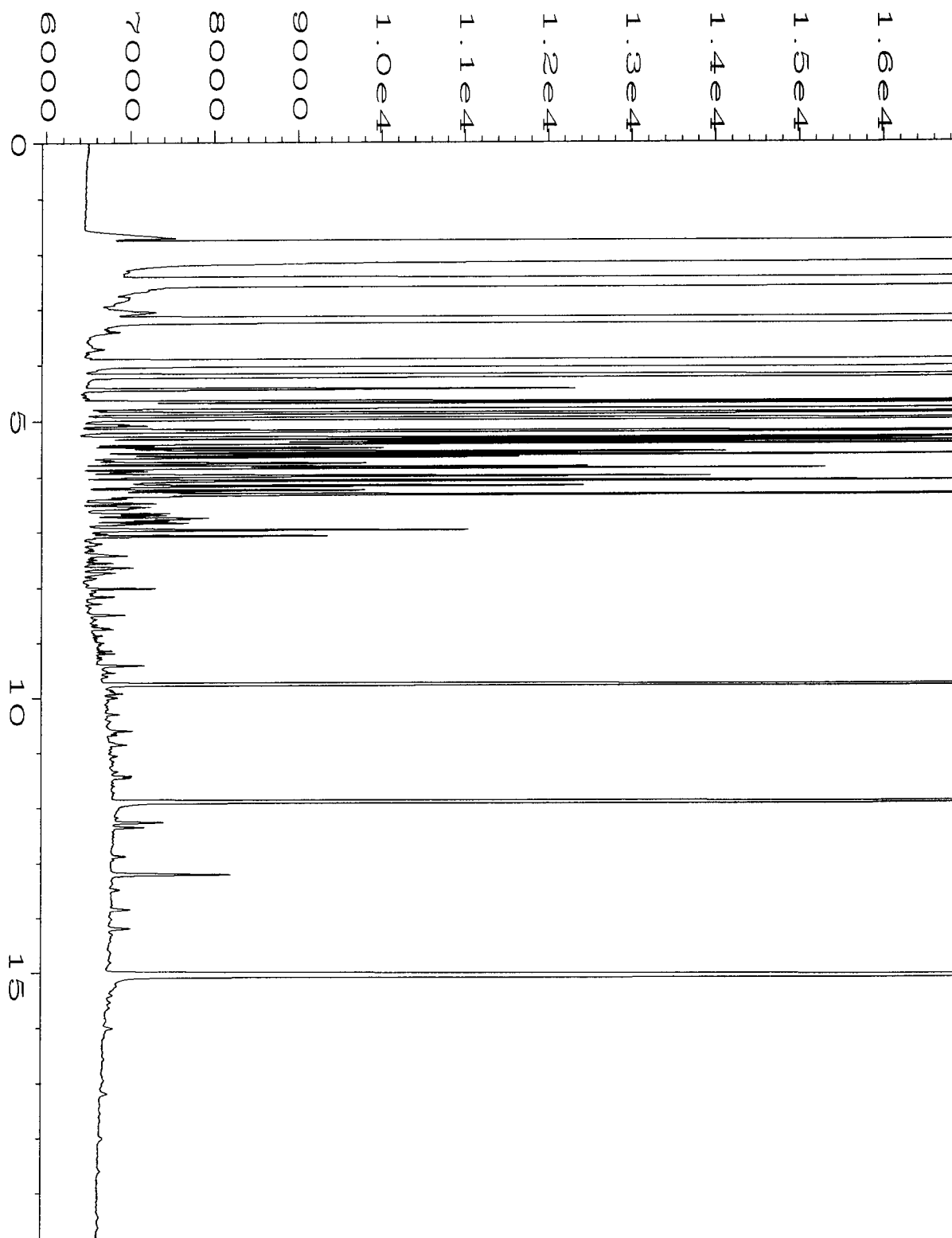
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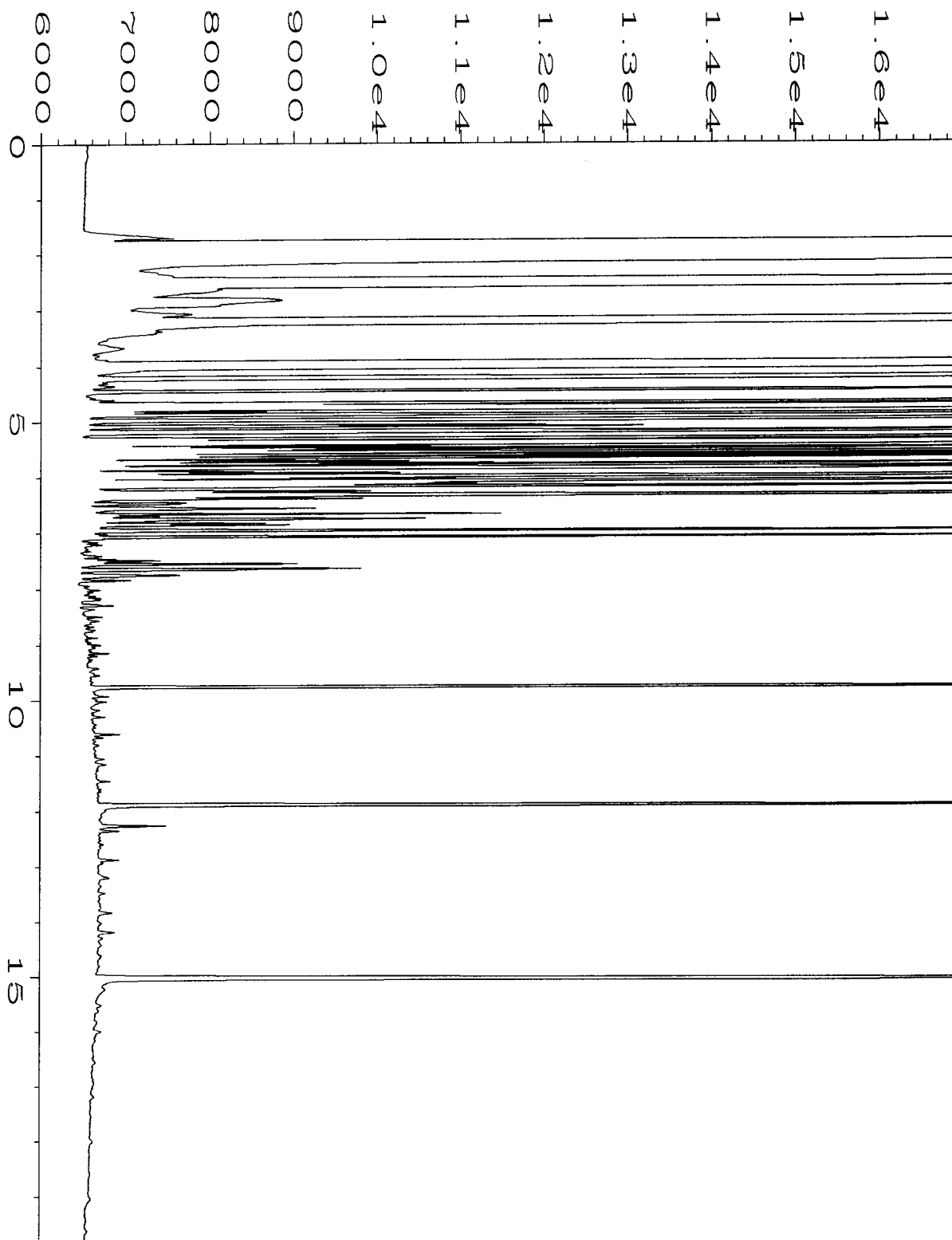
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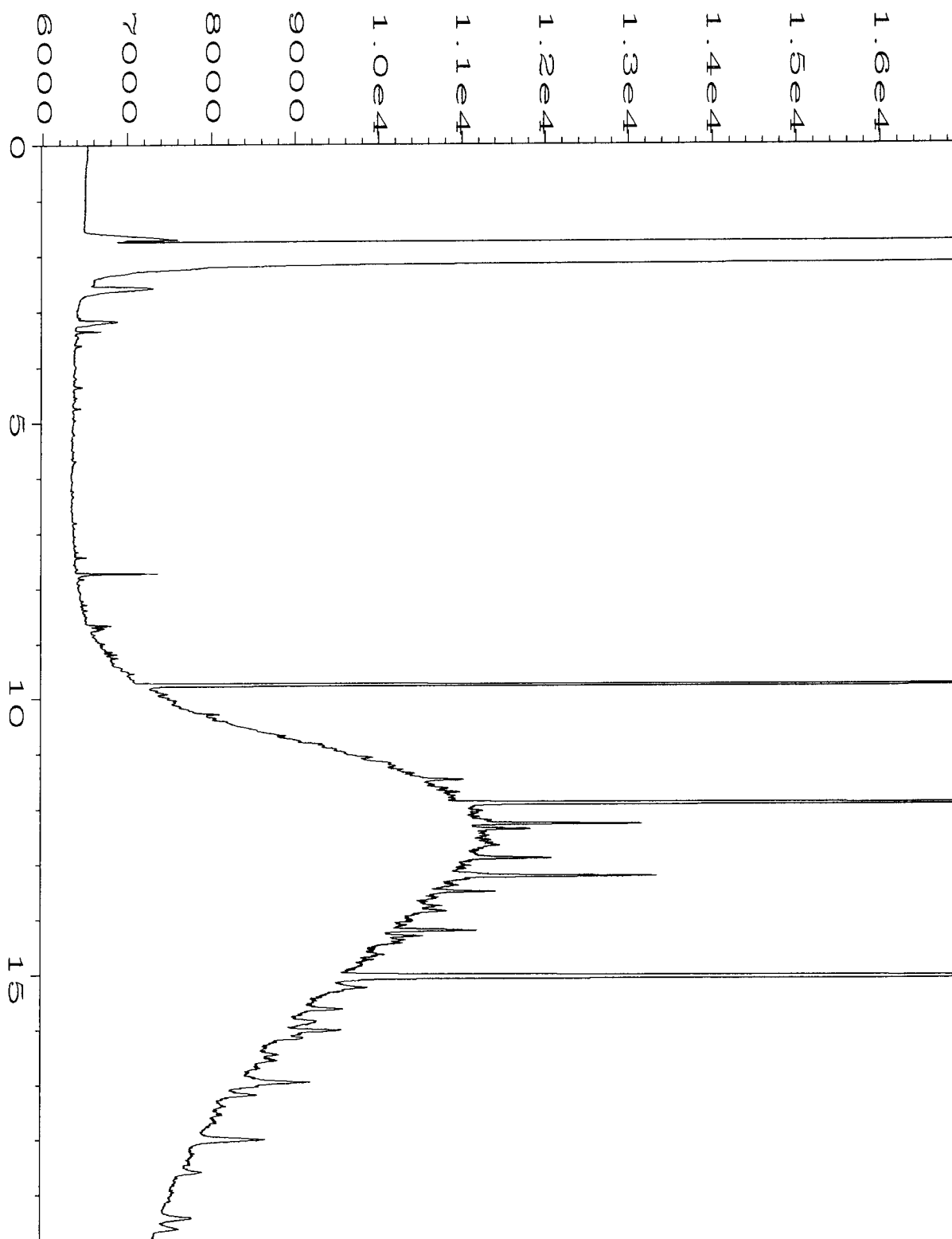
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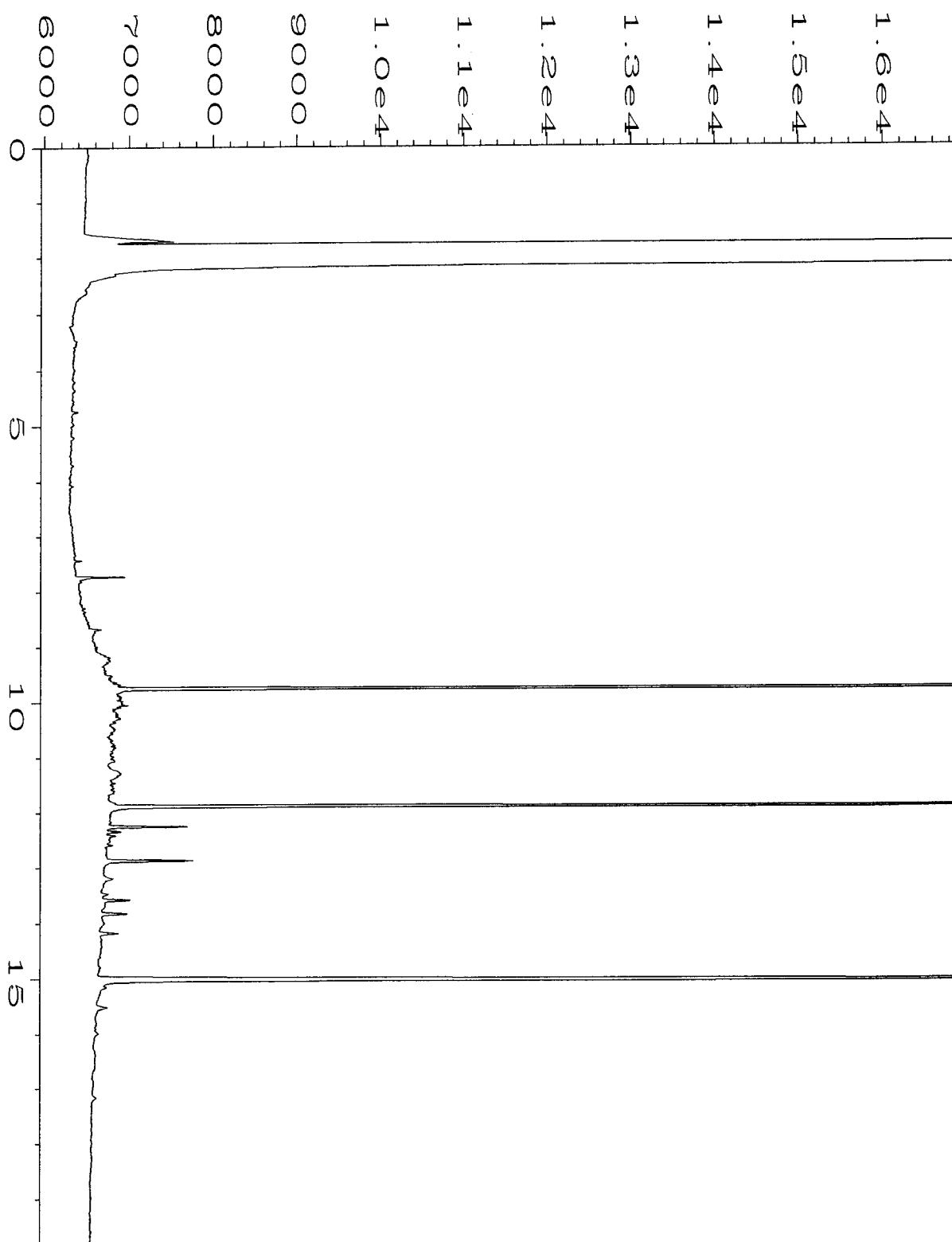
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Sample Name	: 005260-07 sg	Sequence Line	: 6
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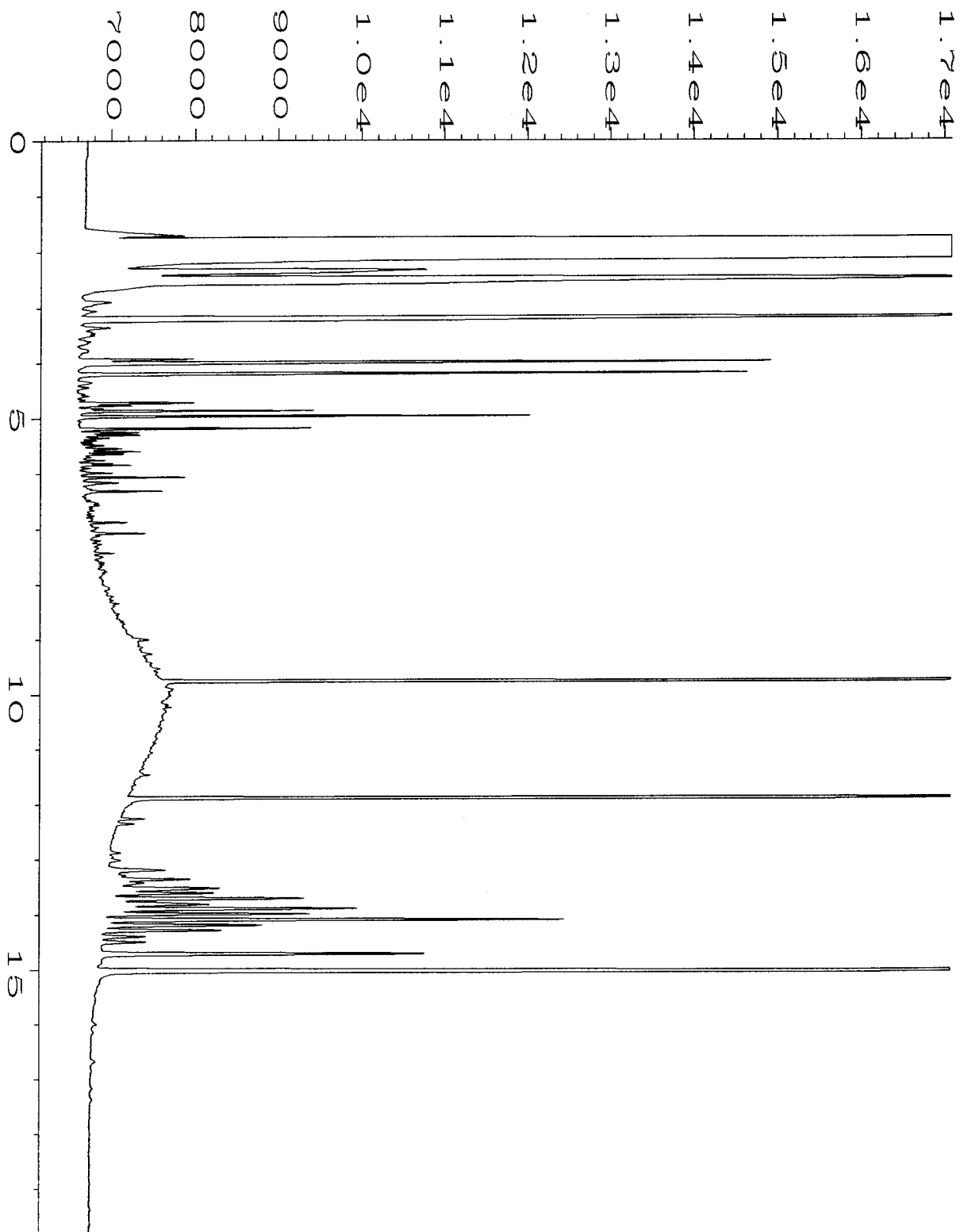
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Operator	: SO	Vial Number	: 15
Instrument	: GC1	Injection Number	: 1
Sample Name	: 005260-09 sg	Sequence Line	: 6
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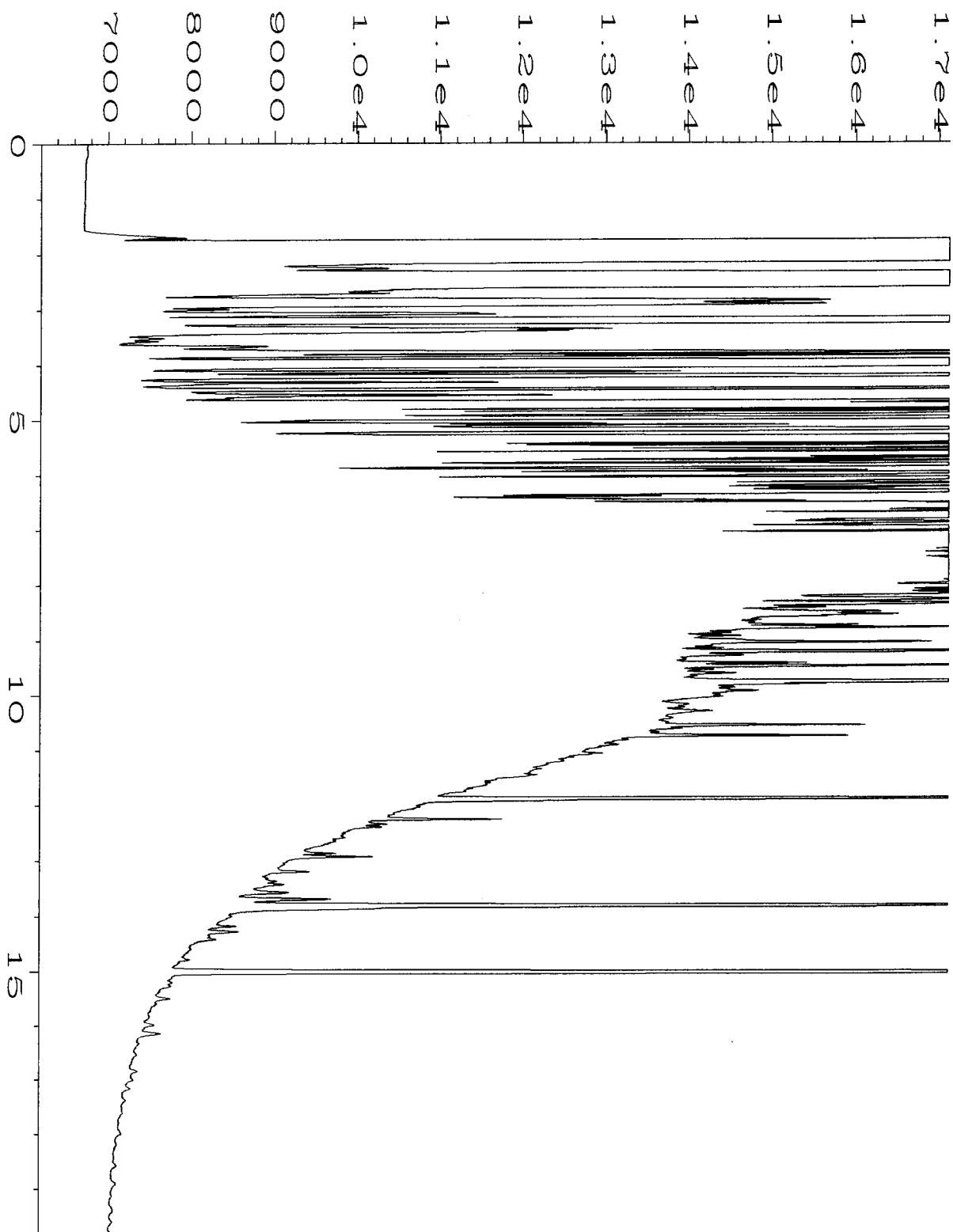


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Instrument	: GC1	Injection Number	: 1
Sample Name	: 005260-10 sg	Sequence Line	: 6
Run Time Bar Code:		Instrument Method	: TPHD.MTH
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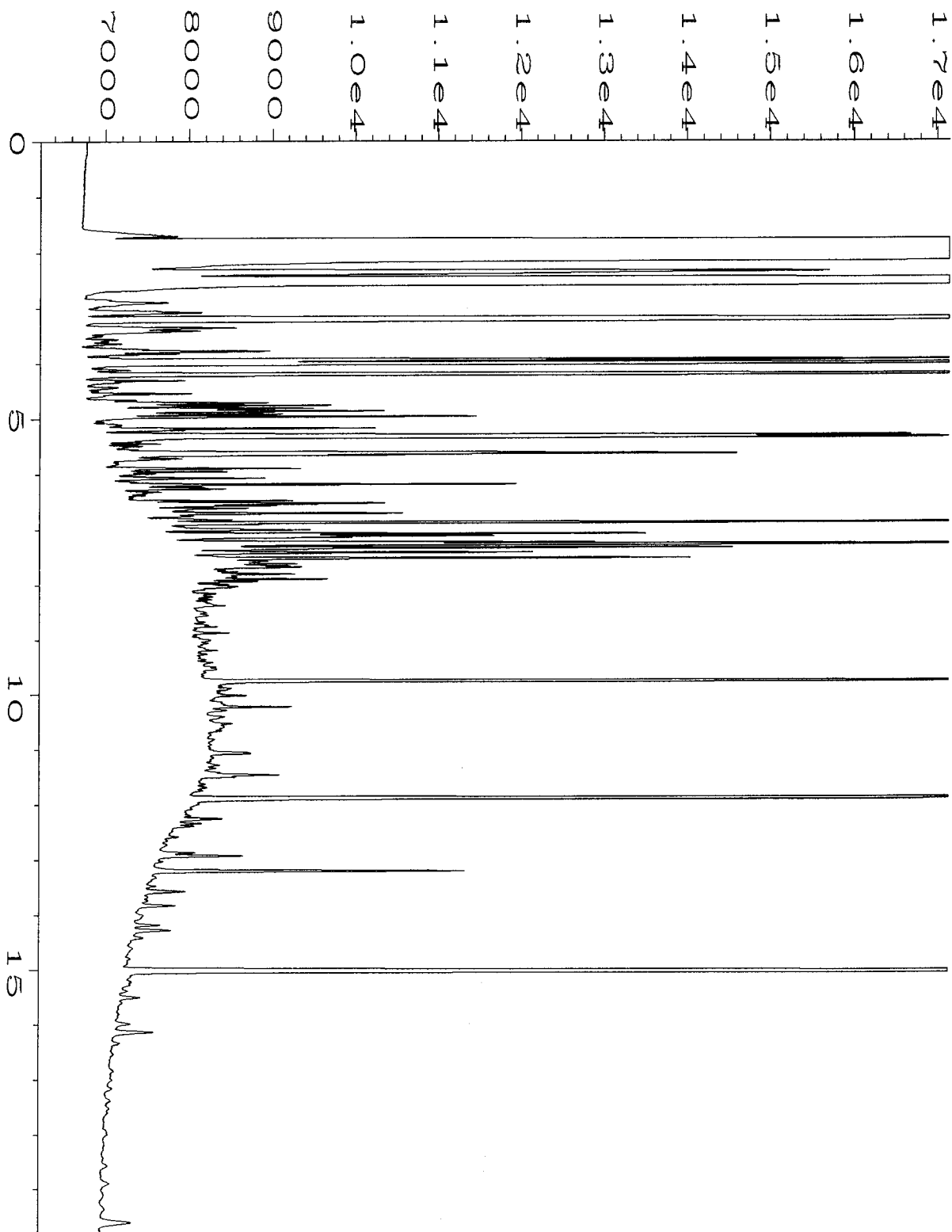


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Instrument	: GC1	Injection Number	: 1
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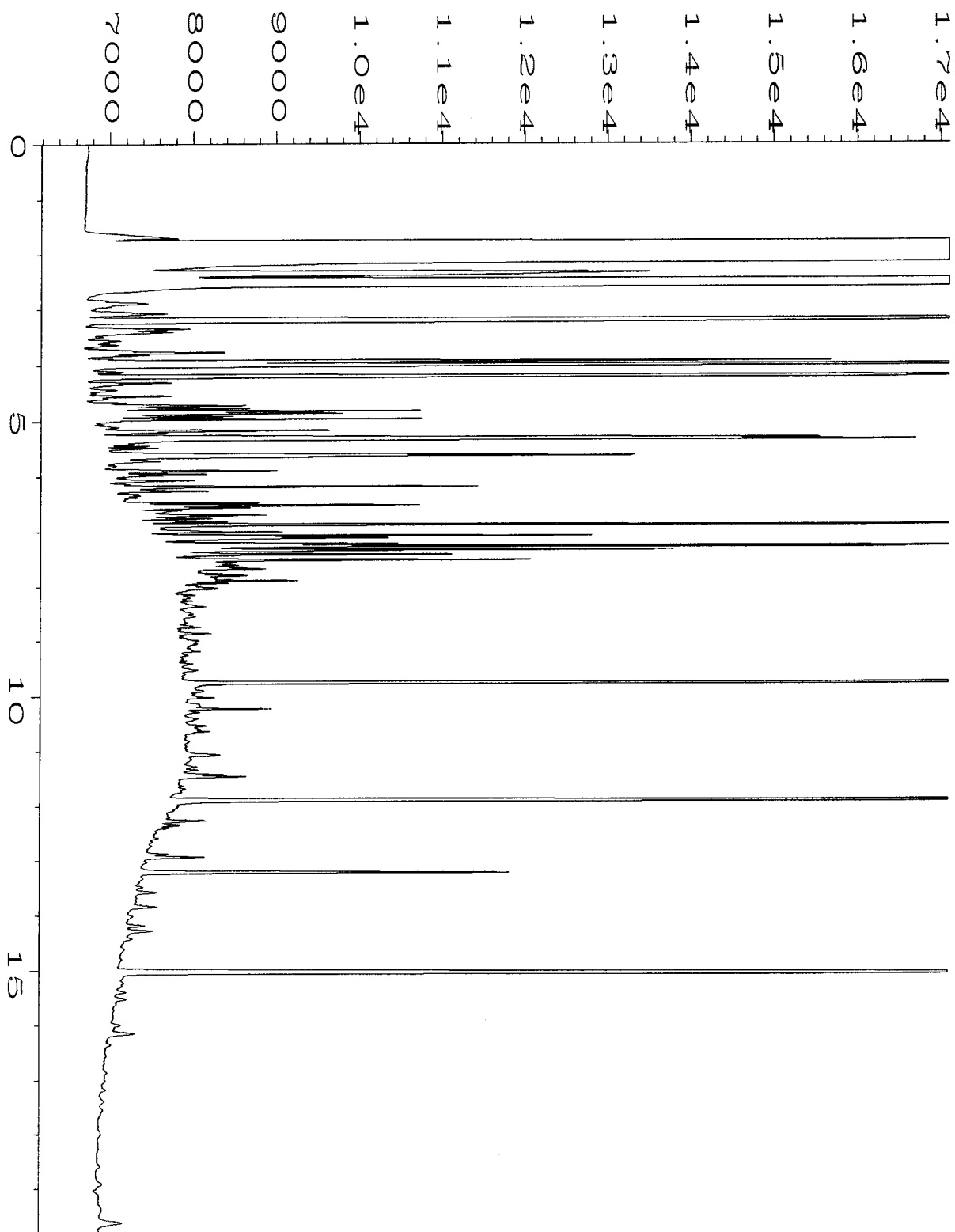




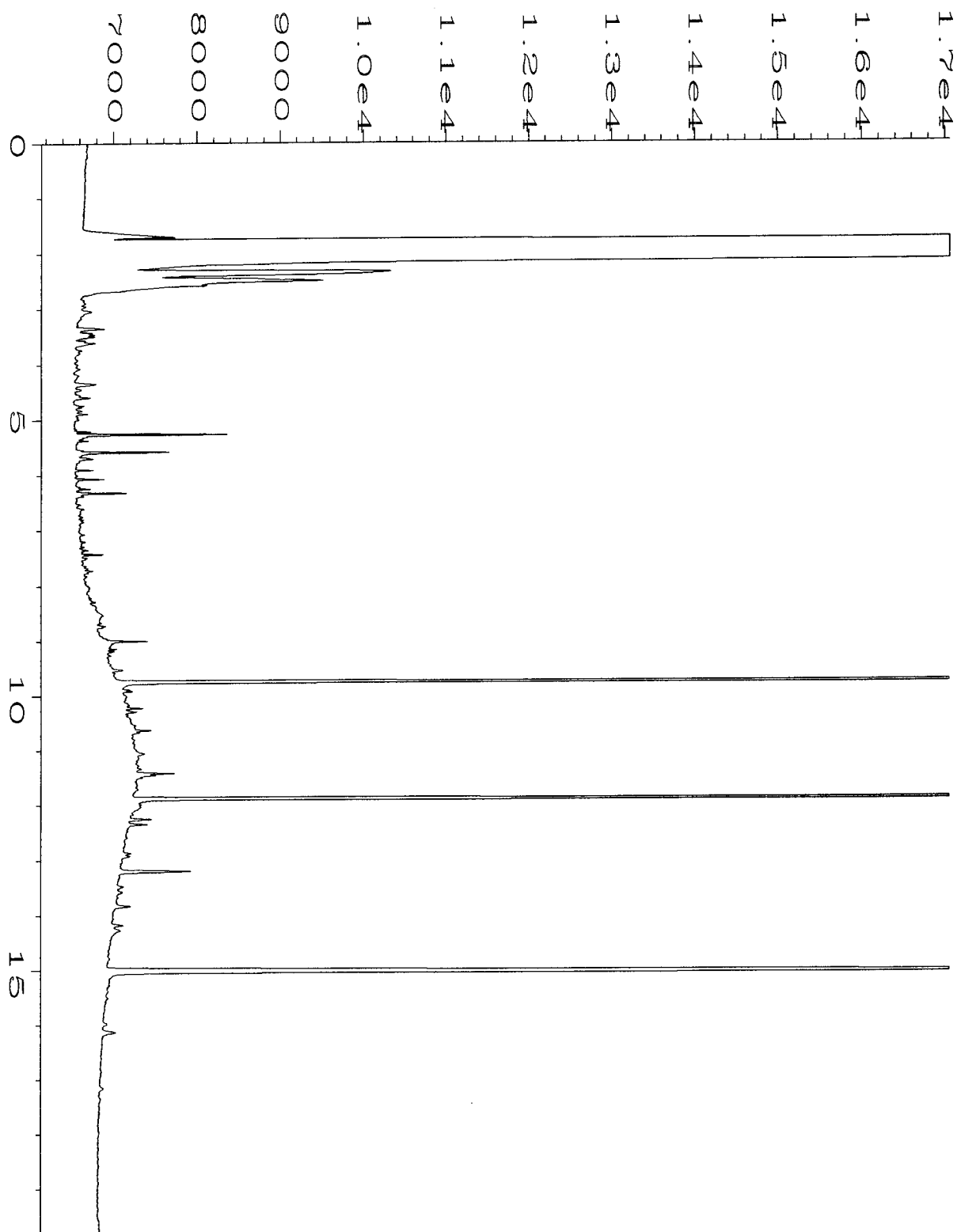
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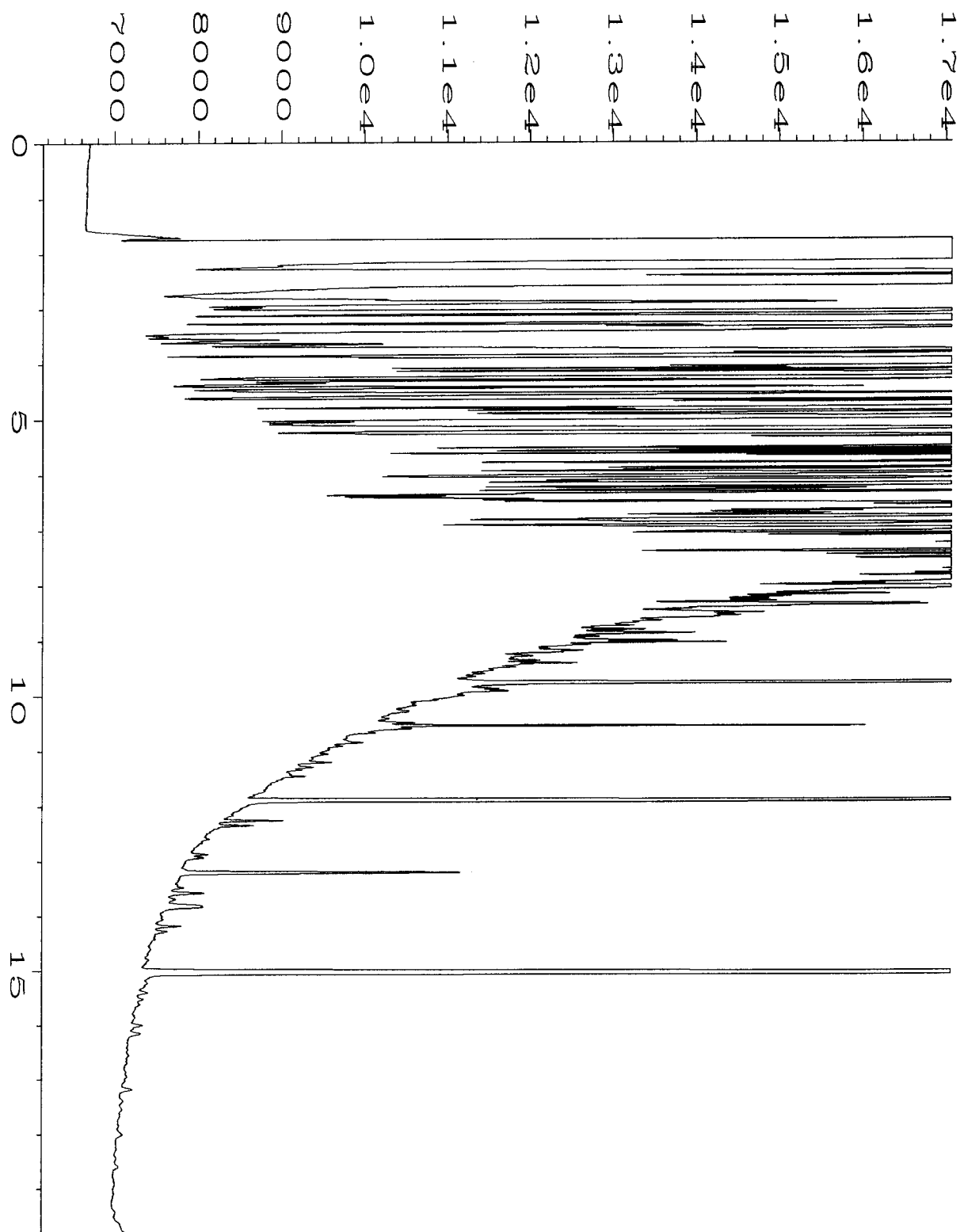
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Operator	: SO	Vial Number	: 13
Instrument	: GC1	Injection Number	: 1
Sample Name	: 005260-03	Sequence Line	: 5
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Report Created on:	07 Jun 10 04:19 PM		



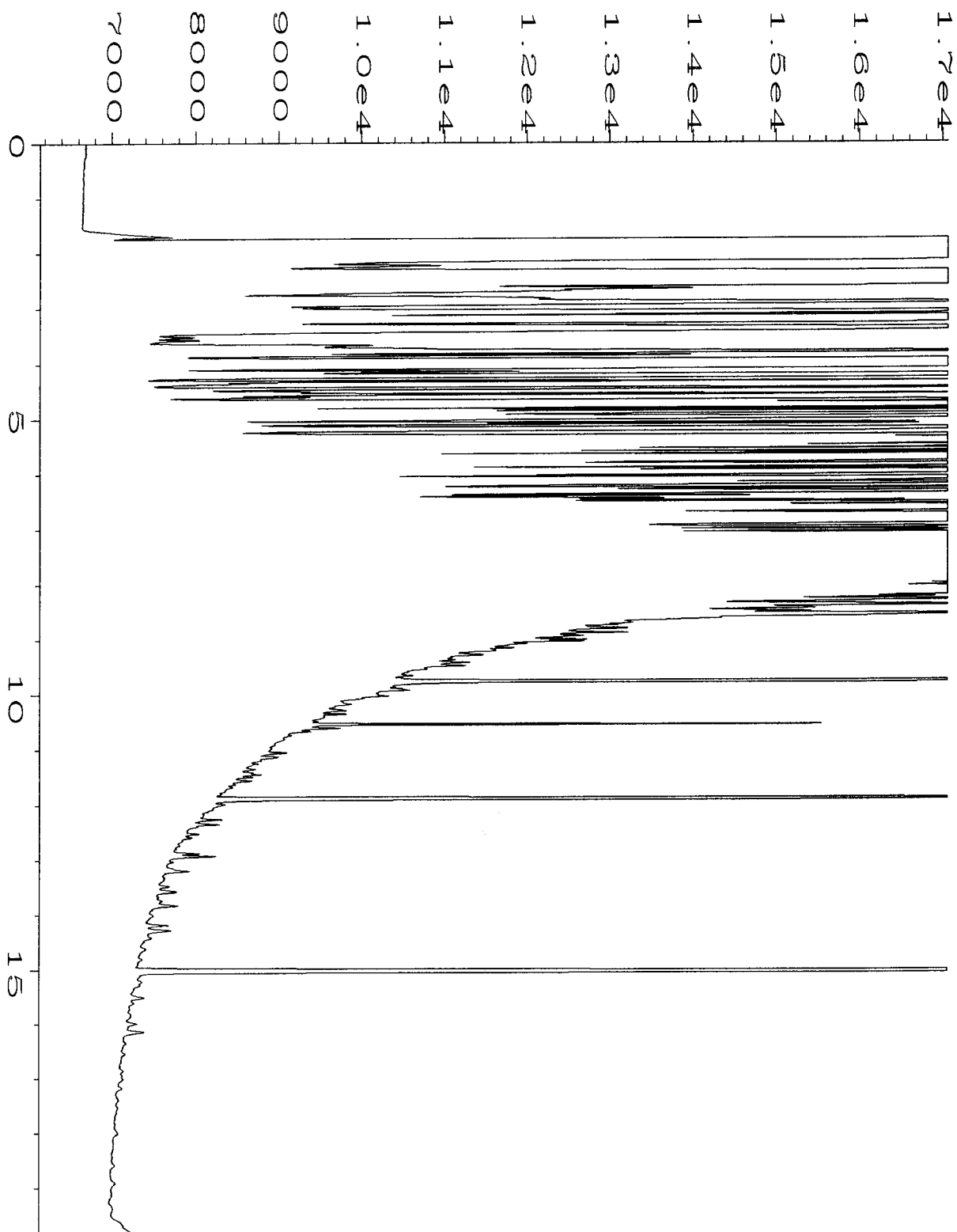
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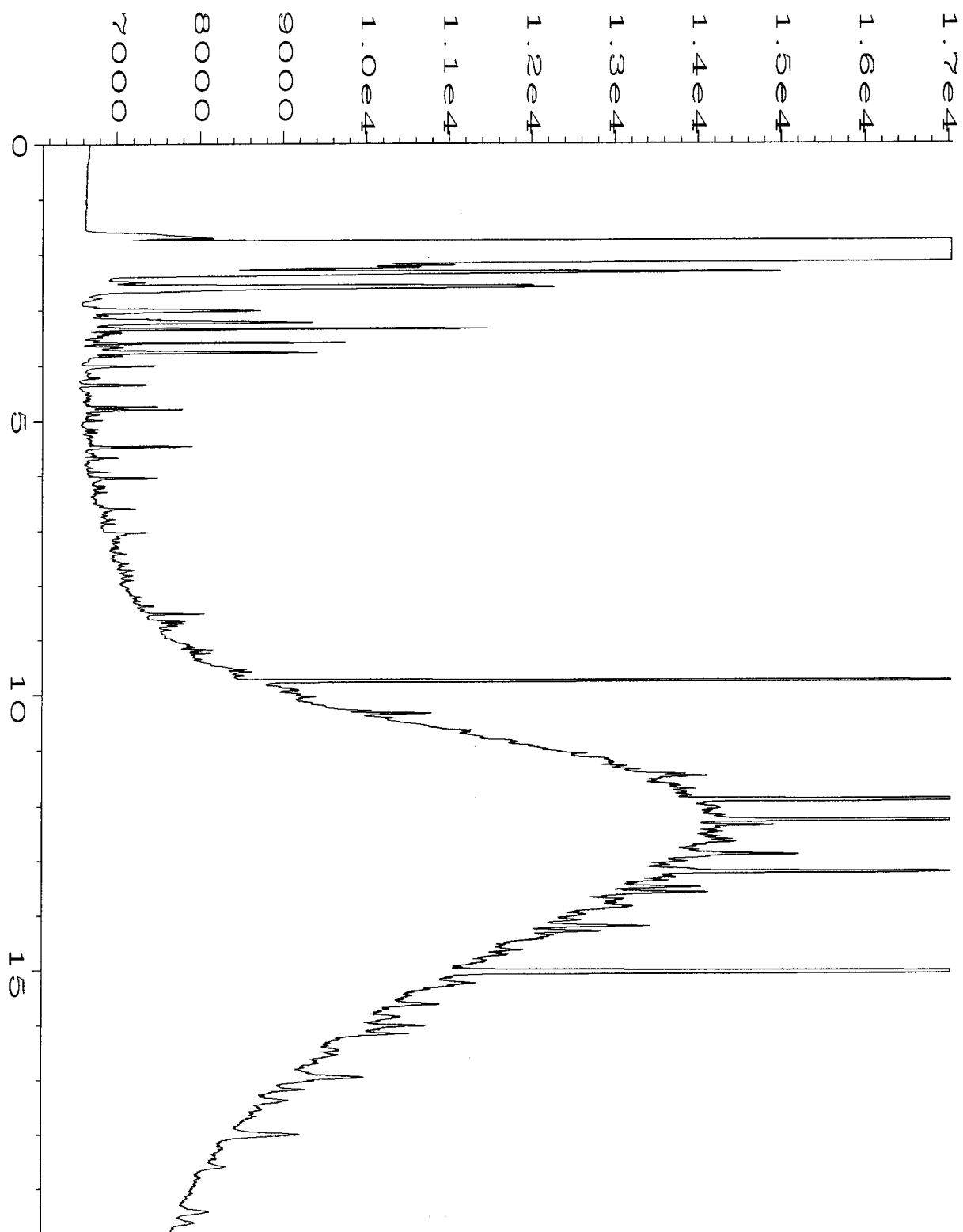
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Sample Name	: 005260-06	Sequence Line	: 5
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Report Created on:	07 Jun 10 04:20 PM		



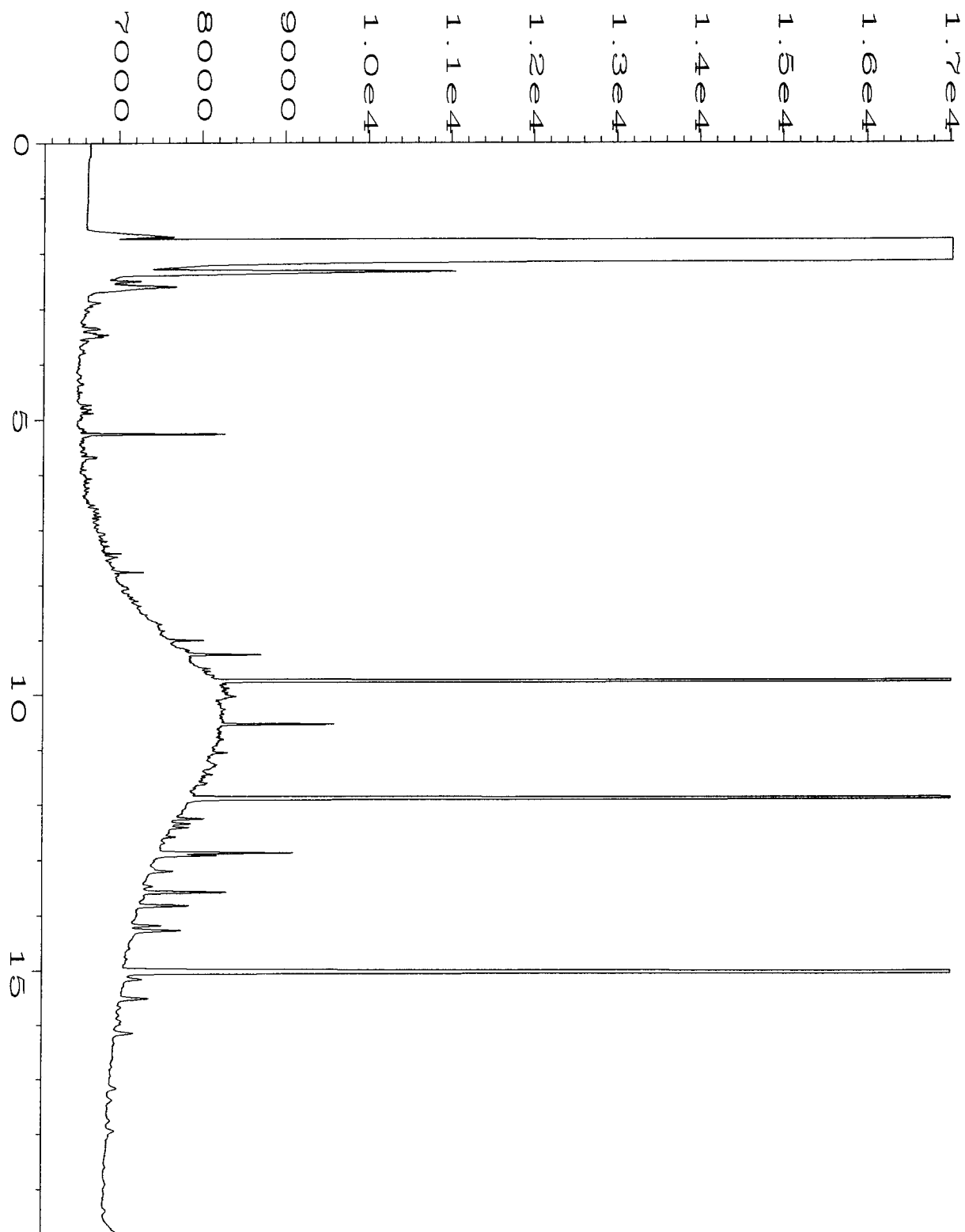
Data File Name	: C:\HPCHEM\1\DATA\06-03-10\016F0501.D	Page Number	: 1
Operator	: SO	Vial Number	: 16
Instrument	: GC1	Injection Number	: 1
Sample Name	: 005260-07	Sequence Line	: 5
Run Time Bar Code:		Instrument Method:	TPHD.MTH
Acquired on	: 03 Jun 10 05:43 PM	Analysis Method	: TPHD.MTH
Report Created on:	07 Jun 10 04:20 PM		



Data File Name	: C:\HPCHEM\1\DATA\06-03-10\017F0501.D	Page Number	: 1
Operator	: SO	Vial Number	: 17
Instrument	: GC1	Injection Number	: 1
Sample Name	: 005260-08	Sequence Line	: 5
Run Time Bar Code:		Instrument Method:	TPHD.MTH
Acquired on	: 03 Jun 10 06:10 PM	Analysis Method	: TPHD.MTH
Report Created on:	07 Jun 10 04:20 PM		

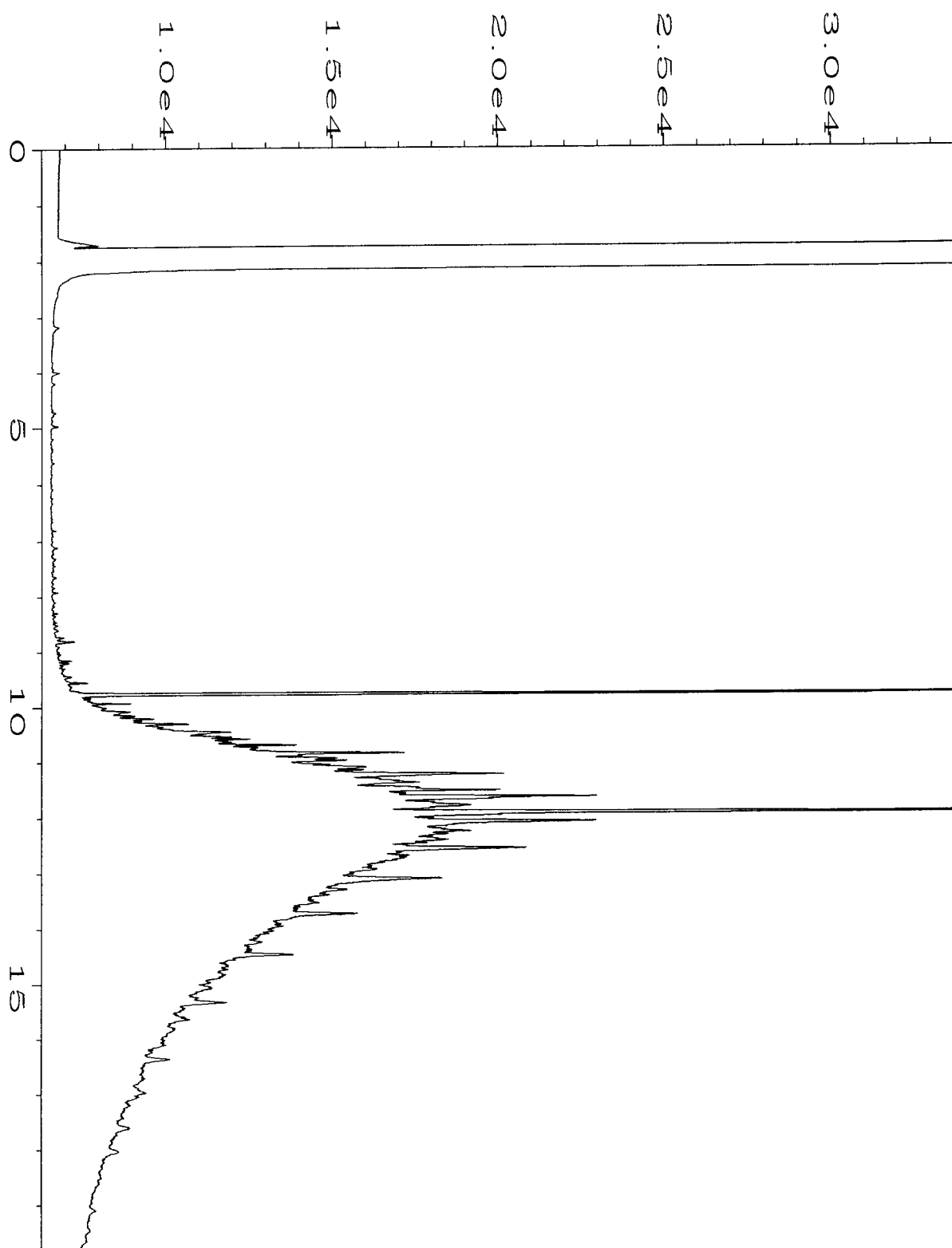


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Operator	: SO	Vial Number	: 18
Instrument	: GC1	Injection Number	: 1
Sample Name	: 005260-09	Sequence Line	: 5
Run Time Bar Code:		Instrument Method:	TPHD.MTH
Acquired on	: 03 Jun 10 06:37 PM	Analysis Method	: TPHD.MTH
Report Created on:	07 Jun 10 04:20 PM		

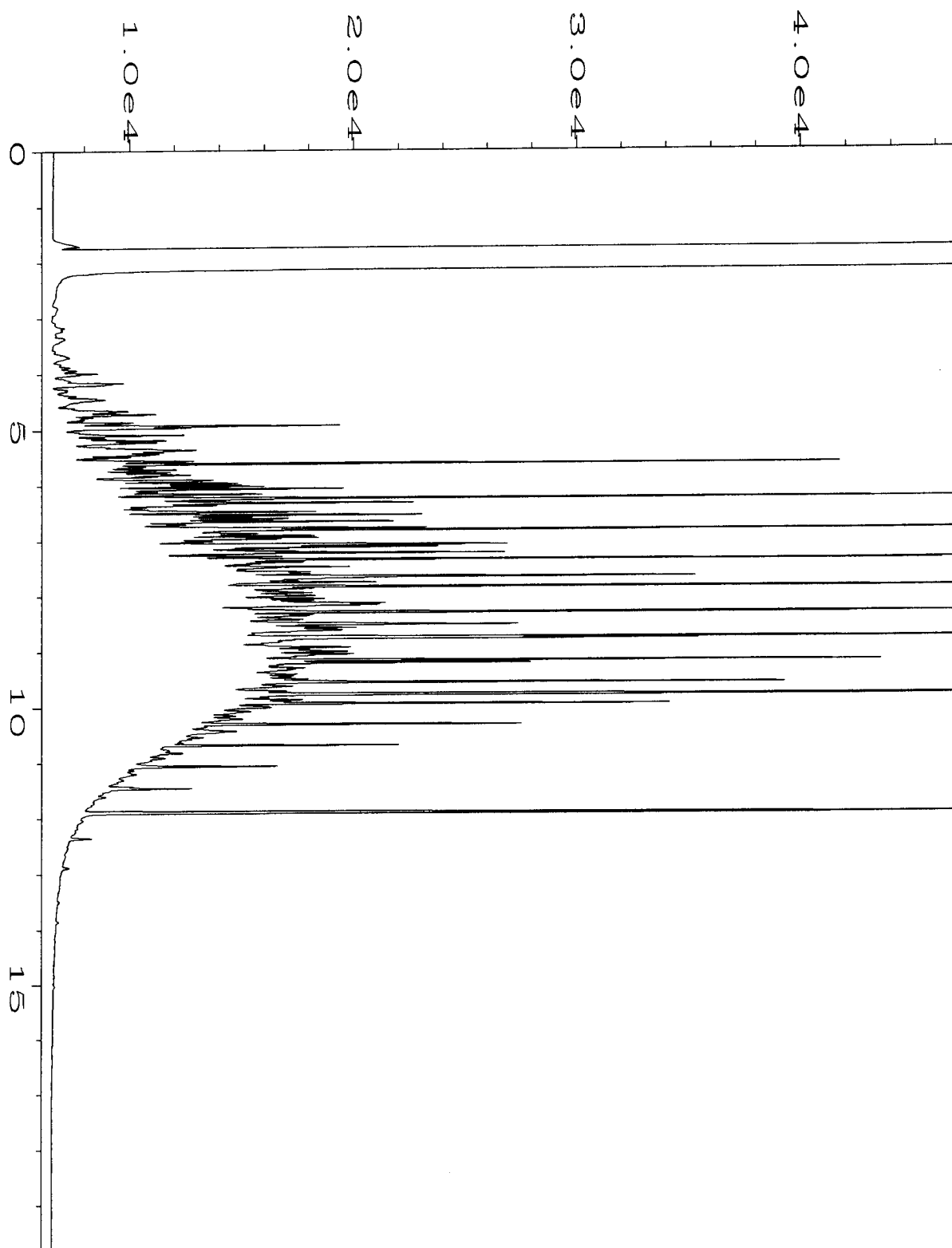


Data File Name	: C:\HPCHEM\1\DATA\06-03-10\019F0501.D	Page Number	: 1
Operator	: SO	Vial Number	: 19
Instrument	: GC1	Injection Number	: 1
Sample Name	: 005260-10	Sequence Line	: 5
Run Time Bar Code:		Instrument Method	: TPHD.MTH
Acquired on	: 03 Jun 10 07:04 PM	Analysis Method	: TPHD.MTH
Report Created on:	07 Jun 10 04:20 PM		





Data File Name	: C:\HPCHEM\1\DATA\06-04-10\002F0201.D	Page Number	: 1
Operator	: SO	Vial Number	: 2
Instrument	: GC1	Injection Number	: 1
Sample Name	: 30-106H 500 MO	Sequence Line	: 2
Run Time Bar Code:		Instrument Method:	TPHD.MTH
Acquired on	: 04 Jun 10 06:03 AM	Analysis Method	: TPHD.MTH
Report Created on:	07 Jun 10 04:16 PM		



Data File Name	: C:\HPCHEM\1\DATA\06-04-10\003F0201.D	Page Number	: 1
Operator	: SO	Vial Number	: 3
Instrument	: GC1	Injection Number	: 1
Sample Name	: 32-80b 500 WADF	Sequence Line	: 2
Run Time Bar Code:		Instrument Method:	TPHD.MTH
Acquired on	: 04 Jun 10 06:30 AM	Analysis Method	: TPHD.MTH
Report Created on:	07 Jun 10 04:16 PM		

## SAMPLE CHAIN OF CUSTODY

V4/B05

Page # 1 of 2

Company Chickat Environmental

City, State, ZIP Barrow AK 99827

Phone # 761 303 7899 Fax # 616 611 1111

*Eligmodontia laterocarinata*, Cuvr

ANALYSES REQUESTED

PO #

De lta wisteria

REMARKS
W49 61000476

☐ Standard (2 Weeks)

DRUSH / *live* / k

Rush charges authorized by:

### SAMPLE DISPOSAL

☒ Dispose after 30 days

Return samples

☐ Will call with instructions

[illegible]

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS\COC\COC.DOC

PRINT NAME \_\_\_\_\_

COMPANY

DATE \_\_\_\_\_

TIME

Relinquished by:

10

Received by:

Relinquished by: 11/27/18

Received by:

11th Dec

R. Heav Pham

Chalky En

FBI

5/27/08

5/28/10

0730

0800

Samples received at

Qa 7

V4/BOS

Phone # 907 303 7899 Fax # Circa!

Eligible children + environmental risk

Page # 2 of 2

**TURNAROUND TIME**

☐ Standard (2 Weeks)

☒ **RUSH** \_\_\_\_\_

Rush charges authorized by: \_\_\_\_\_

\_\_\_\_\_  
1-2-74

**SAMPLE DISPOSAL**

☒ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

[illegible]

**Laboratory Data Review Checklist**

Completed by:

Title:

Date:

CS Report Name:

Report Date:

Consultant Firm:

Laboratory Name:

Laboratory Report Number:

ADEC File Number:

ADEC RecKey Number:

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

☒ Yes ☐ No

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

☐ Yes ☒ No

Comments:

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

☒ Yes ☐ No

Comments:

- b. Correct analyses requested?

☒ Yes ☐ No

Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ( $4^{\circ} \pm 2^{\circ} \text{C}$ )?

☒ Yes ☐ No

Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

☒ Yes ☐ No

Comments:

- c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

☒ Yes ☐ No

Comments:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

☒ Yes ☐ No

Comments: No discrepancies

- e. Data quality or usability affected? Explain.

No

Comments:

### 4. Case Narrative

- a. Present and understandable?

☒ Yes ☐ No

Comments:

- b. Discrepancies, errors or QC failures identified by the lab?

☒ Yes ☐ No

Comments:

- c. Were all corrective actions documented?

☒ Yes ☐ No

Comments:

d. What is the effect on data quality/usability according to the case narrative?

No effect

Comments:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☒ Yes

☐ No

Comments:

b. All applicable holding times met?

☒ Yes

☐ No

Comments:

c. All soils reported on a dry weight basis?

☒ Yes

☐ No

Comments: N/A

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☒ Yes

☐ No

Comments:

e. Data quality or usability affected?

No

Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☒ Yes

☐ No

Comments:

ii. All method blank results less than PQL?

☒ Yes

☐ No

Comments:

iii. If above PQL, what samples are affected?

Comments: N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No

Comments: N/A

v. Data quality or usability affected? Explain.

No Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☒ Yes ☐ No

Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐ Yes ☐ No

Comments: N/A

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No

Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☐ Yes ☒ No

Comments:

The RPD for several 8270D SIM compounds exceeded laboratory acceptance criteria. The analytes were not detected in the samples, therefore the data were considered acceptable.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

None Comments: Analytes with failing RPD's were not detected in the samples.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No

Comments:



vii. Data quality or usability affected? (Use comment box to explain)

No

Comments:

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☒ Yes ☐ No

Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☐ Yes ☒ No

Comments:

Compounds in the sample matrix  
interfered with surrogate quantification for AK103 without silica gel.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No

Comments:

Samples flagged as "ip".

iv. Data quality or usability affected? (Use the comment box to explain.)

No

Comments:

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

☒ Yes ☐ No

Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☒ Yes ☐ No

Comments:

iii. All results less than PQL?

☒ Yes ☐ No

Comments:

iv. If above PQL, what samples are affected?

Comments: N/A

v. Data quality or usability affected? Explain.

No

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☒ Yes ☐ No

Comments:

ii. Submitted blind to lab?

☒ Yes ☐ No

Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

☒ Yes ☐ No

Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

No

Comments:

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)

☐ Yes ☒ No ☒ Not Applicable - ?

i. All results less than PQL?

☐ Yes ☐ No Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Data quality or usability affected? Explain.

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☒ Yes ☐ No Comments: