TDI - BROOKS INTERNATIONAL, INC.
B&B Laboratories, Inc.
College Station, TX

Arcadis
Mayflower AR Project
(Contract # B0086003.1302)
August 8, 2013 Collection Date

Determination of:
Polycyclic Aromatic Hydrocarbons
(PAHs) in Soil Samples

(QC Batch ENV 3091)

September 25, 2013

Technical Report 13-3129

Arcadis
Mayflower AR Project
(Contract # B0086003.1302)
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Introduction

B&B Laboratories received a shipment of two (2) ice chests that were sent by Daniel Mays of Arcadis using FedEx on August 8, 2013 and arrived on August 9, 2013 in College Station, Texas. The ice chests arrived sealed and in good condition.

Cooler Number	Temperature	Samples Received
1	0.3°C 1.1°C (Temp Blank)	Thirteen (13) soils in 8oz or 4oz jars Three (3) 1L water samples in B/R amber bottles.
2	2.2°C 4.0°C (Temp Blank)	Twenty-seven (27) soils in 8oz or 4oz jars

The water and soil samples were collected on August 8, 2013 in support of the Mayflower AR, Project (Arcadis-US Contract # B0086003.1302). The water samples were logged in according to B&B Laboratories standard operating procedure (B&B 1009) and were stored in an access-controlled refrigerator (4.0°C) prior to analysis. The soil samples were logged in according to B&B Laboratories standard operating procedure (B&B 1009) and were stored in an access-controlled freezer (<-16.0°C) prior to analysis. Selected soil samples were analyzed for Polycyclic Aromatic Hydrocarbons (PAH) by GC/MS-SIM, and selected biological markers by GC/MS-SIM.

The analytical results for PAH, selected hopane's, and TAS compounds in the soil samples are included in this report.

Analytical Methods

The standard operating procedures for PAH, hopane's, and TAS are listed in Table 1.

Table 1. Standard Operating Procedures for each analytical test.

Matrix	Extraction	PAH
Soil	B&B 1003	B&B 1006

Data Reporting

The reporting units for each analyte are listed in Table 2. Analytes that are detected below the method detection limit are qualified as "J". Analytes that are detected in the procedural blanks greater than 3X MDL are qualified with a "B". Analytical interference's that are detected in the sample are qualified with an "I". Analytes not detected in the samples are qualified with a "U". The RPD for analytes in duplicate samples that are <3X MDL are qualified with a "X". Spiked levels of analytes in matrix spikes that are <50% of the native levels are considered invalid spikes and are qualified with a "Y". Any QC result reported to be outside the corresponding QC criteria is discussed in the QA/QC variance section of this report. Data Qualifier Definitions are listed in Table 3. The method detection limits (MDL) for each analyte are listed in Table 4.

Table 2. Analytical reporting units.

Matrix	PAH
Soils	ng/dry g

Table 3. Data Qualifier Definitions.

Qualifier	Definition
B	Analyte detected in the procedural blank greater than 3X MDL
D	Diluted Value
E	Analyte concentration exceeds the calibration range of the GC/MS for that specific analysis.
I	Analytical interference
J	Analyte detected below the method detection limit
L	Loss due to matrix effect
NA	Not Applicable
U	Analyte not detected
X	Analyte <3X MDL
Y	Spiked level of analyte <50% of the native concentration
*	Outside QA limits, refer to narrative

Table 4. Method Detection Limits.

PAH Sample size Unit of measure	**Sediment MDLs** 15.0 g, 1ml final extract volume ng/g
cis/trans Decalin	0.132
C1-Decalins	0.263
C2-Decalins	0.263
C3-Decalins	0.263
C4-Decalins	0.263
Naphthalene	0.342
C1-Naphthalenes	1.03
C2-Naphthalenes	0.684
C3-Naphthalenes	0.684
C4-Naphthalenes	0.684
Benzothiophene	0.090
C1-Benzothiophenes	0.180
C2-Benzothiophenes	0.180
C3-Benzothiophenes	0.180
C4-Benzothiophenes	0.180
Biphenyl	0.294
Acenaphthylene	0.041
Acenaphthene	0.103
Dibenzofuran	0.204
Fluorene	0.183
C1-Fluorenes	0.367
C2-Fluorenes	0.367
C3-Fluorenes	0.367
Carbazole	0.150
Anthracene	0.115
Phenanthrene	0.208
C1-Phenanthrenes/Anthracenes	0.077
C2-Phenanthrenes/Anthracenes	0.285
C3-Phenanthrenes/Anthracenes	0.285
C4-Phenanthrenes/Anthracenes	0.285
Dibenzothiophene	0.116
C1-Dibenzothiophenes	0.064
C2-Dibenzothiophenes	0.232
C3-Dibenzothiophenes	0.232
C4-Dibenzothiophenes	0.232
Fluoranthene	0.333
Pyrene	0.136
C1-Fluoranthenes/Pyrenes	0.469
C2-Fluoranthenes/Pyrenes	0.469
C3-Fluoranthenes/Pyrenes	0.469
C4-Fluoranthenes/Pyrenes	0.469
Naphthobenzothiophene	0.128
C1-Naphthobenzothiophenes	0.256
C2-Naphthobenzothiophenes	0.256
C3-Naphthobenzothiophenes	0.256
C4-Naphthobenzothiophenes	0.256
Benz(a)anthracene	0.192
Chrysene/Triphenylene	0.116
C1-Chrysenes	0.232

PAH (continued)	Sediment MDLs
Sample size	15.0 g, 1ml final extract volume
Unit of measure	ng/g
C2-Chrysenes	0.232
C3-Chrysenes	0.232
C4-Chrysenes	0.232
Benzo(b)fluoranthene	0.203
Benzo(k,j)fluoranthene	0.098
Benzo(a)fluoranthene	0.098
Benzo(e)pyrene	0.177
Benzo(a)pyrene	0.101
Perylene	1.27
Indeno(1,2,3-c,d)pyrene	0.050
Dibenzo(a,h)anthracene	0.064
Benzo(g,h,i)perylene	0.088
Individual Alkyl Isomers,TAS, and Hopanes	
2-Methylnaphthalene	1.30
1-Methylnaphthalene	0.546
2,6-Dimethylnaphthalene	0.261
1,6,7-Trimethylnaphthalene	0.127
1-Methylfluorene	0.191
4-Methyldibenzothiophene	0.091
2/3-Methyldibenzothiophene	0.091
1-Methyldibenzothiophene	0.091
3-Methylphenanthrene	0.097
2/4-Methylphenanthrene	0.097
2-Methylanthracene	0.097
9-Methylphenanthrene	0.097
1-Methylphenanthrene	0.097
3,6-Dimethylphenanthrene	0.110
Retene	0.231
2-Methylfluoranthene	0.223
Benzo(b)fluorene	0.125
C29-Hopane	0.575
18a-Oleanane	0.575
C30-Hopane	0.575
C20-TAS	0.575
C21-TAS	0.575
C26(20S)-TAS	0.575
C26(20R)/C27(20S)-TAS	0.575
C28(20S)-TAS	0.575
C27(20R)-TAS	0.575
C28(20R)-TAS	0.575

Quality Assurance/Quality Control – Soil

Polycyclic Aromatic Hydrocarbons (PAH)

The quality assurance/quality control procedure for this program included the analyses of a procedural blank, laboratory duplicate, a matrix spike/matrix spike duplicate, and a sediment SRM (NIST SRM 1941b) of no more than 19 samples. A standard reference oil (NIST 2779) was analyzed with this data set. Procedural blanks are used to determine that sample preparation and analyses are free of contaminants. The laboratory duplicate sample is used to determine the precision of the analysis. The matrix spike/matrix spike duplicate is used to measure accuracy and precision of the analysis. A SRM is a material for which a mean and confidence interval are certified for specific analytes. SRMs are selected based on matrix similarities as well as type and level of certified analytes. All SRMs are traceable to NIST. SRMs are used to verify analytical accuracy. All QC samples are subject to the identical preparation and analysis steps as samples. The QC criterion for blanks specifies no more than 2 analytes to exceed 3x target MDL unless analyte not detected in associated sample(s) or analyte concentration >10x blank value. The QC criteria for spike recoveries are between 40-120% (except for Biphenyl which is 40% to 140%, Decalin which is 25% to 120%, and Perylene which is 10-120%). The QC criterion for RPDs for valid spiked duplicates is ≤30%. The QC criterion for RPDs for valid laboratory duplicates is ≤30%. The QC criterion for the reference sediment 1941b SRM is ± 30% the NIST certified concentration range for those compounds whose concentration is greater than the laboratory method detection limit. The QC criterion for the reference oil 2779 SRM is ± 20% the NIST reference range for those compounds whose concentration is greater than the detection limit of10 ng/g.

Surrogate solutions equivalent to 5-10X the MDL are prepared for various hydrocarbon analyses. The appropriate surrogate solution is added to every sample including quality control samples. The data are corrected based on surrogate recovery up to 100%. The QC criteria for surrogate recoveries are between 40-120%, except d12-perylene whose recovery criteria are 10-120%. Refer to Table 5 for Method Performance Criteria for PAH.

Quality Assurance/Quality Control Variances – Soil

Polycyclic Aromatic Hydrocarbons (PAH)

Initial Calibration (Six Point)

Observation

- No variances were observed.

Initial Calibration Verification

Observation

- No variances were observed.

Mass Discrimination Ratio

Observation

- No variances were observed.

Internal Standard Area Response

Observation

- No variances were observed.

Continuing Calibration Checks

Observation

- No variances were observed.

Surrogate Recoveries

Observation

- d12-Perylene was detected outside of the QC% recovery limits of 10 to 120% in one (1) client submitted sample ARC1739 (SO-DA-019 (1.0-1.5)) and QA samples ENV3091C (SO-DA-019 (0-0.5) MS) and ENC3091D (SO-DA-019 (0-0.5) MSD).

Comment

- The recovery of the surrogate d12-Perylene falling outside the QC limits is due to a matrix effect and is qualified with an "L".

Procedural Blank

Observation

- No variances were observed.

Matrix Spike/Matrix Spike Duplicate

Observation

- Dibenzothiophene, Pyrene, Chrysene/Triphenylene, Benzo(b)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Benzo(g,h,i)perylene, 4-Methyldibenzothiophene, 1-Methylphenanthrene, and 3,6-Dimethylphenanthrene were detected outside of the laboratory QC recovery limits of 40 to 120% in ENV3091C (SO-DA-019 (0-0.5) MS) and ENV3191D (SO-DA-019 (0-0.5) MSD).

Comment

- It is unknown as to why Benzo(a)pyrene and Perylene were detected outside of the laboratory QC recovery limits in the MS and MSD internal QC samples.

- Phenanthrene, Dibenzothiophene, Pyrene, Chrysene/Triphenylene, Benzo(b)fluoranthene, Benzo(e)pyrene, Benzo(g,h,i)perylene, 4-Methyldibenzothiophene, 1-Methylphenanthrene, 3,6-Dimethylphenanthrene, and Retene are invalid spikes due to high native concentrations of PAHs in the samples and the dilution of the original sample and the MS and MSD samples. These peaks are qualified with a "Y".

- Analytes in the MS and MSD samples are suggested to be outside of the laboratory QC recovery limits due to inhomogeneity in the collected samples (original sample, MS, and MSD) that were submitted to the laboratory in three separate jars.

Laboratory Duplicate

Observation

- No variances were observed.

Laboratory Control Standard (Solution, Sediment, and Petroleum)

Observation

- No variances were observed.

Additional QC Batch Information

Observation

- The concentrations reported for the C1-Naphthalenes, C1-Dibenzothiophenes, and the C1-Phenanthrene/Anthracenes are calculated using the RRF of the parent compound (Naphthalene, Dibenzothiophene, and Phenanthrene). The concentration of these individual isomers is based on their RRF or an individual isomer from the same family.

- Labeling of d12- Perylene outside of the laboratory recovery limits is labeled with the "L" qualifier to indicate a loss due to matrix effect was made in consultation with Dr. Ted Sauer.

Table 5. Method Performance Criteria for Extended PAH (Parent and Alkyl Homologs) and Related Compounds.

Element or Sample Type	Minimum Frequency	Measurement Quality Objective/ Acceptance Criteria	Corrective Action
Tuning	Prior to every sequence	Tune as specified in laboratory SOP	Resolve before proceeding.
Initial Calibration (All parent PAH and selected alkyl homologue PAH)	Prior to every sequence, or as needed based on continuing calibration/verification check.	6-point calibration curve over two orders of magnitude RPD ≤ 20%	Resolve before proceeding.
Continuing Calibration Verification (CCV)	Every 12 hours or 6-9 field samples	RPD ≤ 25%, No more than 2 analytes can be between 25% and 35% RPD.	Perform instrument maintenance. Re-analyze affected samples.
Initial Calibration Verification (Second Source or can be met if CCV is second source)	Per initial calibration	%R target analytes 80-120%	Resolve before proceeding.
SRM 1941b for sediment; SRM 1974c for tissue If available use SRMs for appropriate matrices	One per batch/every 20 field samples	Within ±30% of NIST 95% uncertainty range for analytes within the quantitation range. No more than 2 analytes may exceed this criterion.	Resolve before proceeding.
SRM 2779 Reference Oil	One per batch/every 20 field samples	Peak resolution >70% of 4/9-methylphenanthrene from 1-methylphenanthrene (m/z 192). Within ±20% of NIST 95% uncertainty range for analytes within the quantitation range. No more than 2 analytes may exceed this criterion.	Resolve before proceeding.
Matrix Spike/Matrix Spike Duplicate (Sediments, Soils, Tissues only)	One per batch/every 20 field samples	%R 40% - 120% for target analytes, except biphenyl (40-140%), decalin (25-120%) and perylene (10-120%); RPD ≤30%, average %R 60-120% for valid spikes. No more than 2 analytes may exceed 40-120% recovery or >35% RPD.	Evaluate impact to data, discuss with lab manager to determine if corrective action is needed.
Blank Spike/Blank Spike Duplicate	One per batch/every 20 field samples	See MS/MSD criteria above.	Evaluate impact to data, discuss with lab manager to determine if corrective action is needed.
Procedural Blank	One per batch/every 20 field samples	No more than 2 analytes to exceed 3x target MDL unless analyte not detected in associated sample(s) or analyte concentration >10x blank value	Resolve before proceeding. Lab manager may be contacted to resolve issues.
Laboratory Duplicate (not required for aqueous samples)	One per batch/every 20 field samples	RPD ≤ 30% if analyte concentration is 3x greater than the MDL, no more than 2 individual analyte RPDs with conc. 3x MDL can exceed 35%.	Evaluate impact to data, discuss with lab manager, and determine if corrective action is needed.

Table 5. Continued. Method Performance Criteria for Extended PAH (Parent and Alkyl Homologs) and Related Compounds.

Element or Sample Type	Minimum Frequency	Measurement Quality Objective/ Acceptance Criteria	Corrective Action
Mass Discrimination	Initial calibration and CCVs (mid-level)	Ratio for the concentration of Benzo[g,h,i]perylene to phenanthrene ≥0.70	Resolve before proceeding.
Internal Standard (IS)	Every sample	50% - 200% of the area of the IS in the associated calibration standard	Resolve before proceeding.
Surrogates	Every sample	%R 40-120% except d12-perylene which is 10-120%	Re-extract affected samples. Evaluate impact to data, discuss with lab manager, if corrective action is needed.

We appreciate the opportunity to serve your analytical needs and please do not hesitate to contact us should you have any questions.

Juan A. Ramirez
Environmental Laboratory Manager

Donell S. Frank
Project Quality Manager

Sample/Analyses Description

B&B Laboratories
Project J13034
Report 13-3129

Arcadis - Mayflower AR
Sample Inventory

Client Project #B0086003.1302

#	File Number	Client Identification	Collection Date	Received Date	Analysis	Matrix	Comments	B&B SDG	Client Project #
1	ARC1735	SO-DA-019 (0-0.5)	08/08/13	08/09/13	PAH	Soil		13080901	B0086003.1302
2	ARC1736	SO-DA-019 (0-0.5) MS	08/08/13	08/09/13	PAH	Soil	MS	13080901	B0086003.1302
3	ARC1737	SO-DA-019 (0-0.5) MSD	08/08/13	08/09/13	PAH	Soil	MSD	13080901	B0086003.1302
4	ARC1738	SO-DA-019 (0.5-1.0)	08/08/13	08/09/13	PAH	Soil		13080901	B0086003.1302
5	ARC1739	SO-DA-019 (1.0-1.5)	08/08/13	08/09/13	PAH	Soil		13080901	B0086003.1302

Sediment/Soil Samples

Polycyclic Aromatic Hydrocarbon Concentration

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1735.D	ARC1738.D	ARC1739.D
Client Name	SO-DA-019 (0-0.5)	SO-DA-019 (0.5-1.0)	SO-DA-019 (1.0-1.5)
Matrix	Soil	Soil	Soil
Collection Date	08/08/13	08/08/13	08/08/13
Received Date	08/09/13	08/09/13	08/09/13
Extraction Date	08/21/13	08/21/13	08/21/13
Extraction Batch	ENV 3091	ENV 3091	ENV 3091
Date Acquired	9/21/13 14:06	9/21/13 15:12	9/21/13 16:18
Method	PAH-2012.M	PAH-2012.M	PAH-2012.M
Sample Dry Weight (g)	15.2	15.2	15.1
% Dry	84	73	86
% Moisture	16	27	14
Dilution	1X	1X	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	Su. Corrected Conc. (ng/dry g)	Q	Su. Corrected Conc. (ng/dry g)	Q
cis/trans Decalin	<0.1	U	<0.1	U	<0.1	U
C1-Decalins	<0.3	U	<0.3	U	<0.3	U
C2-Decalins	<0.3	U	<0.3	U	<0.3	U
C3-Decalins	<0.3	U	<0.3	U	<0.3	U
C4-Decalins	<0.3	U	<0.3	U	<0.3	U
Naphthalene	4.27		3.38		0.611	
C1-Naphthalenes	9.19		9.33		0.529	J
C2-Naphthalenes	19.6		33.1		1.44	
C3-Naphthalenes	39.2		69.6		1.62	
C4-Naphthalenes	70.9		211		3.73	
Benzothiophene	0.423		0.295		0.177	
C1-Benzothiophenes	4.97		4.68		<0.2	U
C2-Benzothiophenes	14.5		10.9		<0.2	U
C3-Benzothiophenes	17.8		21.1		<0.2	U
C4-Benzothiophenes	35.6		69.1		<0.2	U
Biphenyl	3.00		2.39		0.307	
Acenaphthylene	2.43		1.37		0.045	
Acenaphthene	1.67		1.57		0.159	
Dibenzofuran	3.71		3.32		0.394	
Fluorene	3.96		3.81		0.493	
C1-Fluorenes	16.8		30.4		1.10	
C2-Fluorenes	63.2		<0.4	U	<0.4	U
C3-Fluorenes	154		<0.4	U	<0.4	U
Carbazole	<0.1	U	<0.1	U	<0.1	U
Anthracene	2.04		0.855		<0.1	U
Phenanthrene	22.1		21.2		2.28	
C1-Phenanthrenes/Anthracenes	85.9		92.2		12.8	
C2-Phenanthrenes/Anthracenes	260		394		31.5	
C3-Phenanthrenes/Anthracenes	464		740		45.5	
C4-Phenanthrenes/Anthracenes	347		542		34.4	
Dibenzothiophene	15.8		17.9		1.14	
C1-Dibenzothiophenes	76.3		81.0		8.04	
C2-Dibenzothiophenes	233		339		25.8	
C3-Dibenzothiophenes	409		762		43.8	
C4-Dibenzothiophenes	380		589		36.7	
Fluoranthene	11.4		12.0		0.876	
Pyrene	40.7		36.5		1.54	
C1-Fluoranthenes/Pyrenes	94		119		6.56	
C2-Fluoranthenes/Pyrenes	131		159		12.5	
C3-Fluoranthenes/Pyrenes	129		157		11.5	
C4-Fluoranthenes/Pyrenes	199		183		16.0	
Naphthobenzothiophene	69.7		98.9		6.58	
C1-Naphthobenzothiophenes	218		258		19.3	
C2-Naphthobenzothiophenes	371		403		25.7	
C3-Naphthobenzothiophenes	312		315		24.5	
C4-Naphthobenzothiophenes	132		169		12.6	
Benz(a)anthracene	6.57		6.61		0.468	
Chrysene/Triphenylene	59.6		42.5		3.33	
C1-Chrysenes	104		124		8.79	
C2-Chrysenes	149		165		12.6	
C3-Chrysenes	106		104		7.83	
C4-Chrysenes	39.5		63.9		4.14	
Benzo(b)fluoranthene	28.9		22.1		1.37	
Benzo(k,j)fluoranthene	5.99		8.22		0.384	
Benzo(a)fluoranthene	<0.1	U	<0.1	U	<0.1	U
Benzo(e)pyrene	34.5		26.8		1.71	
Benzo(a)pyrene	8.25		10.1		0.486	
Perylene	3.60		4.24		0.309	J
Indeno(1,2,3-c,d)pyrene	5.63		5.36		0.325	
Dibenzo(a,h)anthracene	4.45		3.95		0.274	
Benzo(g,h,i)perylene	19.1		17.3		0.864	
Total PAHs	5045		6570		433	

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1735.D	ARC1738.D	ARC1739.D
Client Name	SO-DA-019 (0-0.5)	SO-DA-019 (0.5-1.0)	SO-DA-019 (1.0-1.5)
Matrix	Soil	Soil	Soil
Collection Date	08/08/13	08/08/13	08/08/13
Received Date	08/09/13	08/09/13	08/09/13
Extraction Date	08/21/13	08/21/13	08/21/13
Extraction Batch	ENV 3091	ENV 3091	ENV 3091
Date Acquired	9/21/13 14:06	9/21/13 15:12	9/21/13 16:18
Method	PAH-2012.M	PAH-2012.M	PAH-2012.M
Sample Dry Weight (g)	15.2	15.2	15.1
% Dry	84	73	86
% Moisture	16	27	14
Dilution	1X	1X	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	Su. Corrected Conc. (ng/dry g)	Q	Su. Corrected Conc. (ng/dry g)	Q
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	10.1		9.17		0.556	J
1-Methylnaphthalene	4.34		5.50		0.274	J
2,6-Dimethylnaphthalene	10.1		13.7		0.505	
1,6,7-Trimethylnaphthalene	4.22		7.91		0.135	
1-Methylfluorene	5.33		8.90		0.784	
4-Methyldibenzothiophene	43.7		44.3		4.37	
2/3-Methyldibenzothiophene	31.7		34.9		3.19	
1-Methyldibenzothiophene	28.3		30.9		3.35	
3-Methylphenanthrene	21.8		23.2		2.30	
2-Methylphenanthrene	27.1		29.1		2.90	
2-Methylanthracene	6.15		6.76		4.95	
4/9-Methylphenanthrene	33.4		35.9		3.75	
1-Methylphenanthrene	23.1		24.7		2.77	
3,6-Dimethylphenanthrene	17.1		24.1		1.58	
Retene	23.6		43.6		2.86	
2-Methylfluoranthene	8.46		9.88		0.753	
Benzo(b)fluorene	1.69		3.97		0.431	
C29-Hopane	475		439		29.4	
18a-Oleanane	<0.6	U	<0.6	U	<0.6	U
C30-Hopane	662		537		39.4	
C20-TAS	<0.6	U	<0.6	U	<0.6	U
C21-TAS	<0.6	U	<0.6	U	<0.6	U
C26(20S)-TAS	<0.6	U	<0.6	U	<0.6	U
C26(20R)/C27(20S)-TAS	<0.6	U	<0.6	U	<0.6	U
C28(20S)-TAS	<0.6	U	<0.6	U	<0.6	U
C27(20R)-TAS	<0.6	U	<0.6	U	<0.6	U
C28(20R)-TAS	<0.6	U	<0.6	U	<0.6	U
Surrogate Recovery						
Naphthalene-d8	77		73		69	
Acenaphthene-d10	83		77		58	
Phenanthrene-d10	97		83		82	
Chrysene-d12	88		83		75	
Perylene-d12	15		19		0	L

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Procedural Blank Report

Sample Name	ENV3091A.D
Client Name	Procedural Blank
Matrix	Sediment
Collection Date	NA
Received Date	NA
Extraction Date	08/21/13
Extraction Batch	ENV 3091
Date Acquired	9/21/13 8:34
Method	PAH-2012.M
Sample Dry Weight (g)	15.0
% Dry	NA
% Moisture	NA
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	3X MDL	Actual MDL
cis/trans Decalin	<0.1	U	0.395	0.132
C1-Decalins	<0.3	U	0.790	0.263
C2-Decalins	<0.3	U	0.790	0.263
C3-Decalins	<0.3	U	0.790	0.263
C4-Decalins	<0.3	U	0.790	0.263
Naphthalene	0.158	J	1.03	0.342
C1-Naphthalenes	<1	U	3.09	1.03
C2-Naphthalenes	<0.7	U	2.05	0.684
C3-Naphthalenes	<0.7	U	2.05	0.684
C4-Naphthalenes	<0.7	U	2.05	0.684
Benzothiophene	<0.1	U	0.270	0.090
C1-Benzothiophenes	<0.2	U	0.540	0.180
C2-Benzothiophenes	<0.2	U	0.540	0.180
C3-Benzothiophenes	<0.2	U	0.540	0.180
C4-Benzothiophenes	<0.2	U	0.540	0.180
Biphenyl	0.104	J	0.881	0.294
Acenaphthylene	<0	U	0.122	0.041
Acenaphthene	<0.1	U	0.308	0.103
Dibenzofuran	0.052	J	0.613	0.204
Fluorene	0.019	J	0.550	0.183
C1-Fluorenes	<0.4	U	1.10	0.367
C2-Fluorenes	<0.4	U	1.10	0.367
C3-Fluorenes	<0.4	U	1.10	0.367
Carbazole	<0.1	U	0.449	0.150
Anthracene	<0.1	U	0.346	0.115
Phenanthrene	0.098	J	0.624	0.208
C1-Phenanthrenes/Anthracenes	<0.1	U	0.232	0.077
C2-Phenanthrenes/Anthracenes	<0.3	U	0.855	0.285
C3-Phenanthrenes/Anthracenes	<0.3	U	0.855	0.285
C4-Phenanthrenes/Anthracenes	<0.3	U	0.855	0.285
Dibenzothiophene	<0.1	U	0.348	0.116
C1-Dibenzothiophenes	<0.1	U	0.191	0.064
C2-Dibenzothiophenes	<0.2	U	0.696	0.232
C3-Dibenzothiophenes	<0.2	U	0.696	0.232
C4-Dibenzothiophenes	<0.2	U	0.696	0.232
Fluoranthene	0.0	J	1.00	0.333
Pyrene	0.1	J	0.408	0.136
C1-Fluoranthenes/Pyrenes	<0.5	U	1.41	0.469
C2-Fluoranthenes/Pyrenes	<0.5	U	1.41	0.469
C3-Fluoranthenes/Pyrenes	<0.5	U	1.41	0.469
C4-Fluoranthenes/Pyrenes	<0.5	U	1.41	0.469
Naphthobenzothiophene	<0.1	U	0.383	0.128
C1-Naphthobenzothiophenes	<0.3	U	0.767	0.256
C2-Naphthobenzothiophenes	<0.3	U	0.767	0.256
C3-Naphthobenzothiophenes	<0.3	U	0.767	0.256
C4-Naphthobenzothiophenes	<0.3	U	0.767	0.256
Benz(a)anthracene	<0.2	U	0.577	0.192
Chrysene/Triphenylene	<0.1	U	0.347	0.116
C1-Chrysenes	<0.2	U	0.695	0.232
C2-Chrysenes	<0.2	U	0.695	0.232
C3-Chrysenes	<0.2	U	0.695	0.232
C4-Chrysenes	<0.2	U	0.695	0.232
Benzo(b)fluoranthene	<0.2	U	0.609	0.203
Benzo(k,j)fluoranthene	<0.1	U	0.294	0.098
Benzo(a)fluoranthene	<0.1	U	0.294	0.098
Benzo(e)pyrene	<0.2	U	0.530	0.177
Benzo(a)pyrene	<0.1	U	0.304	0.101
Perylene	<1.3	U	3.80	1.27
Indeno(1,2,3-c,d)pyrene	<0.1	U	0.151	0.050
Dibenzo(a,h)anthracene	<0.1	U	0.193	0.064
Benzo(g,h,i)perylene	<0.1	U	0.264	0.088
Total PAHs	0.6			

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Procedural Blank Report

Sample Name	ENV3091A.D
Client Name	Procedural Blank
Matrix	Sediment
Collection Date	NA
Received Date	NA
Extraction Date	08/21/13
Extraction Batch	ENV 3091
Date Acquired	9/21/13 8:34
Method	PAH-2012.M
Sample Dry Weight (g)	15.0
% Dry	NA
% Moisture	NA
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	3X MDL	Actual MDL
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	<1.3	U	3.89	1.30
1-Methylnaphthalene	<0.5	U	1.64	0.546
2,6-Dimethylnaphthalene	<0.3	U	0.782	0.261
1,6,7-Trimethylnaphthalene	<0.1	U	0.382	0.127
1-Methylfluorene	<0.2	U	0.574	0.191
4-Methyldibenzothiophene	<0.1	U	0.274	0.091
2/3-Methyldibenzothiophene	<0.1	U	0.274	0.091
1-Methyldibenzothiophene	<0.1	U	0.274	0.091
3-Methylphenanthrene	<0.1	U	0.291	0.097
2-Methylphenanthrene	<0.1	U	0.291	0.097
2-Methylanthracene	<0.1	U	0.291	0.097
4/9-Methylphenanthrene	<0.1	U	0.291	0.097
1-Methylphenanthrene	<0.1	U	0.291	0.097
3,6-Dimethylphenanthrene	<0.1	U	0.329	0.110
Retene	<0.2	U	0.694	0.231
2-Methylfluoranthene	<0.2	U	0.668	0.223
Benzo(b)fluorene	<0.1	U	0.374	0.125
C29-Hopane	<0.6	U	1.72	0.575
18a-Oleanane	<0.6	U	1.72	0.575
C30-Hopane	<0.6	U	1.72	0.575
C20-TAS	<0.6	U	1.72	0.575
C21-TAS	<0.6	U	1.72	0.575
C26(20S)-TAS	<0.6	U	1.72	0.575
C26(20R)/C27(20S)-TAS	<0.6	U	1.72	0.575
C28(20S)-TAS	<0.6	U	1.72	0.575
C27(20R)-TAS	<0.6	U	1.72	0.575
C28(20R)-TAS	<0.6	U	1.72	0.575

Surrogate Recovery	
Naphthalene-d8	83
Acenaphthene-d10	83
Phenanthrene-d10	81
Chrysene-d12	86
Perylene-d12	92

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Matrix Spike Report

Sample Name	ARC1735.D	ENV3091C.D	ENV3091D.D
Client Name	SO-DA-019 (0-0.5)	SO-DA-019 (0-0.5) MS	SO-DA-019 (0-0.5) MSD
Matrix	Soil	Soil	Soil
Collection Date	08/08/13	08/08/13	08/08/13
Received Date	08/09/13	08/09/13	08/09/13
Extraction Date	08/21/13	08/21/13	08/21/13
Extraction Batch	ENV 3091	ENV 3091	ENV 3091
Date Acquired	9/21/13 14:06	9/21/13 10:47	9/21/13 11:53
Method	PAH-2012.M	PAH-2012.M	PAH-2012.M
Sample Dry Weight (g)	15.2	15.0	15.2
% Dry	84	88	75
% Moisture	16	12	25
Dilution	1X	1X	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	Su. Corrected Conc. (ng/dry g)	Q	Recovery (%)	Q	Q1	Su. Corrected Conc. (ng/dry g)	Q	Recovery (%)	Q	Q1	RPD (%)	Q	Spike Amount (ng)
cis/trans Decalin	<0.1	U	6.19		94			7.05		108			13		98.9
C1-Decalins	<0.3	U	NA					NA							
C2-Decalins	<0.3	U	NA					NA							
C3-Decalins	<0.3	U	NA					NA							
C4-Decalins	<0.3	U	NA					NA							
Naphthalene	4.27		10.7		96			9.45		79			12		100
C1-Naphthalenes	9.19		NA					NA							
C2-Naphthalenes	19.62		NA					NA							
C3-Naphthalenes	39.22		NA					NA							
C4-Naphthalenes	70.95		NA					NA							
Benzothiophene	0.42		5.99		84			5.37		76			11		99.4
C1-Benzothiophenes	4.97		NA					NA							
C2-Benzothiophenes	14.47		NA					NA							
C3-Benzothiophenes	17.81		NA					NA							
C4-Benzothiophenes	35.64		NA					NA							
Biphenyl	3.00		9.45		97			8.06		78			16		99.1
Acenaphthylene	2.43		6.34		59			5.20		43			20		99.2
Acenaphthene	1.67		6.48		72			5.90		64			9		100
Dibenzofuran	3.71		9.65		89			9.65		91			0		100
Fluorene	3.96		10.4		95			11.0		108			6		100
C1-Fluorenes	16.79		NA					NA							
C2-Fluorenes	63.22		NA					NA							
C3-Fluorenes	154.45		NA					NA							
Carbazole	<0.1	U	3.48		53			2.99		46			15		99.1
Anthracene	2.04		6.52	L	67			5.65	L	55			14		100
Phenanthrene	22.07		25.5		49		Y	29.0		108		Y	13		99.1
C1-Phenanthrenes/Anthracenes	85.88		NA					NA							
C2-Phenanthrenes/Anthracenes	260.11		NA					NA							
C3-Phenanthrenes/Anthracenes	464.21		NA					NA							
C4-Phenanthrenes/Anthracenes	346.62		NA					NA							
Dibenzothiophene	15.80		17.0		17		Y	15.6		-2		Y	9		98.6
C1-Dibenzothiophenes	76.34		NA					NA							
C2-Dibenzothiophenes	233.26		NA					NA							
C3-Dibenzothiophenes	409.24		NA					NA							
C4-Dibenzothiophenes	379.85		NA					NA							
Fluoranthene	11.44		16.6		76			14.6		48			13		100
Pyrene	40.69		36.5		-69		Y	30.9		-146		Y	16		100
C1-Fluoranthenes/Pyrenes	94.47		NA					NA							
C2-Fluoranthenes/Pyrenes	130.62		NA					NA							
C3-Fluoranthenes/Pyrenes	129.07		NA					NA							
C4-Fluoranthenes/Pyrenes	199.22		NA					NA							
Naphthobenzothiophene	69.65		NA					NA							
C1-Naphthobenzothiophenes	218.36		NA					NA							
C2-Naphthobenzothiophenes	371.33		NA					NA							
C3-Naphthobenzothiophenes	311.68		NA					NA							
C4-Naphthobenzothiophenes	132.43		NA					NA							
Benz(a)anthracene	6.57		11.0		66			9.90		51			11		100
Chrysene/Triphenylene	59.64		51.4		-133		Y	43.6		-241		Y	16		99.4
C1-Chrysenes	104.14		NA					NA							
C2-Chrysenes	148.58		NA					NA							
C3-Chrysenes	105.67		NA					NA							
C4-Chrysenes	39.47		NA					NA							
Benzo(b)fluoranthene	28.89		29.6		6		Y	24.9		-59		Y	17		100
Benzo(k,j)fluoranthene	5.99		11.4		81			10.3		66			10		100
Benzo(a)fluoranthene	<0.1	U	NA					NA							
Benzo(e)pyrene	34.52		31.8		-46		Y	27.1		-111		Y	16		100
Benzo(a)pyrene	8.25		4.49	L	-58	*		3.28	L	-75	*		31	*	100
Perylene	3.60		1.56	L	-31	*		1.32	L	-35	*		17		100
Indeno(1,2,3-c,d)pyrene	5.63		12.3		101			10.2		72			18		98.3
Dibenzo(a,h)anthracene	4.45		10.0		84			8.55		63			16		99.1
Benzo(g,h,i)perylene	19.14		20.9	L	23		Y	16.2	L	-44		Y	25		99.1
Average % Recovery					41	*				19	*				

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Matrix Spike Report

Sample Name	ARC1735.D	ENV3091C.D	ENV3091D.D
Client Name	SO-DA-019 (0-0.5)	SO-DA-019 (0-0.5) MS	SO-DA-019 (0-0.5) MSD
Matrix	Soil	Soil	Soil
Collection Date	08/08/13	08/08/13	08/08/13
Received Date	08/09/13	08/09/13	08/09/13
Extraction Date	08/21/13	08/21/13	08/21/13
Extraction Batch	ENV 3091	ENV 3091	ENV 3091
Date Acquired	9/21/13 14:06	9/21/13 10:47	9/21/13 11:53
Method	PAH-2012.M	PAH-2012.M	PAH-2012.M
Sample Dry Weight (g)	15.2	15.0	15.2
% Dry	84	88	75
% Moisture	16	12	25
Dilution	1X	1X	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	Su. Corrected Conc. (ng/dry g)	Q	Recovery (%)	Q	Q1	Su. Corrected Conc. (ng/dry g)	Q	Recovery (%)	Q	Q1	RPD (%)	Q	Spike Amount (ng)
Individual Alkyl Isomers and Hopanes															
2-Methylnaphthalene	10.1		16.2		91			13.7		56			17		100
1-Methylnaphthalene	4.34		10.1		86			8.92		70			13		100
2,6-Dimethylnaphthalene	10.1		15.7		83			13.4		52			16		100
1,6,7-Trimethylnaphthalene	4.22		8.62		65			7.60		52			13		100
1-Methylfluorene	5.33		11.5		91			9.00		56			24		101
4-Methyldibenzothiophene	43.7		33.2		-162		Y	28.6		-224		Y	15		101
2/3-Methyldibenzothiophene	31.7		NA					NA							
1-Methyldibenzothiophene	28.3		NA					NA							
3-Methylphenanthrene	21.8		NA					NA							
2-Methylphenanthrene	27.1		NA					NA							
2-Methylanthracene	6.15		NA					NA							
4/9-Methylphenanthrene	33.4		NA					NA							
1-Methylphenanthrene	23.1		19.9		-51		Y	17.5		-84		Y	13		98.9
3,6-Dimethylphenanthrene	17.1		14.7		-37		Y	14.2		-42		Y	3		100
Retene	23.6		31.0		120		Y	28.6		87		Y	8		89.4
2-Methylfluoranthene	8.46		12.3		56			13.5		77			10		101
Benzo(b)fluorene	1.69		7.58		87			7.08		81			7		101
C29-Hopane	475		NA					NA							
18a-Oleanane	<0.6	U	NA					NA							
C30-Hopane	662		NA					NA							
C20-TAS	<0.6	U	NA					NA							
C21-TAS	<0.6	U	NA					NA							
C26(20S)-TAS	<0.6	U	NA					NA							
C26(20R)/C27(20S)-TAS	<0.6	U	4.82		72			4.72		72			2		100
C28(20S)-TAS	<0.6	U	NA					NA							
C27(20R)-TAS	<0.6	U	NA					NA							
C28(20R)-TAS	<0.6	U	NA					NA							
Surrogate Recovery															
Naphthalene-d8	77		80					79							
Acenaphthene-d10	83		87					85							
Phenanthrene-d10	97		88					91							
Chrysene-d12	88		95					97							
Perylene-d12	15		5		L			6		L					

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Laboratory Duplicate Report

Sample Name	ARC1738.D	ENV3091E.D
Client Name	SO-DA-019 (0.5-1.0)	Dupl. (SO-DA-019 (0.5-1.0))
Matrix	Soil	Soil
Collection Date	08/08/13	08/08/13
Received Date	08/09/13	08/09/13
Extraction Date	08/21/13	08/21/13
Extraction Batch	ENV 3091	ENV 3091
Date Acquired	9/21/13 15:12	9/21/13 12:59
Method	PAH-2012.M	PAH-2012.M
Sample Dry Weight (g)	15.2	15.0
% Dry	73	73
% Moisture	27	27
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	Su. Corrected Conc. (ng/dry g)	Q	RPD %	Q Q1	3X MDL	MDL
cis/trans Decalin	<0.1	U	<0.1	U			0.395	0.132
C1-Decalins	<0.3	U	<0.3	U			0.790	0.263
C2-Decalins	<0.3	U	<0.3	U			0.790	0.263
C3-Decalins	<0.3	U	<0.3	U			0.790	0.263
C4-Decalins	<0.3	U	<0.3	U			0.790	0.263
Naphthalene	3.38		3.40		1		1.03	0.342
C1-Naphthalenes	9.33		9.52		2		3.09	1.03
C2-Naphthalenes	33.1		34.5		4		2.05	0.684
C3-Naphthalenes	69.6		75.6		8		2.05	0.684
C4-Naphthalenes	211		202		4		2.05	0.684
Benzothiophene	0.29		0.308		4		0.270	0.090
C1-Benzothiophenes	4.68		3.99		16		0.540	0.180
C2-Benzothiophenes	10.9		11.4		5		0.540	0.180
C3-Benzothiophenes	21.1		20.6		2		0.540	0.180
C4-Benzothiophenes	69.1		64.8		6		0.540	0.180
Biphenyl	2.39		2.43		2		0.881	0.294
Acenaphthylene	1.37		1.42		4		0.122	0.041
Acenaphthene	1.57		1.67		6		0.308	0.103
Dibenzofuran	3.32		3.50		5		0.613	0.204
Fluorene	3.81		3.62		5		0.55	0.183
C1-Fluorenes	30.4		27.1		11		1.10	0.367
C2-Fluorenes	<0.4	U	<0.4	U			1.10	0.367
C3-Fluorenes	<0.4	U	<0.4	U			1.10	0.367
Carbazole	<0.1	U	<0.1	U			0.449	0.150
Anthracene	0.855		0.989		15		0.346	0.115
Phenanthrene	21.2		20.4		4		0.624	0.208
C1-Phenanthrenes/Anthracenes	92.2		102		10		0.232	0.077
C2-Phenanthrenes/Anthracenes	394		418		6		0.855	0.285
C3-Phenanthrenes/Anthracenes	740		739		0		0.855	0.285
C4-Phenanthrenes/Anthracenes	542		538		1		0.855	0.285
Dibenzothiophene	17.9		17.7		2		0.348	0.116
C1-Dibenzothiophenes	81.0		87.7		8		0.191	0.064
C2-Dibenzothiophenes	339		370		9		0.696	0.232
C3-Dibenzothiophenes	762		763		0		0.696	0.232
C4-Dibenzothiophenes	589		610		4		0.696	0.232
Fluoranthene	12.0		12.1		1		1.00	0.333
Pyrene	36.5		37.0		1		0.408	0.136
C1-Fluoranthenes/Pyrenes	119		139		15		1.41	0.469
C2-Fluoranthenes/Pyrenes	159		183		14		1.41	0.469
C3-Fluoranthenes/Pyrenes	157		174		10		1.41	0.469
C4-Fluoranthenes/Pyrenes	183		206		12		1.41	0.469
Naphthobenzothiophene	98.9		96.6		2		0.383	0.128
C1-Naphthobenzothiophenes	258		273		6		0.767	0.256
C2-Naphthobenzothiophenes	403		435		8		0.767	0.256
C3-Naphthobenzothiophenes	315		386		20		0.767	0.256
C4-Naphthobenzothiophenes	169		187		10		0.767	0.256
Benz(a)anthracene	6.61		6.61		0		0.577	0.192
Chrysene/Triphenylene	42.5		45.1		6		0.347	0.116
C1-Chrysenes	124		128		3		0.695	0.232
C2-Chrysenes	165		190		14		0.695	0.232
C3-Chrysenes	104		115		10		0.695	0.232
C4-Chrysenes	63.9		74.2		15		0.695	0.232
Benzo(b)fluoranthene	22.1		21.8		1		0.609	0.203
Benzo(k,j)fluoranthene	8.2		7.89		4		0.294	0.098
Benzo(a)fluoranthene	<0.1	U	<0.1	U			0.294	0.098
Benzo(e)pyrene	26.8		27.5		3		0.530	0.177
Benzo(a)pyrene	10.1		10.5		4		0.304	0.101
Perylene	4.24		4.48		6		3.80	1.27
Indeno(1,2,3-c,d)pyrene	5.36		6.38		17		0.151	0.050
Dibenzo(a,h)anthracene	3.95		4.47		12		0.193	0.064
Benzo(g,h,i)perylene	17.3		19.6		13		0.264	0.088
Total PAHs	6570		6922		5			

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Laboratory Duplicate Report

Sample Name	ARC1738.D	ENV3091E.D
Client Name	SO-DA-019 (0.5-1.0)	Dupl. (SO-DA-019 (0.5-1.0))
Matrix	Soil	Soil
Collection Date	08/08/13	08/08/13
Received Date	08/09/13	08/09/13
Extraction Date	08/21/13	08/21/13
Extraction Batch	ENV 3091	ENV 3091
Date Acquired	9/21/13 15:12	9/21/13 12:59
Method	PAH-2012.M	PAH-2012.M
Sample Dry Weight (g)	15.2	15.0
% Dry	73	73
% Moisture	27	27
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	Su. Corrected Conc. (ng/dry g)	Q	RPD %	Q Q1	3X MDL	MDL
Individual Alkyl Isomers and Hopanes								
2-Methylnaphthalene	9.17		9.32		2		3.89	1.30
1-Methylnaphthalene	5.50		5.66		3		1.64	0.546
2,6-Dimethylnaphthalene	13.7		14.5		6		0.782	0.261
1,6,7-Trimethylnaphthalene	7.91		8.56		8		0.382	0.127
1-Methylfluorene	8.90		9.31		4		0.574	0.191
4-Methyldibenzothiophene	44.3		50.8		14		0.274	0.091
2/3-Methyldibenzothiophene	34.9		36.9		6		0.274	0.091
1-Methyldibenzothiophene	30.9		31.4		2		0.274	0.091
3-Methylphenanthrene	23.2		26.8		15		0.291	0.097
2-Methylphenanthrene	29.1		31.7		9		0.291	0.097
2-Methylanthracene	6.76		6.82		1		0.291	0.097
4/9-Methylphenanthrene	35.9		41.8		15		0.291	0.097
1-Methylphenanthrene	24.7		25.3		2		0.291	0.097
3,6-Dimethylphenanthrene	24.1		26.7		10		0.329	0.110
Retene	43.6		48.6		11		0.694	0.231
2-Methylfluoranthene	9.88		10.0		1		0.668	0.223
Benzo(b)fluorene	3.97		4.62		15		0.374	0.125
C29-Hopane	439		451		3		1.72	0.575
18a-Oleanane	<0.6	U	<0.6	U			1.72	0.575
C30-Hopane	537		544		1		1.72	0.575
C20-TAS	<0.6	U	<0.6	U			1.72	0.575
C21-TAS	<0.6	U	<0.6	U			1.72	0.575
C26(20S)-TAS	<0.6	U	<0.6	U			1.72	0.575
C26(20R)/C27(20S)-TAS	<0.6	U	<0.6	U			1.72	0.575
C28(20S)-TAS	<0.6	U	<0.6	U			1.72	0.575
C27(20R)-TAS	<0.6	U	<0.6	U			1.72	0.575
C28(20R)-TAS	<0.6	U	<0.6	U			1.72	0.575

Surrogate Recovery		
Naphthalene-d8	73	73
Acenaphthene-d10	77	80
Phenanthrene-d10	83	83
Chrysene-d12	83	86
Perylene-d12	19	28

Sample Name	ENV3091B.D
Client Name	SRM 1941b
Matrix	Sediment
Collection Date	NA
Received Date	NA
Extraction Date	08/21/13
Extraction Batch	ENV 3091
Date Acquired	9/21/13 9:41
Method	PAH-2012.M
Sample Dry Weight (g)	4.1
% Dry	98
% Moisture	2
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/dry g)	Q	RPD (%)	SRM 1941b Certified Conc. (ng/dry g)	-30% Certified Conc. (ng/dry g)	+30% Certified Conc. (ng/dry g)
cis/trans Decalin	45.6					
C1-Decalins	8.49					
C2-Decalins	13.4					
C3-Decalins	34.9					
C4-Decalins	44.0					
Naphthalene	777		9	848 ± 95	527	1226
C1-Naphthalenes	240					
C2-Naphthalenes	226					
C3-Naphthalenes	160					
C4-Naphthalenes	116					
Benzothiophene	31.6					
C1-Benzothiophenes	9.7					
C2-Benzothiophenes	18.7					
C3-Benzothiophenes	20.0					
C4-Benzothiophenes	21.2					
Biphenyl	73.3					
Acenaphthylene	57.4					
Acenaphthene	29.1					
Dibenzofuran	94.9					
Fluorene	54.6		44	85 ± 15	49.0	130
C1-Fluorenes	59.3					
C2-Fluorenes	107					
C3-Fluorenes	211					
Carbazole	22.7					
Anthracene	218		17	184 ± 18	116	263
Phenanthrene	457		12	406 ± 44	253	585
C1-Phenanthrenes/Anthracenes	342					
C2-Phenanthrenes/Anthracenes	366					
C3-Phenanthrenes/Anthracenes	283					
C4-Phenanthrenes/Anthracenes	180					
Dibenzothiophene	59.1					
C1-Dibenzothiophenes	70.3					
C2-Dibenzothiophenes	133					
C3-Dibenzothiophenes	142					
C4-Dibenzothiophenes	89.2					
Fluoranthene	787		19	651 ± 50	421	911
Pyrene	545		6	581 ± 39	379	806
C1-Fluoranthenes/Pyrenes	415					
C2-Fluoranthenes/Pyrenes	432					
C3-Fluoranthenes/Pyrenes	212					
C4-Fluoranthenes/Pyrenes	149					
Naphthobenzothiophene	153					
C1-Naphthobenzothiophenes	151					
C2-Naphthobenzothiophenes	156					
C3-Naphthobenzothiophenes	116					
C4-Naphthobenzothiophenes	50.0					
Benz(a)anthracene	379		12	335 ± 25	217	468
Chrysene/Triphenylene	480		19	399 ± 36	254	566
C1-Chrysenes	329					
C2-Chrysenes	233					
C3-Chrysenes	128					
C4-Chrysenes	58.8					
Benzo(b)fluoranthene	524		14	453 ± 21	302	616
Benzo(k,j)fluoranthene	444		1	442 ± 23	293	605
Benzo(a)fluoranthene	77.0					
Benzo(e)pyrene	360		10	325 ± 25	210	455
Benzo(a)pyrene	288		22	358 ± 17	239	488
Perylene	372		6	397 ± 45	246	575
Indeno(1,2,3-c,d)pyrene	303		12	341 ± 57	199	517
Dibenzo(a,h)anthracene	75.1		34	53 ± 10	30.1	81.9
Benzo(g,h,i)perylene	269		13	307 ± 45	183	458
Total PAHs	12302					

Sample Name	ENV3091B.D
Client Name	SRM 1941b
Matrix	Sediment
Collection Date	NA
Received Date	NA
Extraction Date	08/21/13
Extraction Batch	ENV 3091
Date Acquired	9/21/13 9:41
Method	PAH-2012.M
Sample Dry Weight (g)	4.1
% Dry	98
% Moisture	2
Dilution	1X

Target Compounds **Individual Alkyl Isomers and Hopanes**	Su. Corrected Conc. (ng/dry g)	Q	RPD (%)	SRM 1941b Certified Conc. (ng/dry g)	-30% Certified Conc. (ng/dry g)	+30% Certified Conc. (ng/dry g)
2-Methylnaphthalene	255					
1-Methylnaphthalene	121					
2,6-Dimethylnaphthalene	81.2					
1,6,7-Trimethylnaphthalene	18.9					
1-Methylfluorene	34.1					
4-Methyldibenzothiophene	47.2					
2/3-Methyldibenzothiophene	34.6					
1-Methyldibenzothiophene	13.6					
3-Methylphenanthrene	105		0	105 ± 13	64.4	153
2-Methylphenanthrene	118					
2-Methylanthracene	63.9					
4/9-Methylphenanthrene	83.3					
1-Methylphenanthrene	73.0		0	73.2 ± 5.9	47.1	103
3,6-Dimethylphenanthrene	28.8					
Retene	36.4					
2-Methylfluoranthene	79.8					
Benzo(b)fluorene	89.5					
C29-Hopane	247					
18a-Oleanane	35.4					
C30-Hopane	339					
C20-TAS	2.36					
C21-TAS	7.80					
C26(20S)-TAS	6.69					
C26(20R)/C27(20S)-TAS	9.99					
C28(20S)-TAS	6.69					
C27(20R)-TAS	6.59					
C28(20R)-TAS	6.32					

Surrogate Recovery	
Naphthalene-d8	66
Acenaphthene-d10	74
Phenanthrene-d10	82
Chrysene-d12	85
Perylene-d12	82

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS50168J.D
Client Name	AR-SRM2779-WK-4.0-002
Matrix	Gulf of Mexico Crude Oil
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3091
Date Acquired	9/21/13 6:22
Method	PAH-2012.M
Sample Weight (mg)	4.1

Target Compounds	Su. Corrected Conc. (ng/mg)	Q	Q1	RPD (%)	SRM 2779 Certified Value (ug/g)	-20% Certified Value (ug/g)	+20% Certified Value (ug/g)
cis/trans Decalin	698						
C1-Decalins	945						
C2-Decalins	763						
C3-Decalins	834						
C4-Decalins	499						
Naphthalene	679			23	855 ± 46	647	1081
C1-Naphthalenes	1441						
C2-Naphthalenes	1788						
C3-Naphthalenes	1201						
C4-Naphthalenes	675						
Benzothiophene	8.03	J					
C1-Benzothiophenes	30.1						
C2-Benzothiophenes	19.9						
C3-Benzothiophenes	27.3						
C4-Benzothiophenes	26.3						
Biphenyl	159						
Acenaphthylene	8.51	J					
Acenaphthene	17.1						
Dibenzofuran	29.0						
Fluorene	112						
C1-Fluorenes	250						
C2-Fluorenes	404						
C3-Fluorenes	287						
Carbazole	4.2	J					
Anthracene	3.6	J		4	3.42 ± 0.59	2.26	4.81
Phenanthrene	206			22	258 ± 27	185	342
C1-Phenanthrenes/Anthracenes	516						
C2-Phenanthrenes/Anthracenes	597						
C3-Phenanthrenes/Anthracenes	448						
C4-Phenanthrenes/Anthracenes	266						
Dibenzothiophene	40.8			24	51.8 ± 2.1	39.8	64.7
C1-Dibenzothiophenes	110						
C2-Dibenzothiophenes	154						
C3-Dibenzothiophenes	123						
C4-Dibenzothiophenes	64.9						
Fluoranthene	3.49	J		22	4.36 ± 0.40	3.17	5.71
Pyrene	12.1			20	14.81 ± 0.39	11.5	18.2
C1-Fluoranthenes/Pyrenes	80.4						
C2-Fluoranthenes/Pyrenes	126						
C3-Fluoranthenes/Pyrenes	127						
C4-Fluoranthenes/Pyrenes	103						
Naphthobenzothiophene	25.4						
C1-Naphthobenzothiophenes	52.7						
C2-Naphthobenzothiophenes	70.0						
C3-Naphthobenzothiophenes	55.8						
C4-Naphthobenzothiophenes	22.6						
Benz(a)anthracene	6.24	J		12	7.03 ± 0.85	4.94	9.5
Chrysene/Triphenylene	41.2			14	47.4 ± 1.7	36.6	58.9
C1-Chrysenes	102						
C2-Chrysenes	140						
C3-Chrysenes	97.9						
C4-Chrysenes	50.1						
Benzo(b)fluoranthene	4.66	J		19	5.62 ± 0.34	4.22	7.15
Benzo(k,j)fluoranthene	0.576	J					
Benzo(a)fluoranthene	<10	U					
Benzo(e)pyrene	8.53	J		23	10.78 ± 0.60	8.14	13.7
Benzo(a)pyrene	1.97	J					
Perylene	0.569	J					
Indeno(1,2,3-c,d)pyrene	0.394	J					
Dibenzo(a,h)anthracene	0.661	J		14	0.574 ± 0.091	0.386	0.798
Benzo(g,h,i)perylene	1.55	J		30	2.11 ± 0.26	1.48	2.84
Total PAHs	14570						

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS50168J.D
Client Name	AR-SRM2779-WK-4.0-002
Matrix	Gulf of Mexico Crude Oil
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3091
Date Acquired	9/21/13 6:22
Method	PAH-2012.M
Sample Weight (mg)	4.1

Target Compounds	Su. Corrected Conc. (ng/mg)	Q	RPD (%)	SRM 2779 Certified Value (ug/g)	-20% Certified Value (ug/g)	+20% Certified Value (ug/g)
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	1358		18	1630 ± 50	1264	2016
1-Methylnaphthalene	909		23	1140 ± 20	896	1392
2,6-Dimethylnaphthalene	478					
1,6,7-Trimethylnaphthalene	234					
1-Methylfluorene	204					
4-Methyldibenzothiophene	82.8					
2/3-Methyldibenzothiophene	38.6					
1-Methyldibenzothiophene	28.3					
3-Methylphenanthrene	146		34	206 ± 32	139	286
2-Methylphenanthrene	177		26	230 ± 14	173	293
2-Methylanthracene	10.1					
4/9-Methylphenanthrene	196		17	232 ± 19	170	301
1-Methylphenanthrene	141		18	169 ± 10	127	215
3,6-Dimethylphenanthrene	32.0					
Retene	14.0					
2-Methylfluoranthene	5.36	J				
Benzo(b)fluorene	12.6					
C29-Hopane	19.6					
18a-Oleanane	<10	U				
C30-Hopane	43.8					
C20-TAS	6.04	J				
C21-TAS	6.53	J				
C26(20S)-TAS	3.71	J				
C26(20R)/C27(20S)-TAS	11.8					
C28(20S)-TAS	8.73	J				
C27(20R)-TAS	7.72	J				
C28(20R)-TAS	6.05	J				

Surrogate Recovery	
Naphthalene-d8	90
Acenaphthene-d10	92
Phenanthrene-d10	91
Chrysene-d12	87
Perylene-d12	89

Peak Resolution	
4/9-Methylphenanthrene from 1-Methylyphenanthrene (m/z 192)	89%

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Laboratory Control Material Report

Sample Name	MS50168K.D
Client Name	AR-WKCC-250-038
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3091
Date Acquired	9/21/13 7:28
Method	PAH-2012.M
Sample Volume (mL)	1.0

Target Compounds	Concentration (ng/mL)	Q	RPD (%)	LCM Certified Conc. (ng/mL)	-15% Certified Conc. (ng/mL)	+15% Certified Conc. (ng/mL)
cis/trans Decalin	267		7.7	247	210	284
C1-Decalins	NA					
C2-Decalins	NA					
C3-Decalins	NA					
C4-Decalins	NA					
Naphthalene	265		5.9	250	213	288
C1-Naphthalenes	NA					
C2-Naphthalenes	NA					
C3-Naphthalenes	NA					
C4-Naphthalenes	NA					
Benzothiophene	264		6.1	249	211	286
C1-Benzothiophenes	NA					
C2-Benzothiophenes	NA					
C3-Benzothiophenes	NA					
C4-Benzothiophenes	NA					
Biphenyl	263		5.9	248	211	285
Acenaphthylene	257		3.7	248	211	285
Acenaphthene	264		5.2	251	213	288
Dibenzofuran	260		4.4	249	211	286
Fluorene	260		3.8	251	213	288
C1-Fluorenes	NA					
C2-Fluorenes	NA					
C3-Fluorenes	NA					
Carbazole	257		3.6	248	211	285
Anthracene	258		2.9	251	213	288
Phenanthrene	264		6.3	248	211	285
C1-Phenanthrenes/Anthracenes	NA					
C2-Phenanthrenes/Anthracenes	NA					
C3-Phenanthrenes/Anthracenes	NA					
C4-Phenanthrenes/Anthracenes	NA					
Dibenzothiophene	263		6.6	247	210	283
C1-Dibenzothiophenes	NA					
C2-Dibenzothiophenes	NA					
C3-Dibenzothiophenes	NA					
C4-Dibenzothiophenes	NA					
Fluoranthene	266		6.0	250	213	288
Pyrene	263		5.1	250	213	288
C1-Fluoranthenes/Pyrenes	NA					
C2-Fluoranthenes/Pyrenes	NA					
C3-Fluoranthenes/Pyrenes	NA					
C4-Fluoranthenes/Pyrenes	NA					
Naphthobenzothiophene	258		2.5	252	214	289
C1-Naphthobenzothiophenes	NA					
C2-Naphthobenzothiophenes	NA					
C3-Naphthobenzothiophenes	NA					
C4-Naphthobenzothiophenes	NA					
Benz(a)anthracene	262		5.0	250	212	287
Chrysene/Triphenylene	259		4.2	249	211	286
C1-Chrysenes	NA					
C2-Chrysenes	NA					
C3-Chrysenes	NA					
C4-Chrysenes	NA					
Benzo(b)fluoranthene	278		10.4	251	213	288
Benzo(k,j)fluoranthene	259		3.9	249	212	286
Benzo(a)fluoranthene	NA					
Benzo(e)pyrene	263		5.5	249	212	286
Benzo(a)pyrene	273		8.8	250	212	287
Perylene	262		4.7	250	213	288
Indeno(1,2,3-c,d)pyrene	250		1.7	246	209	283
Dibenzo(a,h)anthracene	250		1.0	248	211	285
Benzo(g,h,i)perylene	255		2.7	248	211	285

Sample Name	MS50168K.D
Client Name	AR-WKCC-250-038
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3091
Date Acquired	9/21/13 7:28
Method	PAH-2012.M
Sample Volume (mL)	1.0

Target Compounds	Concentration (ng/mL)	Q	RPD (%)	LCM Certified Conc. (ng/mL)	-15% Certified Conc. (ng/mL)	+15% Certified Conc. (ng/mL)
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	262		4.6	250	213	288
1-Methylnaphthalene	265		6.0	250	212	287
2,6-Dimethylnaphthalene	263		5.2	250	213	288
1,6,7-Trimethylnaphthalene	260		3.9	250	213	288
1-Methylfluorene	253		0.4	252	214	290
4-Methyldibenzothiophene	257		2.1	252	214	290
2/3-Methyldibenzothiophene	NA					
1-Methyldibenzothiophene	NA					
3-Methylphenanthrene	NA					
2-Methylphenanthrene	NA					
2-Methylanthracene	NA					
4/9-Methylphenanthrene	NA					
1-Methylphenanthrene	249		0.7	247	210	284
3,6-Dimethylphenanthrene	253		0.9	250	213	288
Retene	230		2.8	223	190	257
2-Methylfluoranthene	276		9.2	252	214	289
Benzo(b)fluorene	274		8.3	252	214	290
C29-Hopane	NA					
18a-Oleanane	NA					
C30-Hopane	279		11.0	250	213	288
C20-TAS	NA					
C21-TAS	NA					
C26(20S)-TAS	NA					
C26(20R)/C27(20S)-TAS	283		12.2	250	213	288
C28(20S)-TAS	NA					
C27(20R)-TAS	NA					
C28(20R)-TAS	NA					

Surrogate Recovery	
Naphthalene-d8	95
Acenaphthene-d10	93
Phenanthrene-d10	89
Chrysene-d12	99
Perylene-d12	96

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Laboratory Control Material Report

Sample Name	MS50168I.D
Client Name	AR-WKICV-250-004
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3091
Date Acquired	9/21/13 5:15
Method	PAH-2012.M
Sample Volume (mL)	1.0

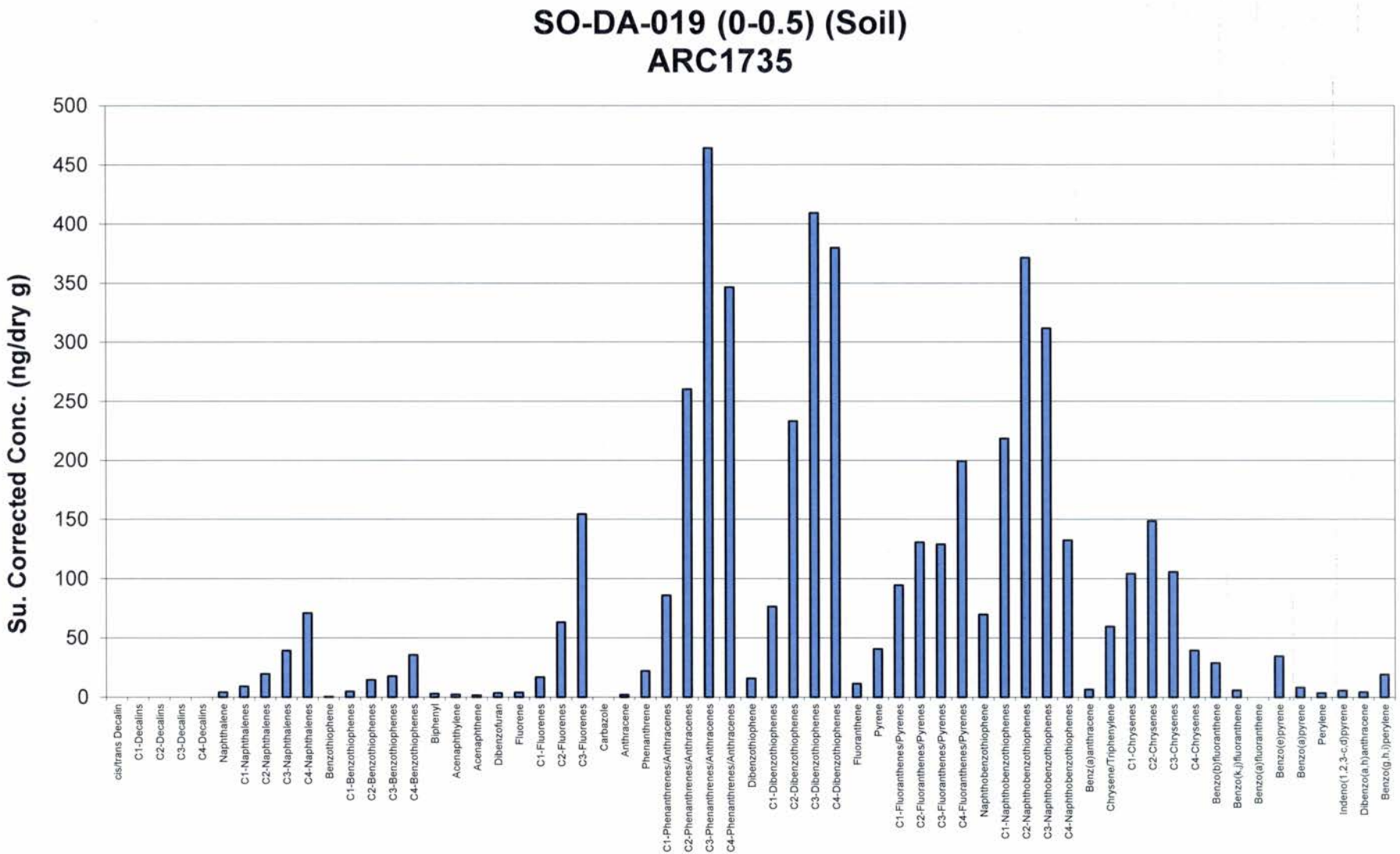
Target Compounds	Concentration (ng/mL)	Q	RPD (%)	ICV Certified Conc. (ng/mL)	-20% Certified Conc. (ng/mL)	+20% Certified Conc. (ng/mL)
cis/trans Decalin	279		10.7	250	200	300
C1-Decalins	NA					
C2-Decalins	NA					
C3-Decalins	NA					
C4-Decalins	NA					
Naphthalene	279		10.8	250	200	300
C1-Naphthalenes	NA					
C2-Naphthalenes	NA					
C3-Naphthalenes	NA					
C4-Naphthalenes	NA					
Benzothiophene	284		12.5	250	200	300
C1-Benzothiophenes	NA					
C2-Benzothiophenes	NA					
C3-Benzothiophenes	NA					
C4-Benzothiophenes	NA					
Biphenyl	280		11.0	251	201	301
Acenaphthylene	270					
Acenaphthene	284		12.6	250	200	300
Dibenzofuran	288		13.9	250	200	300
Fluorene	278		10.6	250	200	300
C1-Fluorenes	NA					
C2-Fluorenes	NA					
C3-Fluorenes	NA					
Carbazole	275		9.5	250	200	300
Anthracene	277		10.3	250	200	300
Phenanthrene	284		12.8	250	200	300
C1-Phenanthrenes/Anthracenes	NA					
C2-Phenanthrenes/Anthracenes	NA					
C3-Phenanthrenes/Anthracenes	NA					
C4-Phenanthrenes/Anthracenes	NA					
Dibenzothiophene	286		13.3	250	200	300
C1-Dibenzothiophenes	NA					
C2-Dibenzothiophenes	NA					
C3-Dibenzothiophenes	NA					
C4-Dibenzothiophenes	NA					
Fluoranthene	289		14.4	250	200	300
Pyrene	284		12.6	250	200	300
C1-Fluoranthenes/Pyrenes	NA					
C2-Fluoranthenes/Pyrenes	NA					
C3-Fluoranthenes/Pyrenes	NA					
C4-Fluoranthenes/Pyrenes	NA					
Naphthobenzothiophene	NA					
C1-Naphthobenzothiophenes	NA					
C2-Naphthobenzothiophenes	NA					
C3-Naphthobenzothiophenes	NA					
C4-Naphthobenzothiophenes	NA					
Benz(a)anthracene	289		14.4	250	200	300
Chrysene/Triphenylene	283		12.4	250	200	300
C1-Chrysenes	NA					
C2-Chrysenes	NA					
C3-Chrysenes	NA					
C4-Chrysenes	NA					
Benzo(b)fluoranthene	288		14.0	250	200	300
Benzo(k,j)fluoranthene	289		14.3	250	200	300
Benzo(a)fluoranthene	NA					
Benzo(e)pyrene	291		14.9	250	200	300
Benzo(a)pyrene	280		11.4	250	200	300
Perylene	283		12.2	251	200	301
Indeno(1,2,3-c,d)pyrene	280		11.4	250	200	300
Dibenzo(a,h)anthracene	290		14.8	250	200	300
Benzo(g,h,i)perylene	281		11.7	250	200	300

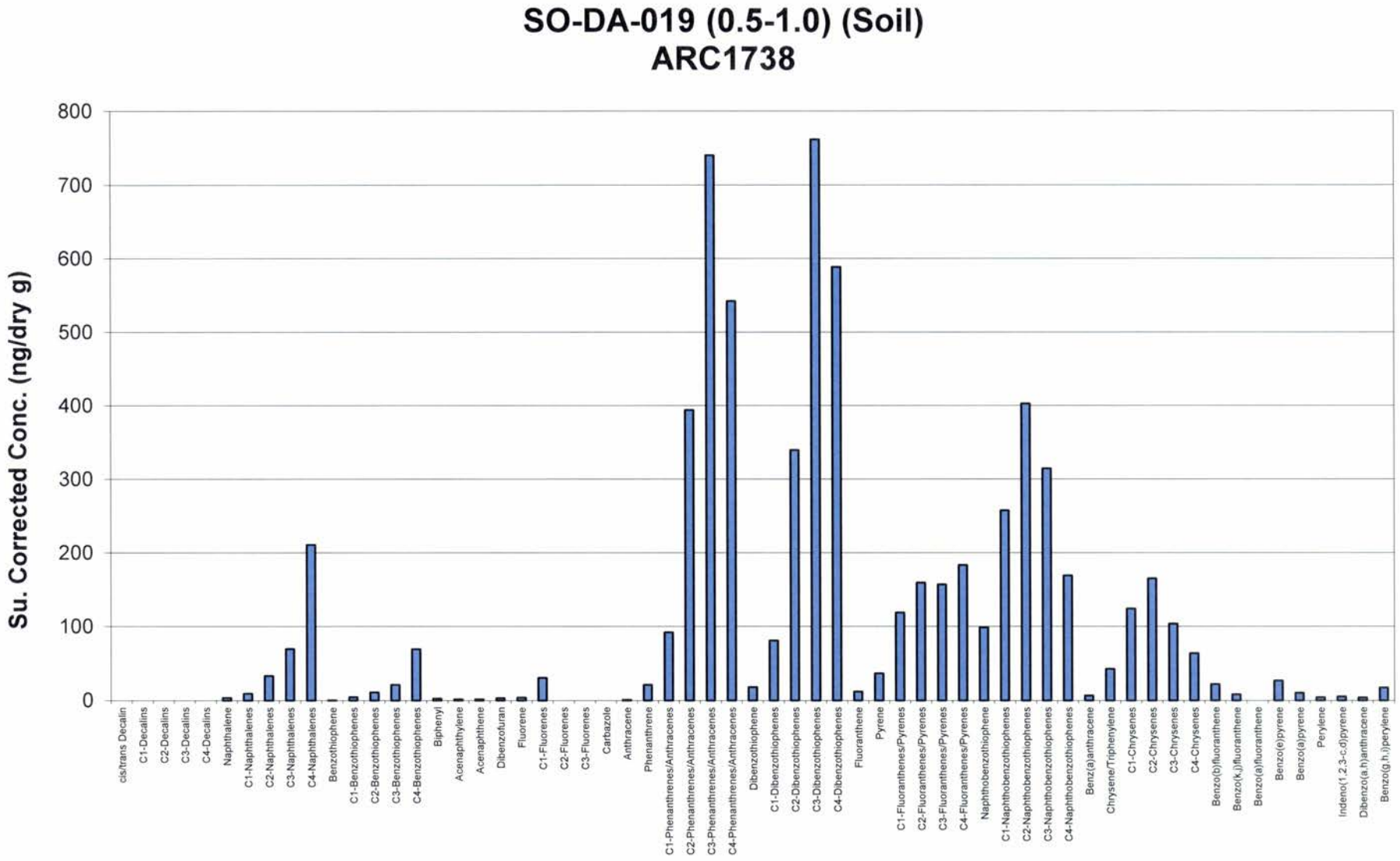
Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Laboratory Control Material Report

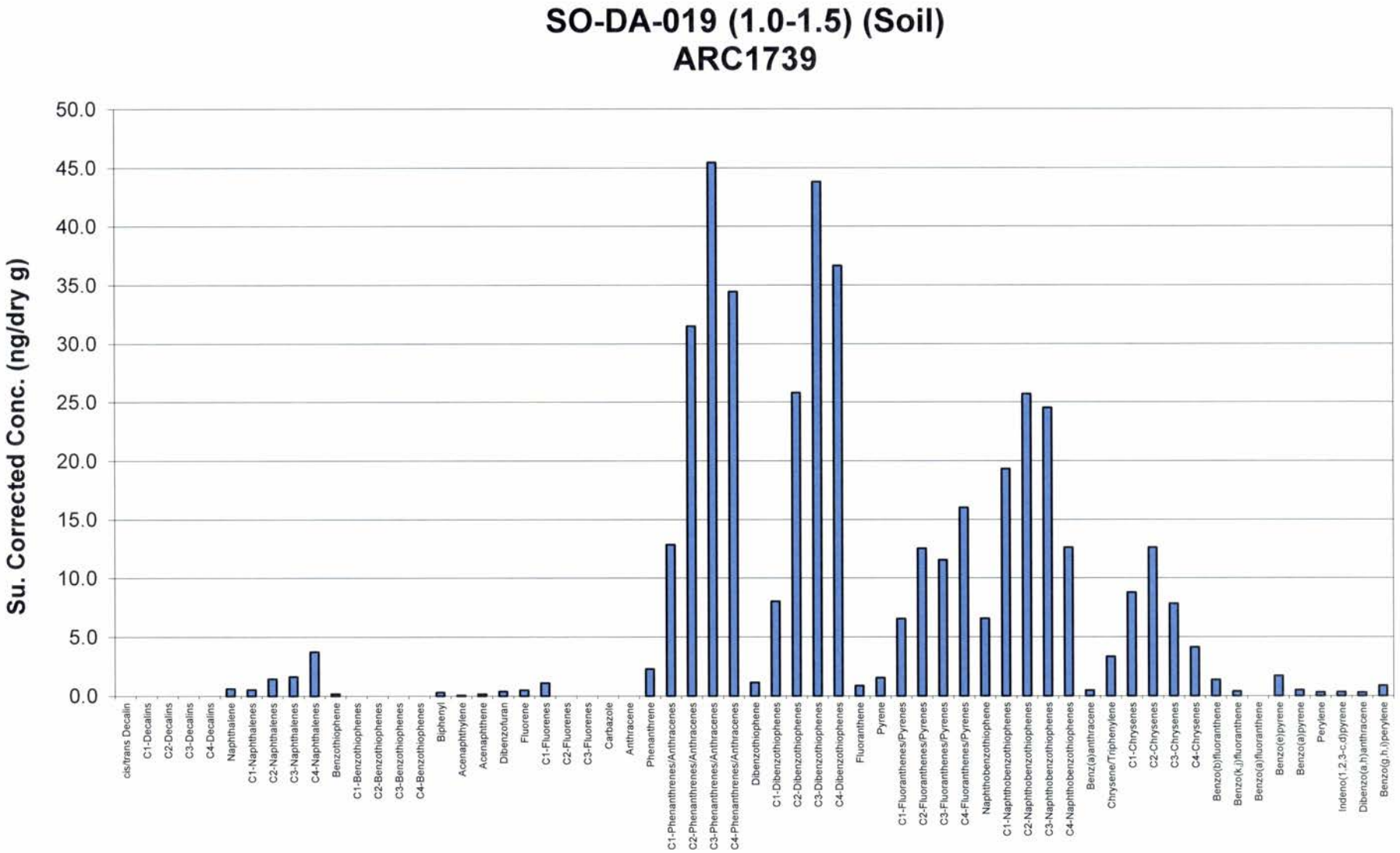
Sample Name	MS50168I.D
Client Name	AR-WKICV-250-004
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3091
Date Acquired	9/21/13 5:15
Method	PAH-2012.M
Sample Volume (mL)	1.0

Target Compounds	Concentration (ng/mL)	Q	RPD (%)	ICV Certified Conc. (ng/mL)	-20% Certified Conc. (ng/mL)	+20% Certified Conc. (ng/mL)
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	290		14.5	250	200	301
1-Methylnaphthalene	289		14.3	251	200	301
2,6-Dimethylnaphthalene	282		12.0	250	200	300
1,6,7-Trimethylnaphthalene	289		14.2	250	200	301
1-Methylfluorene	NA					
4-Methyldibenzothiophene	NA					
2/3-Methyldibenzothiophene	NA					
1-Methyldibenzothiophene	NA					
3-Methylphenanthrene	NA					
2-Methylphenanthrene	NA					
2-Methylanthracene	NA					
4/9-Methylphenanthrene	NA					
1-Methylphenanthrene	269		7.1	250	200	300
3,6-Dimethylphenanthrene	NA					
Retene	NA					
2-Methylfluoranthene	NA					
Benzo(b)fluorene	NA					
C29-Hopane	NA					
18a-Oleanane	NA					
C30-Hopane	NA					
C20-TAS	NA					
C21-TAS	NA					
C26(20S)-TAS	NA					
C26(20R)/C27(20S)-TAS	NA					
C28(20S)-TAS	NA					
C27(20R)-TAS	NA					
C28(20R)-TAS	NA					
Surrogate Recovery						
Naphthalene-d8	232		7.6	250	200	300
Acenaphthene-d10	225		10.6	250	200	300
Phenanthrene-d10	224		11.1	250	200	300
Chrysene-d12	242		3.4	250	200	300
Perylene-d12	229		8.7	250	200	300

Polycyclic Aromatic Hydrocarbon Histograms


SO-DA-019 (0-0.5) (Soil)
ARC1735
Su. Corrected Conc. (ng/dry g)
500
450
400
350
300
250
200
150
100
50
0
cis/trans Decalin
C1-Decalins
C2-Decalins
C3-Decalins
C4-Decalins
Naphthalene
C1-Naphthalenes
C2-Naphthalenes
C3-Naphthalenes
C4-Naphthalenes
Benzothiophene
C1-Benzothiophenes
C2-Benzothiophenes
C3-Benzothiophenes
C4-Benzothiophenes
Biphenyl
Acenaphthylene
Acenaphthene
Dibenzofuran
Fluorene
C1-Fluorenes
C2-Fluorenes
C3-Fluorenes
Carbazole
Anthracene
Phenanthrene
C1-Phenanthrenes/Anthracenes
C2-Phenanthrenes/Anthracenes
C3-Phenanthrenes/Anthracenes
C4-Phenanthrenes/Anthracenes
Dibenzothiophene
C1-Dibenzothiophenes
C2-Dibenzothiophenes
C3-Dibenzothiophenes
C4-Dibenzothiophenes
Fluoranthene
Pyrene
C1-Fluoranthenes/Pyrenes
C2-Fluoranthenes/Pyrenes
C3-Fluoranthenes/Pyrenes
C4-Fluoranthenes/Pyrenes
Naphthobenzothiophene
C1-Naphthobenzothiophenes
C2-Naphthobenzothiophenes
C3-Naphthobenzothiophenes
C4-Naphthobenzothiophenes
Benz(a)anthracene
Chrysene/Triphenylene
C1-Chrysenes
C2-Chrysenes
C3-Chrysenes
C4-Chrysenes
Benzo(b)fluoranthene
Benzo(k,j)fluoranthene
Benzo(a)fluoranthene
Benzo(e)pyrene
Benzo(a)pyrene
Perylene
Indeno(1,2,3-c,d)pyrene
Dibenzo(a,h)anthracene
Benzo(g,h,i)perylene


SO-DA-019 (0.5-1.0) (Soil)
ARC1738
Su. Corrected Conc. (ng/dry g)
800
700
600
500
400
300
200
100
0
cis/trans Decalin
C1-Decalins
C2-Decalins
C3-Decalins
C4-Decalins
Naphthalene
C1-Naphthalenes
C2-Naphthalenes
C3-Naphthalenes
C4-Naphthalenes
Benzothiophene
C1-Benzothiophenes
C2-Benzothiophenes
C3-Benzothiophenes
C4-Benzothiophenes
Biphenyl
Acenaphthylene
Acenaphthene
Dibenzofuran
Fluorene
C1-Fluorenes
C2-Fluorenes
C3-Fluorenes
Carbazole
Anthracene
Phenanthrene
C1-Phenanthrenes/Anthracenes
C2-Phenanthrenes/Anthracenes
C3-Phenanthrenes/Anthracenes
C4-Phenanthrenes/Anthracenes
Dibenzothiophene
C1-Dibenzothiophenes
C2-Dibenzothiophenes
C3-Dibenzothiophenes
C4-Dibenzothiophenes
Fluoranthene
Pyrene
C1-Fluoranthenes/Pyrenes
C2-Fluoranthenes/Pyrenes
C3-Fluoranthenes/Pyrenes
C4-Fluoranthenes/Pyrenes
Naphthobenzothiophene
C1-Naphthobenzothiophenes
C2-Naphthobenzothiophenes
C3-Naphthobenzothiophenes
C4-Naphthobenzothiophenes
Benz(a)anthracene
Chrysene/Triphenylene
C1-Chrysenes
C2-Chrysenes
C3-Chrysenes
C4-Chrysenes
Benzo(b)fluoranthene
Benzo(k,j)fluoranthene
Benzo(a)fluoranthene
Benzo(e)pyrene
Benzo(a)pyrene
Perylene
Indeno(1,2,3-c,d)pyrene
Dibenzo(a,h)anthracene
Benzo(g,h,i)perylene


SO-DA-019 (1.0-1.5) (Soil)
ARC1739
Su. Corrected Conc. (ng/dry g)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
cis/trans Decalin
C1-Decalins
C2-Decalins
C3-Decalins
C4-Decalins
Naphthalene
C1-Naphthalenes
C2-Naphthalenes
C3-Naphthalenes
C4-Naphthalenes
Benzothiophene
C1-Benzothiophenes
C2-Benzothiophenes
C3-Benzothiophenes
C4-Benzothiophenes
Biphenyl
Acenaphthylene
Acenaphthene
Dibenzofuran
Fluorene
C1-Fluorenes
C2-Fluorenes
C3-Fluorenes
Carbazole
Anthracene
Phenanthrene
C1-Phenanthrenes/Anthracenes
C2-Phenanthrenes/Anthracenes
C3-Phenanthrenes/Anthracenes
C4-Phenanthrenes/Anthracenes
Dibenzothiophene
C1-Dibenzothiophenes
C2-Dibenzothiophenes
C3-Dibenzothiophenes
C4-Dibenzothiophenes
Fluoranthene
Pyrene
C1-Fluoranthenes/Pyrenes
C2-Fluoranthenes/Pyrenes
C3-Fluoranthenes/Pyrenes
C4-Fluoranthenes/Pyrenes
Naphthobenzothiophene
C1-Naphthobenzothiophenes
C2-Naphthobenzothiophenes
C3-Naphthobenzothiophenes
C4-Naphthobenzothiophenes
Benz(a)anthracene
Chrysene/Triphenylene
C1-Chrysenes
C2-Chrysenes
C3-Chrysenes
C4-Chrysenes
Benzo(b)fluoranthene
Benzo(k,j)fluoranthene
Benzo(a)fluoranthene
Benzo(e)pyrene
Benzo(a)pyrene
Perylene
Indeno(1,2,3-c,d)pyrene
Dibenzo(a,h)anthracene
Benzo(g,h,i)perylene

Polycyclic Aromatic Hydrocarbon Total Ion Chromatograms

```
File        :C:\GCMS5\MS50168\ARC1735.D
Operator    : ECM(YMIAO)
Acquired    : 21 Sep 2013  14:06      using AcqMethod PAH-2012.M
Instrument :   GCMS5
Sample Name: SO-DA-019 (0-0.5)
Misc Info  :
Vial Number: 17
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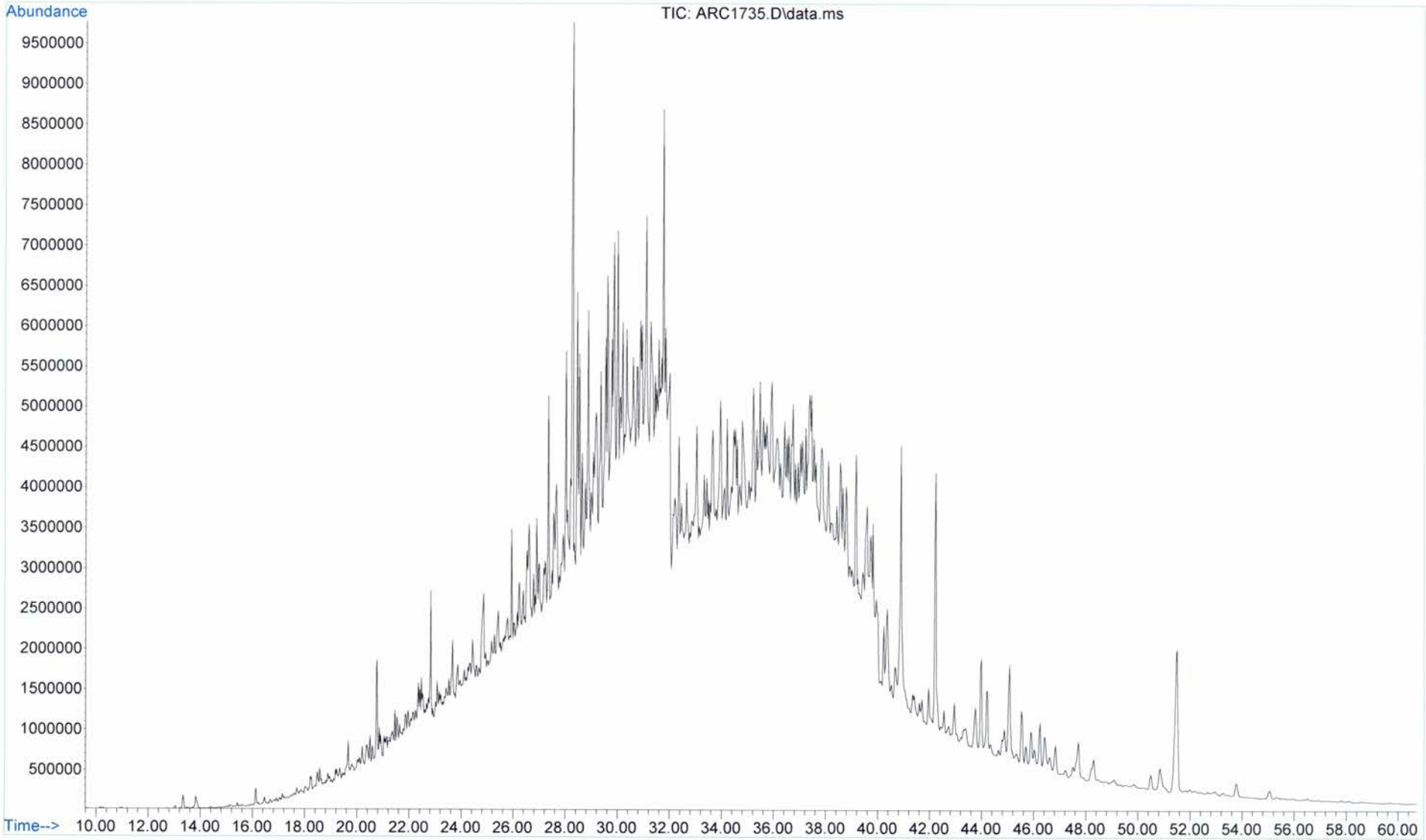

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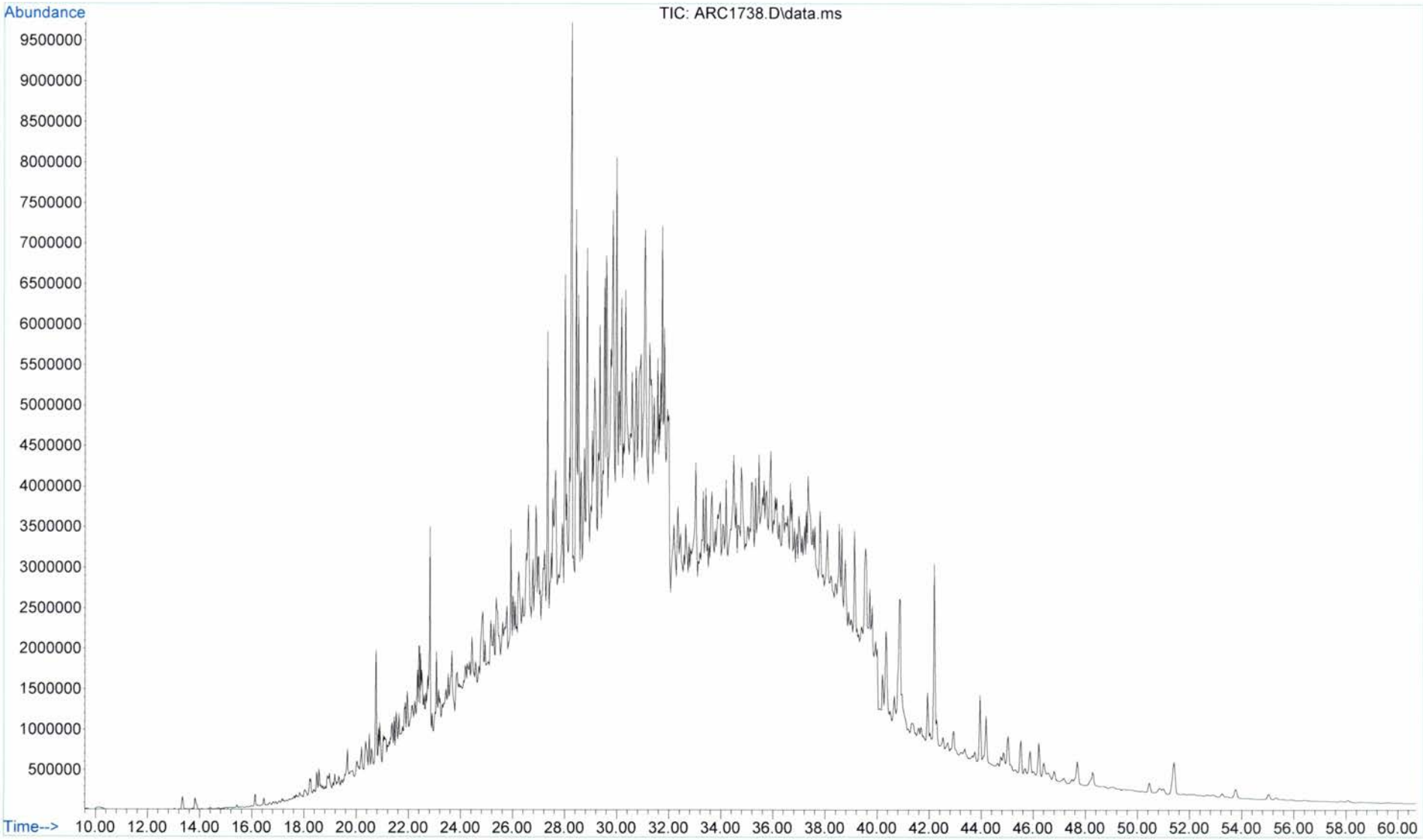
File        :C:\GCMS5\MS50168\ARC1738.D
Operator    : ECM(YMIAO)
Acquired    : 21 Sep 2013  15:12      using AcqMethod PAH-2012.M
Instrument :   GCMS5
Sample Name: SO-DA-019 (0.5-1.0)
Misc Info  :
Vial Number: 18
```



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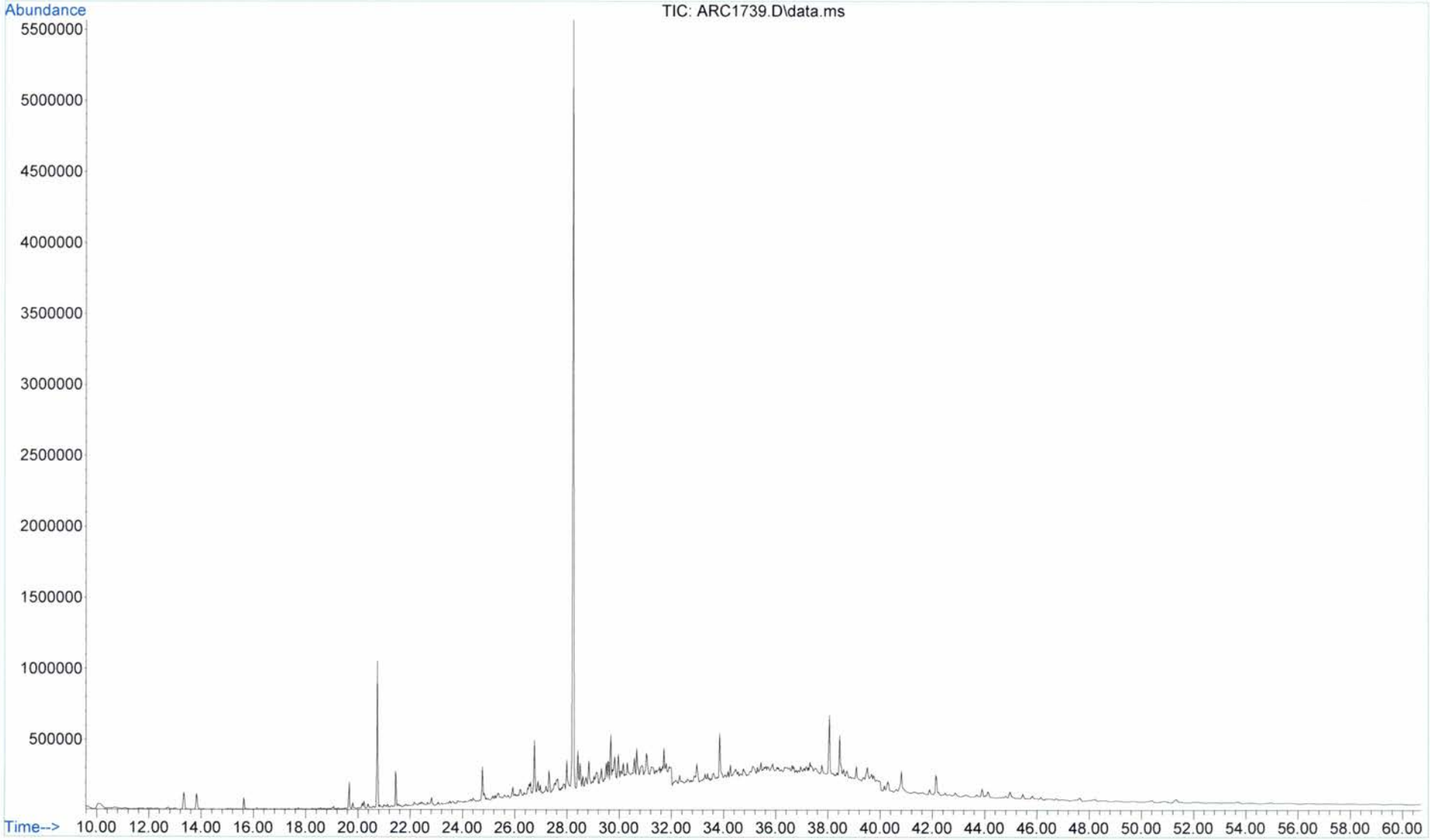
File        :C:\GCMS5\MS50168\ARC1739.D
Operator    : ECM(YMIAO)
Acquired    : 21 Sep 2013  16:18      using AcqMethod PAH-2012.M
Instrument :   GCMS5
Sample Name: SO-DA-019 (1.0-1.5)
Misc Info   :
Vial Number: 19
```



Polycyclic Aromatic Hydrocarbon Raw Data

B&B LABORATORIES PAHs QA FORM

Extraction Page: ENV 3091	Analyst: Y. Miao
Client: Arcadis - Mayflower AR	Date: September 23, 2013
Job: #: J13034	Project Quality Manager: D Foard
SDG #: 13080901	Date: 09/26/13

Initial Calibration: No failures	ICV (from the second source): No failures

Surrogate Recoveries:	d12-Perylene was outside of the laboratory %recovery limits in 3 client samples samples
Procedural Blank:	No failures
Blank Spike:	NA
Blank Spike Duplicate:	NA
Laboratory Duplicate:	No failures
Matrix Spike:	Benz(a)anthracene was detected outside of the laboratory %recovery limits of 40-120%. Perylene was detected outside of the laboratory % recovery limits of 10-120%, However these compounds are outside of the limits due to high native concentrations of PAHs in the sample. Peaks are qualifed with a "Y" - invalid spike
Matirx Spike Duplicate:	Benz(a)anthracene was detected outside of the laboratory %recovery limits of 40-120%. Perylene was detected outside of the laboratory % recovery limits of 10-120%, However these compounds are outside of the limits due to high native concentrations of PAHs in the sample. Peaks are qualifed with a "Y" - invalid spike
SRM/LCS (Solution, Tissue, Sediment):	Solution no failures Sediment (1941b) no failures
CCC (from a second source):	No failures
SRM-2279 Reference Oil	No failures
Mass Discrimination Check (benzo(ghi)perylene/phenanthrene ≥ 0.7)	No failures

Sequence Name: C:\msdchem\1\sequence\MS50168.s
Comment: Arcadis-Mayflower AR-Sed-PAH (09/20/13)
Operator: ECM(YMIAO)
Data Path: C:\MSDCHEM\1\DATA\MS50168\
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

Sequence Barcode Options
(X) On Mismatch, Inject Anyway
( ) On Mismatch, Don't Inject
( ) Barcode Disabled

Line		Sample Name/Misc Info		
1)	Sample 1	MS50168A	PAH-2012	Solvent
2)	Sample 2	MS50168B	PAH-2012	AR-WKC1-020-030
3)	Sample 3	MS50168C	PAH-2012	AR-WKC2-100-030
4)	Sample 4	MS50168D	PAH-2012	AR-WKC3-250-030
5)	Sample 5	MS50168E	PAH-2012	AR-WKC4-500-030
6)	Sample 6	MS50168F	PAH-2012	AR-WKC5-1000-030
7)	Sample 7	MS50168G	PAH-2012	AR-WKC6-5000-030
8)	Sample 8	MS50168H	PAH-2012	AR-WKISSU-250-002
9)	Sample 9	MS50168I	PAH-2012	AR-WKICV-250-004
10)	Sample 10	MS50168J	PAH-2012	AR-SRM2779-WK-4.0-002
11)	Sample 11	MS50168K	PAH-2012	AR-WKCC-250-038
12)	Sample 12	ENV3091A	PAH-2012	
13)	Sample 13	ENV3091B	PAH-2012	
14)	Sample 14	ENV3091C	PAH-2012	
15)	Sample 15	ENV3091D	PAH-2012	
16)	Sample 16	ENV3091E	PAH-2012	
17)	Sample 17	ARC1735	PAH-2012	
18)	Sample 18	ARC1738	PAH-2012	
19)	Sample 19	ARC1739	PAH-2012	
20)	Sample 20	MS50168L	PAH-2012	AR-WKCC-250-038

Evaluate Continuing Calibration Report

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168K.D
Acq On : 21 Sep 2013 7:28 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Sep 23 16:54:13 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	83	0.00
2	S	Naphthalene-d8	1.612	1.538	4.6	85	0.00
3	T	cis/trans Decalin	0.300	0.290	3.3	84	-0.02
4	un	C1-Decalins	0.300	0.000	100.0#	0#	-12.36#
5	un	C2-Decalins	0.300	0.000	100.0#	0#	-13.34#
6	un	C3-Decalins	0.300	0.000	100.0#	0#	-16.27#
7	un	C4-Decalins	0.300	0.000	100.0#	0#	-18.75#
8	T	Naphthalene	1.707	1.618	5.2	85	0.00
9	T	2-Methylnaphthalene	1.102	1.032	6.4	84	-0.02
10	T	1-Methylnaphthalene	1.058	1.004	5.1	85	0.00
11	T	2,6-Dimethylnaphthalene	1.021	0.961	5.9	84	0.00
12	T	1,6,7-Trimethylnaphthalene	1.011	0.940	7.0	84	0.00
13	un	C2-Naphthalenes	1.707	0.000	100.0#	0#	-18.57#
14	un	C3-Naphthalenes	1.707	0.000	100.0#	0#	-20.03#
15	un	C4-Naphthalenes	1.707	0.000	100.0#	0#	-22.13#
16	T	Benzothiophene	1.385	1.317	4.9	85	0.02
17	un	C1-Benzothiophenes	1.385	0.000	100.0#	0#	-15.49#
18	un	C2-Benzothiophenes	1.385	0.000	100.0#	0#	-18.37#
19	un	C3-Benzothiophenes	1.385	0.000	100.0#	0#	-20.32#
20	un	C4-Benzothiophenes	1.385	0.000	100.0#	0#	-21.77#
21	S	Acenaphthene-d10	0.982	0.915	6.8	84	0.00
22	T	Biphenyl	1.419	1.345	5.2	85	-0.02
23	T	Acenaphthylene	1.686	1.564	7.2	84	0.00
24	T	Acenaphthene	1.020	0.961	5.8	84	-0.02
25	T	Dibenzofuran	1.547	1.445	6.6	83	0.00
26	T	Fluorene	1.273	1.183	7.1	84	0.00
27	T	1-Methylfluorene	0.809	0.727	10.1	82	0.00
28	un	C1-Fluorenes	1.273	0.000	100.0#	0#	-23.52#
29	un	C2-Fluorenes	1.273	0.000	100.0#	0#	-25.92#
30	un	C3-Fluorenes	1.273	0.000	100.0#	0#	-27.31#
31	I	Pyrene-d10	1.000	1.000	0.0	84	0.00
32	S	Phenanthrene-d10	0.877	0.784	10.6	82	0.00
33	T	Carbazole	0.801	0.743	7.2	84	0.00
34	T	Dibenzothiophene	0.953	0.910	4.5	85	0.00
35	T	4-Methyldibenzothiophene	0.701	0.640	8.7	84	-0.03
36	un	2/3-Methyldibenzothiophene	0.701	0.000	100.0#	0#	-26.21#
37	un	1-Methyldibenzothiophene	0.701	0.000	100.0#	0#	-26.55#
38	un	C2-Dibenzothiophenes	0.953	0.000	100.0#	0#	-27.87#
39	un	C3-Dibenzothiophenes	0.953	0.000	100.0#	0#	-28.83#
40	un	C4-Dibenzothiophenes	0.953	0.000	100.0#	0#	-30.50#
41	T	Phenanthrene	0.985	0.939	4.7	86	0.00
42	T	Anthracene	0.907	0.835	7.9	85	0.00
43	un	3-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
44	un	2-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
45	un	2-Methylanthracene	0.759	0.000	100.0#	0#	-26.74#
46	un	4/9-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
47	T	1-Methylphenanthrene	0.759	0.684	9.9	83	0.00

Evaluate Continuing Calibration Report

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168K.D
Acq On : 21 Sep 2013 7:28 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Sep 23 16:54:13 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
48	T	3,6-Dimethylphenanthrene	0.778	0.702	9.8	84	0.00
49	T	Retene	0.375	0.345	8.0	85	0.00
50	un	C2-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-28.58#
51	un	C3-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-29.82#
52	un	C4-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-32.09#
53	T	Naphthobenzothiophene	1.141	1.046	8.3	81	0.00
54	un	C1-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-34.26#
55	un	C2-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-36.63#
56	un	C3-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-37.47#
57	un	C4-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-37.77#
58	T	Fluoranthene	1.155	1.097	5.0	82	0.00
59	T	Pyrene	1.234	1.161	5.9	85	-0.03
60	T	2-Methylfluoranthene	0.817	0.801	2.0	90	0.00
61	T	Benzo(b)fluorene	0.800	0.777	2.9	90	0.00
62	un	C1-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-31.55#
63	un	C2-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-32.19#
64	un	C3-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-33.97#
65	un	C4-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-35.85#
66	S	Chrysene-d12	1.138	1.125	1.1	88	0.00
67	T	Benz(a)anthracene	1.182	1.111	6.0	84	0.00
68	T	Chrysene/Triphenylene	1.137	1.060	6.8	81	0.00
69	un	C1-Chrysenes	1.137	0.000	100.0#	0#	-36.08#
70	un	C2-Chrysenes	1.137	0.000	100.0#	0#	-36.08#
71	un	C3-Chrysenes	1.137	0.000	100.0#	0#	-38.15#
72	un	C4-Chrysenes	1.137	0.000	100.0#	0#	-39.48#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	84	0.00
74	un	C29-Hopane	0.486	0.000	100.0#	0#	-40.82#
75	un	18a-Oleanane	0.486	0.000	100.0#	0#	-42.13#
76	T	C30-Hopane	0.486	0.485	0.2	88	0.00
77	T	Benzo(b)fluoranthene	1.257	1.247	0.8	90	-0.03
78	T	Benzo(k,j)fluoranthene	1.258	1.169	7.1	84	0.00
79	un	Benzo(a)fluoranthene	1.258	0.000	100.0#	0#	-37.38#
80	T	Benzo(e)pyrene	1.308	1.235	5.6	82	0.00
81	T	Benzo(a)pyrene	1.179	1.152	2.3	86	-0.03
82	T	Indeno(1,2,3-c,d)pyrene	1.314	1.194	9.1	84	-0.03
83	T	Dibenzo(a,h)anthracene	1.029	0.929	9.7	83	-0.03
84	un	C1-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-49.35#
85	un	C2-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-50.73#
86	un	C3-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-50.04#
87	T	Benzo(g,h,i)perylene	1.145	1.052	8.1	84	0.00
88	S	Perylene-d12	1.172	1.125	4.0	87	0.00
89	T	Perylene	1.287	1.207	6.2	86	0.00
90	S	5(b)H-Cholane	0.252	0.255	-1.2	91	0.00
91	un	C20-TAS	1.706	0.000	100.0#	0#	-33.87#
92	un	C21-TAS	1.706	0.000	100.0#	0#	-34.26#
93	un	C26(20S)-TAS	1.706	0.000	100.0#	0#	-38.74#
94	T	C26(20R)/C27(20S)-TAS	1.706	1.724	-1.1	88	0.00

Evaluate Continuing Calibration Report

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168K.D
Acq On : 21 Sep 2013 7:28 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Sep 23 16:54:13 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev Area%	Dev(min)
95 un	C28(20S)-TAS	1.706	0.000	100.0# 0#	-40.72#
96 un	C27(20R)-TAS	1.706	0.000	100.0# 0#	-40.72#
97 un	C28(20R)-TAS	1.706	0.000	100.0# 0#	-41.67#

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168K.D
Acq On : 21 Sep 2013 7:28 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Sep 23 16:54:13 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	409528m	251.05		0.00
31) Pyrene-d10	29.653	212	802949m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	816071m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	627412m	238.56		0.00
21) Acenaphthene-d10	19.670	164	373412m	233.06		0.00
32) Phenanthrene-d10	24.766	188	628446m	223.70		0.00
66) Chrysene-d12	33.842	240	901417m	247.16		0.00
88) Perylene-d12	38.738	264	917027m	239.95		0.00
90) 5(b)H-Cholane	34.231	217	207676m	252.67		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.175	138	117043m	238.81		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	660033m	237.09		
9) 2-Methylnaphthalene	16.115	142	421209m	234.29		
10) 1-Methylnaphthalene	16.451	142	409183m	237.20		
11) 2,6-Dimethylnaphthalene	18.217	156	392113m	235.50		
12) 1,6,7-Trimethylnaphtha...	21.078	170	383292m	232.50		
13) C2-Naphthalenes	0.000		0	N.D.		
14) C3-Naphthalenes	0.000		0	N.D.		
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	14.059	134	533752m	236.16		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.680	154	543680m	234.94		
23) Acenaphthylene	19.178	152	632544m	229.99		
24) Acenaphthene	19.759	154	392766m	235.97		
25) Dibenzofuran	20.363	168	586541m	232.44		
26) Fluorene	21.548	166	483217m	232.69		
27) 1-Methylfluorene	23.523	180	298532m	226.20		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	589542m	229.63		
34) Dibenzothiophene	24.399	184	718740m	235.45		
35) 4-Methyldibenzothiophene	25.896	198	517263m	230.19		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.		
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	744953m	235.99		
42) Anthracene	25.020	178	670601m	230.89		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168K.D
Acq On : 21 Sep 2013 7:28 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Sep 23 16:54:13 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.970	192	541699m	222.72		
48) 3,6-Dimethylphenanthrene	28.043	206	563091m	225.78		
49) Retene	30.727	234	246948m	205.45		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53) Naphthobenzothiophene	32.999	234	842684m	230.55		
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.947	202	879637m	237.70		
59) Pyrene	29.710	202	930170m	235.25		
60) 2-Methylfluoranthene	30.473	216	646344m	246.85		
61) Benzo(b)fluorene	31.094	216	627703m	244.99		
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.		
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	33.810	228	888108m	234.56		
68) Chrysene/Triphenylene	33.939	228	844306m	231.71		
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.846	191	395113m	249.53		
77) Benzo(b)fluoranthene	37.344	252	1018264m	248.44		
78) Benzo(k,j)fluoranthene	37.441	252	949062m	231.47		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.349	252	1002696m	235.21		
81) Benzo(a)pyrene	38.511	252	936662m	243.69		
82) Indeno(1,2,3-c,d)pyrene	43.272	276	956889m	223.44		
83) Dibenzo(a,h)anthracene	43.337	278	750554m	223.74		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.		
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.		
87) Benzo(g,h,i)perylene	44.678	276	849626m	227.63		
89) Perylene	38.835	252	984616m	234.60		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	39.451	231	1404696m	252.64		
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168K.D
Acq On : 21 Sep 2013 7:28 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Sep 23 16:54:13 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

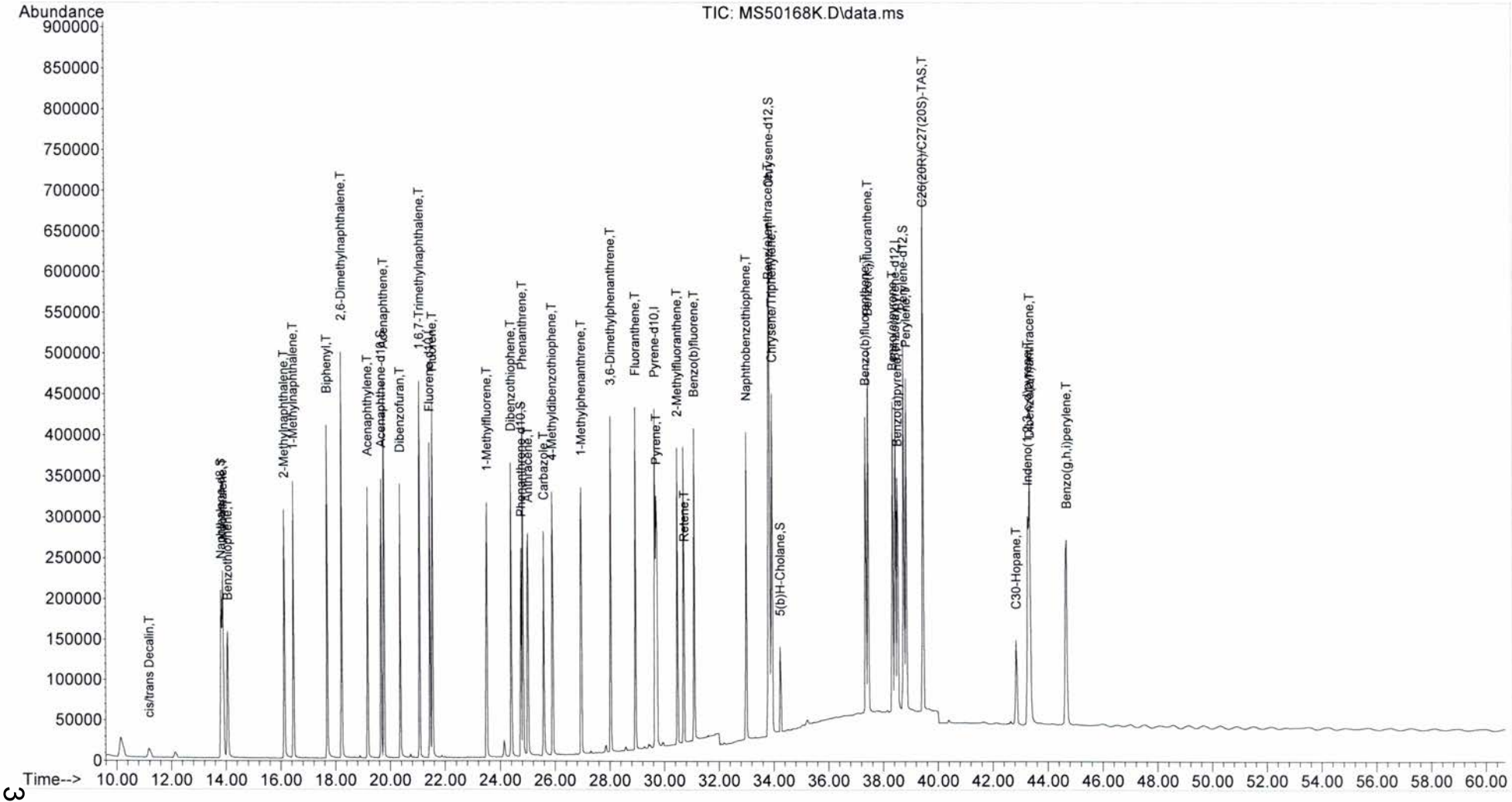
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168K.D
Acq On : 21 Sep 2013 7:28 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Sep 23 16:54:13 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50168\
Data File : MS50168L.D
Acq On : 21 Sep 2013 5:24 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 22 15:26:36 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	77	0.00
2	S	Naphthalene-d8	1.612	1.460	9.4	74	0.00
3	T	cis/trans Decalin	0.300	0.276	8.0	74	-0.02
4	un	C1-Decalins	0.300	0.000	100.0#	0#	-12.36#
5	un	C2-Decalins	0.300	0.000	100.0#	0#	-13.34#
6	un	C3-Decalins	0.300	0.000	100.0#	0#	-16.27#
7	un	C4-Decalins	0.300	0.000	100.0#	0#	-18.75#
8	T	Naphthalene	1.707	1.535	10.1	74	0.00
9	T	2-Methylnaphthalene	1.102	1.013	8.1	76	-0.02
10	T	1-Methylnaphthalene	1.058	0.969	8.4	76	0.00
11	T	2,6-Dimethylnaphthalene	1.021	0.936	8.3	76	0.00
12	T	1,6,7-Trimethylnaphthalene	1.011	0.923	8.7	76	0.00
13	un	C2-Naphthalenes	1.707	0.000	100.0#	0#	-18.57#
14	un	C3-Naphthalenes	1.707	0.000	100.0#	0#	-20.03#
15	un	C4-Naphthalenes	1.707	0.000	100.0#	0#	-22.13#
16	T	Benzothiophene	1.385	1.252	9.6	74	0.02
17	un	C1-Benzothiophenes	1.385	0.000	100.0#	0#	-15.49#
18	un	C2-Benzothiophenes	1.385	0.000	100.0#	0#	-18.37#
19	un	C3-Benzothiophenes	1.385	0.000	100.0#	0#	-20.32#
20	un	C4-Benzothiophenes	1.385	0.000	100.0#	0#	-21.77#
21	S	Acenaphthene-d10	0.982	0.900	8.4	76	0.00
22	T	Biphenyl	1.419	1.308	7.8	77	-0.02
23	T	Acenaphthylene	1.686	1.613	4.3	80	0.00
24	T	Acenaphthene	1.020	0.944	7.5	76	0.00
25	T	Dibenzofuran	1.547	1.448	6.4	77	0.00
26	T	Fluorene	1.273	1.186	6.8	77	0.00
27	T	1-Methylfluorene	0.809	0.758	6.3	79	0.00
28	un	C1-Fluorenes	1.273	0.000	100.0#	0#	-23.52#
29	un	C2-Fluorenes	1.273	0.000	100.0#	0#	-25.92#
30	un	C3-Fluorenes	1.273	0.000	100.0#	0#	-27.31#
31	I	Pyrene-d10	1.000	1.000	0.0	79	0.00
32	S	Phenanthrene-d10	0.877	0.785	10.5	77	0.00
33	T	Carbazole	0.801	0.758	5.4	81	0.00
34	T	Dibenzothiophene	0.953	0.874	8.3	77	0.00
35	T	4-Methyldibenzothiophene	0.701	0.637	9.1	78	0.00
36	un	2/3-Methyldibenzothiophene	0.701	0.000	100.0#	0#	-26.21#
37	un	1-Methyldibenzothiophene	0.701	0.000	100.0#	0#	-26.55#
38	un	C2-Dibenzothiophenes	0.953	0.000	100.0#	0#	-27.87#
39	un	C3-Dibenzothiophenes	0.953	0.000	100.0#	0#	-28.83#
40	un	C4-Dibenzothiophenes	0.953	0.000	100.0#	0#	-30.50#
41	T	Phenanthrene	0.985	0.898	8.8	77	0.00
42	T	Anthracene	0.907	0.838	7.6	80	0.00
43	un	3-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
44	un	2-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
45	un	2-Methylanthracene	0.759	0.000	100.0#	0#	-26.74#
46	un	4/9-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
47	T	1-Methylphenanthrene	0.759	0.694	8.6	79	0.00
48	T	3,6-Dimethylphenanthrene	0.778	0.717	7.8	80	0.00
49	T	Retene	0.375	0.347	7.5	81	0.00

Data Path : C:\GCMS5\MS50168\
Data File : MS50168L.D
Acq On : 21 Sep 2013 5:24 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 22 15:26:36 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
50	un	C2-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-28.58#
51	un	C3-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-29.82#
52	un	C4-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-32.09#
53	T	Naphthobenzothiophene	1.141	1.110	2.7	81	0.00
54	un	C1-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-34.26#
55	un	C2-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-36.63#
56	un	C3-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-37.47#
57	un	C4-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-37.77#
58	T	Fluoranthene	1.155	1.119	3.1	79	0.00
59	T	Pyrene	1.234	1.156	6.3	79	0.00
60	T	2-Methylfluoranthene	0.817	0.766	6.2	81	0.00
61	T	Benzo(b)fluorene	0.800	0.767	4.1	84	0.00
62	un	C1-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-31.55#
63	un	C2-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-32.19#
64	un	C3-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-33.97#
65	un	C4-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-35.85#
66	S	Chrysene-d12	1.138	1.020	10.4	75	0.00
67	T	Benz(a)anthracene	1.182	1.150	2.7	81	0.00
68	T	Chrysene/Triphenylene	1.137	1.079	5.1	77	0.00
69	un	C1-Chrysenes	1.137	0.000	100.0#	0#	-36.08#
70	un	C2-Chrysenes	1.137	0.000	100.0#	0#	-36.08#
71	un	C3-Chrysenes	1.137	0.000	100.0#	0#	-38.15#
72	un	C4-Chrysenes	1.137	0.000	100.0#	0#	-39.48#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	58	0.00
74	un	C29-Hopane	0.486	0.000	100.0#	0#	-40.82#
75	un	18a-Oleanane	0.486	0.000	100.0#	0#	-42.13#
76	T	C30-Hopane	0.486	0.491	-1.0	62	0.03
77	T	Benzo(b)fluoranthene	1.257	1.347	-7.2	68	0.00
78	T	Benzo(k,j)fluoranthene	1.258	1.369	-8.8	69	0.00
79	un	Benzo(a)fluoranthene	1.258	0.000	100.0#	0#	-37.38#
80	T	Benzo(e)pyrene	1.308	1.359	-3.9	63	0.00
81	T	Benzo(a)pyrene	1.179	1.216	-3.1	64	0.00
82	T	Indeno(1,2,3-c,d)pyrene	1.314	1.012	23.0	50	0.00
83	T	Dibenzo(a,h)anthracene	1.029	0.823	20.0	52	0.00
84	un	C1-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-49.35#
85	un	C2-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-50.73#
86	un	C3-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-50.04#
87	T	Benzo(g,h,i)perylene	1.145	0.790	31.0#	44#	0.00
88	S	Perylene-d12	1.172	1.156	1.4	63	0.00
89	T	Perylene	1.287	1.253	2.6	62	0.00
90	S	5(b)H-Cholane	0.252	0.311	-23.4	78	0.03
91	un	C20-TAS	1.706	0.000	100.0#	0#	-33.87#
92	un	C21-TAS	1.706	0.000	100.0#	0#	-34.26#
93	un	C26(20S)-TAS	1.706	0.000	100.0#	0#	-38.74#
94	T	C26(20R)/C27(20S)-TAS	1.706	1.990	-16.6	71	0.00
95	un	C28(20S)-TAS	1.706	0.000	100.0#	0#	-40.72#
96	un	C27(20R)-TAS	1.706	0.000	100.0#	0#	-40.72#
97	un	C28(20R)-TAS	1.706	0.000	100.0#	0#	-41.67#

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50168\
Data File : MS50168L.D
Acq On : 21 Sep 2013 5:24 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 22 15:26:36 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168L.D
Acq On : 21 Sep 2013 5:24 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 22 15:26:36 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	377809m	251.05		0.00
31) Pyrene-d10	29.654	212	754713m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	571620m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	549503m	226.48		0.00
21) Acenaphthene-d10	19.670	164	338956m	229.32		0.00
32) Phenanthrene-d10	24.766	188	591108m	223.85		0.00
66) Chrysene-d12	33.842	240	767770m	223.97		0.00
88) Perylene-d12	38.738	264	659841m	246.48		0.00
90) 5(b)H-Cholane	34.264	217	177730m	308.71		0.03
Target Compounds						Qvalue
3) cis/trans Decalin	11.175	138	102726m	227.20		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	577571m	224.89		
9) 2-Methylnaphthalene	16.115	142	381639m	230.10		
10) 1-Methylnaphthalene	16.451	142	364019m	228.73		
11) 2,6-Dimethylnaphthalene	18.217	156	352249m	229.32		
12) 1,6,7-Trimethylnaphtha...	21.079	170	347420m	228.43		
13) C2-Naphthalenes	0.000		0	N.D.		
14) C3-Naphthalenes	0.000		0	N.D.	d	
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	14.059	134	468294m	224.60		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.680	154	487856m	228.52		
23) Acenaphthylene	19.178	152	601879m	237.21		
24) Acenaphthene	19.782	154	355836m	231.73		
25) Dibenzofuran	20.363	168	542192m	232.90		
26) Fluorene	21.548	166	447248m	233.45		
27) 1-Methylfluorene	23.523	180	287262m	235.93		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	565367m	234.28		
34) Dibenzothiophene	24.399	184	649101m	226.23		
35) 4-Methyldibenzothiophene	25.924	198	483297m	228.82		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.	d	
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	670127m	225.85		
42) Anthracene	25.020	178	632816m	231.81		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168L.D
Acq On : 21 Sep 2013 5:24 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 22 15:26:36 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

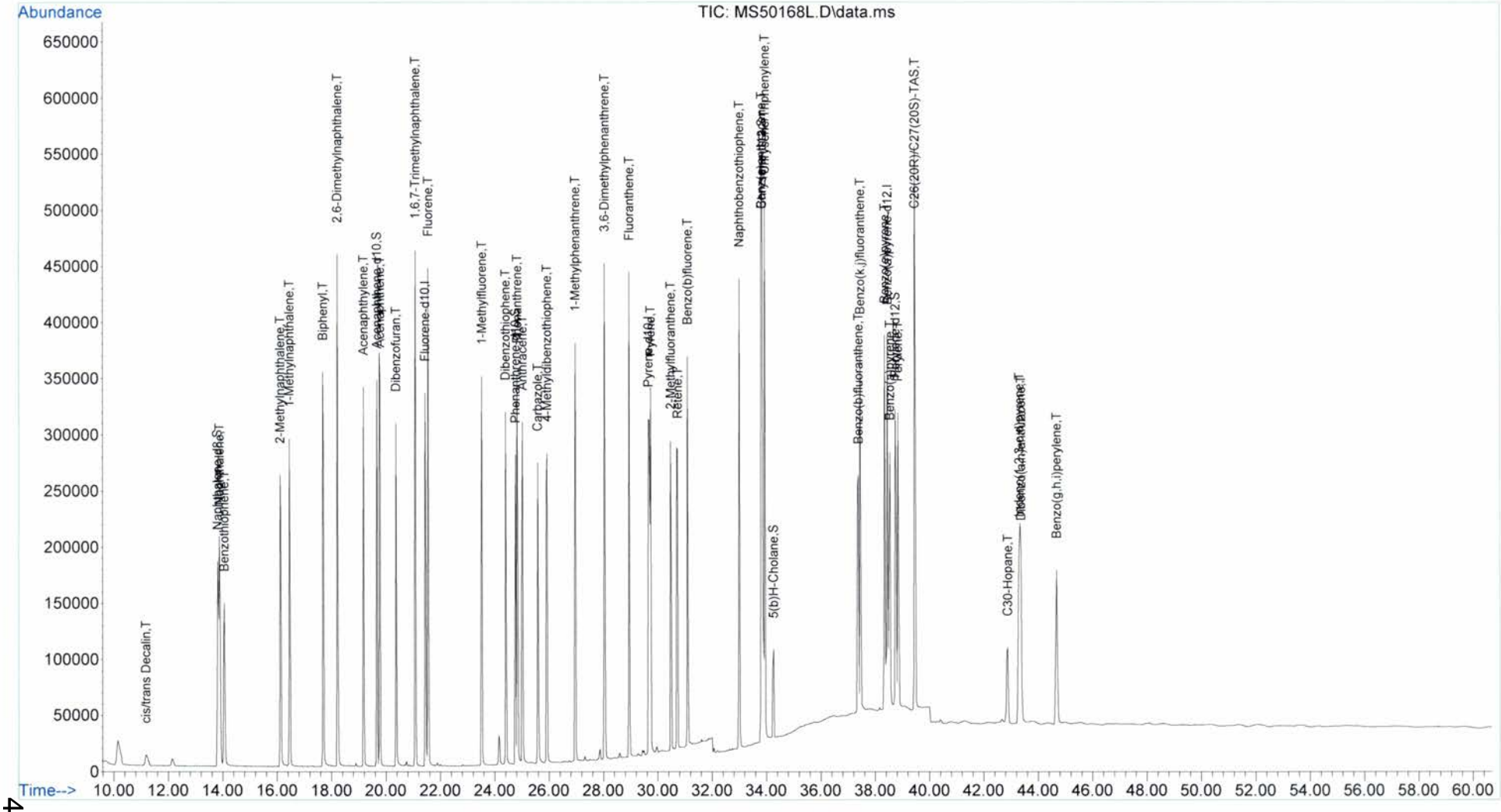
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.970	192	517033m	226.17		
48) 3,6-Dimethylphenanthrene	28.043	206	540349m	230.51		
49) Retene	30.727	234	233399m	206.59		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53) Naphthobenzothiophene	32.999	234	841113m	244.83		
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.947	202	843016m	242.37		
59) Pyrene	29.738	202	870200m	234.15		
60) 2-Methylfluoranthene	30.473	216	580328m	235.80		
61) Benzo(b)fluorene	31.094	216	582449m	241.86		
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.		
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	33.810	228	863948m	242.76		
68) Chrysene/Triphenylene	33.940	228	807508m	235.78		
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.879	191	280127m	252.57		
77) Benzo(b)fluoranthene	37.376	252	770607m	268.41		
78) Benzo(k,j)fluoranthene	37.441	252	778440m	271.04		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.349	252	772531m	258.72		
81) Benzo(a)pyrene	38.543	252	692879m	257.35		
82) Indeno(1,2,3-c,d)pyrene	43.304	276	567858m	189.31		
83) Dibenzo(a,h)anthracene	43.370	278	465832m	198.25		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.678	276	446975m	170.96		
89) Perylene	38.835	252	716085m	243.58		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	39.451	231	1136228m	291.75		
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168L.D
Acq On : 21 Sep 2013 5:24 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-038
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 22 15:26:36 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	MS50168H.D
Data File Path	C:\GCMS5\MS50168\
Operator	ECM(YMIAO)
Date Acquired	9/21/2013 4:09
Acq. Method File	PAH-2012.M
Sample Name	AR-WKISSU-250-002
Misc Info	0
Instrument Name	GCMS5
Vial Number	8
Sample Multiplier	1
Sample Amount	0

Surrogate/Internal Multiplier Factor:	1.00
AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

MS50168H.D
AR-WKISSU-250-002
9/21/2013
PAH-2012.M
1

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	0.00	0	0.0000	0.0000
9)+10)	C1-Naphthalenes	0.00	0	0.0000	0.0000
13)	C2-Naphthalenes	0.00	0	0.0000	0.0000
14)	C3-Naphthalenes	0.00	0	0.0000	0.0000
15)	C4-Naphthalenes	0.00	0	0.0000	0.0000
16)	Benzothiophene	0.00	0	0.0000	0.0000
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	0.00	0	0.0000	0.0000
23)	Acenaphthylene	0.00	0	0.0000	0.0000
24)	Acenaphthene	0.00	0	0.0000	0.0000
25)	Dibenzofuran	0.00	0	0.0000	0.0000
26)	Fluorene	0.00	0	0.0000	0.0000
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	0.00	0	0.0000	0.0000
42)	Anthracene	0.00	0	0.0000	0.0000
41)	Phenanthrene	0.00	0	0.0000	0.0000
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	0.00	0	0.0000	0.0000
35)+36)+37)	C1-Dibenzothiophenes	0.00	0	0.0000	0.0000
38)	C2-Dibenzothiophenes	0.00	0	0.0000	0.0000
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	0.00	0	0.0000	0.0000
59)	Pyrene	0.00	0	0.0000	0.0000
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	0.00	0	0.0000	0.0000
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	0.00	0	0.0000	0.0000
68)	Chrysene/Triphenylene	0.00	0	0.0000	0.0000
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	0.00	0	0.0000	0.0000
78)	Benzo(k,j)fluoranthene	0.00	0	0.0000	0.0000
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	0.00	0	0.0000	0.0000
81)	Benzo(a)pyrene	0.00	0	0.0000	0.0000
89)	Perylene	0.00	0	0.0000	0.0000
82)	Indeno(1,2,3-c,d)pyrene	0.00	0	0.0000	0.0000
83)	Dibenzo(a,h)anthracene	0.00	0	0.0000	0.0000
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	0.00	0	0.0000	0.0000

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	0.00	0	0.0000	0.0000
10)	1-Methylnaphthalene	0.00	0	0.0000	0.0000
11)	2,6-Dimethylnaphthalene	0.00	0	0.0000	0.0000
12)	1,6,7-Trimethylnaphthalene	0.00	0	0.0000	0.0000
27)	1-Methylfluorene	0.00	0	0.0000	0.0000
35)	4-Methyldibenzothiophene	0.00	0	0.0000	0.0000
36)	2/3-Methyldibenzothiophene	0.00	0	0.0000	0.0000
37)	1-Methyldibenzothiophene	0.00	0	0.0000	0.0000
43)	3-Methylphenanthrene	0.00	0	0.0000	0.0000
44)	2-Methylphenanthrene	0.00	0	0.0000	0.0000
45)	2-Methylanthracene	0.00	0	0.0000	0.0000
46)	4/9-Methylphenanthrene	0.00	0	0.0000	0.0000
47)	1-Methylphenanthrene	0.00	0	0.0000	0.0000
48)	3,6-Dimethylphenanthrene	0.00	0	0.0000	0.0000
49)	Retene	0.00	0	0.0000	0.0000
60)	2-Methylfluoranthene	0.00	0	0.0000	0.0000
61)	Benzo(b)fluorene	0.00	0	0.0000	0.0000
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	0.00	0	0.0000	0.0000
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.81	675771	237.44	94.93
21)	Acenaphthene-d10	19.67	397229	229.10	91.58
32)	Phenanthrene-d10	24.77	681247	227.67	91.00
66)	Chrysene-d12	33.84	901672	232.12	92.83
88)	Perylene-d12	38.74	925895	242.41	96.95
90)	5(b)H-Cholane	34.23	212441	258.61	103.45
	Internal Standards				
1)	Fluorene-d10	21.44	443176	251.05	
31)	Pyrene-d10	29.65	855216	250.63	
73)	Benzo(a)pyrene-d12	38.45	815599	250.33	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168H.D
Acq On : 21 Sep 2013 4:09 am
Operator : ECM(YMIAO)
Sample : AR-WKISSU-250-002
Misc :
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Sep 22 13:14:00 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	443176m	251.05		0.00
31) Pyrene-d10	29.654	212	855216m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	815599m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	675771m	237.44		0.00
21) Acenaphthene-d10	19.670	164	397229m	229.10		0.00
32) Phenanthrene-d10	24.766	188	681247m	227.67		0.00
66) Chrysene-d12	33.842	240	901672m	232.12		0.00
88) Perylene-d12	38.738	264	925895m	242.41		0.00
90) 5(b)H-Cholane	34.231	217	212441m	258.61		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	0.000		0	N.D.	d	
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	0.000		0	N.D.	d	
9) 2-Methylnaphthalene	0.000		0	N.D.	d	
10) 1-Methylnaphthalene	0.000		0	N.D.	d	
11) 2,6-Dimethylnaphthalene	0.000		0	N.D.	d	
12) 1,6,7-Trimethylnaphtha...	0.000		0	N.D.	d	
13) C2-Naphthalenes	0.000		0	N.D.	d	
14) C3-Naphthalenes	0.000		0	N.D.	d	
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	0.000		0	N.D.	d	
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	0.000		0	N.D.	d	
23) Acenaphthylene	0.000		0	N.D.	d	
24) Acenaphthene	0.000		0	N.D.	d	
25) Dibenzofuran	0.000		0	N.D.	d	
26) Fluorene	0.000		0	N.D.	d	
27) 1-Methylfluorene	0.000		0	N.D.	d	
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	0.000		0	N.D.	d	
34) Dibenzothiophene	0.000		0	N.D.	d	
35) 4-Methyldibenzothiophene	0.000		0	N.D.	d	
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.	d	
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	0.000		0	N.D.	d	
42) Anthracene	0.000		0	N.D.	d	
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168H.D
Acq On : 21 Sep 2013 4:09 am
Operator : ECM(YMIAO)
Sample : AR-WKISSU-250-002
Misc :
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Sep 22 13:14:00 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	0.000		0	N.D.	d	
48) 3,6-Dimethylphenanthrene	0.000		0	N.D.	d	
49) Retene	0.000		0	N.D.	d	
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53) Naphthobenzothiophene	0.000		0	N.D.	d	
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	0.000		0	N.D.	d	
59) Pyrene	0.000		0	N.D.	d	
60) 2-Methylfluoranthene	0.000		0	N.D.	d	
61) Benzo(b)fluorene	0.000		0	N.D.	d	
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	0.000		0	N.D.	d	
68) Chrysene/Triphenylene	0.000		0	N.D.	d	
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	0.000		0	N.D.	d	
77) Benzo(b)fluoranthene	0.000		0	N.D.	d	
78) Benzo(k,j)fluoranthene	0.000		0	N.D.	d	
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	0.000		0	N.D.	d	
81) Benzo(a)pyrene	0.000		0	N.D.	d	
82) Indeno(1,2,3-c,d)pyrene	0.000		0	N.D.	d	
83) Dibenzo(a,h)anthracene	0.000		0	N.D.	d	
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	0.000		0	N.D.	d	
89) Perylene	0.000		0	N.D.	d	
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	0.000		0	N.D.	d	
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168H.D
Acq On : 21 Sep 2013 4:09 am
Operator : ECM(YMIAO)
Sample : AR-WKISSU-250-002
Misc :
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Sep 22 13:14:00 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

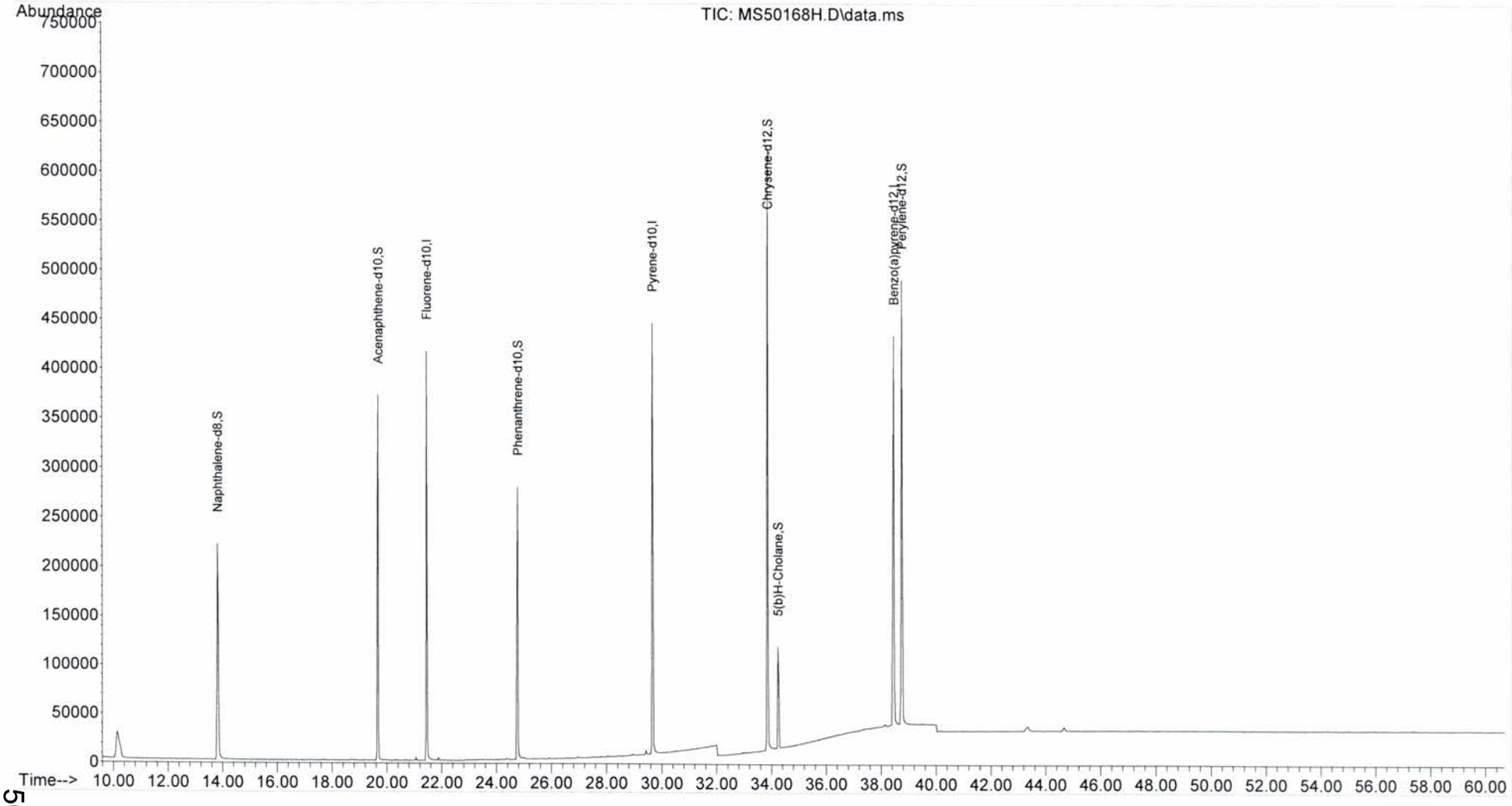
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168H.D
Acq On : 21 Sep 2013 4:09 am
Operator : ECM(YMIAO)
Sample : AR-WKISSU-250-002
Misc :
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Sep 22 13:14:00 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	MS50168J.D
Data File Path	P:\2013\J13034\PAH\ENV3091\MS50168\
Operator	ECM(YMIAO)
Date Acquired	9/21/2013 6:22
Acq. Method File	PAH-2012.M
Sample Name	AR-SRM2779-WK-4.0-002
Misc Info	0
Instrument Name	GCMS5
Vial Number	10
Sample Multiplier	0.24461
Sample Amount	0

Surrogate/Internal Multiplier Factor:	1.00
AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

MS50168J.D
.R-SRM2779-WK-4.0-002
9/21/2013
PAH-2012.M
4.088140305

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.20	2156550	634.1319	697.7938
4)	C1-Decalins	12.34	2920830	858.8697	945.0937
5)	C2-Decalins	14.71	2359480	693.8045	763.4571
6)	C3-Decalins	16.67	2578690	758.2616	834.3853
7)	C4-Decalins	17.73	1541020	453.1376	498.6291
8)	Naphthalene	13.88	11911900	616.6447	678.5511
9)+10)	C1-Naphthalenes	16.31	25289800	1309.1800	1440.6116
13)	C2-Naphthalenes	18.51	31394700	1625.2084	1788.3668
14)	C3-Naphthalenes	20.50	21076000	1091.0389	1200.5708
15)	C4-Naphthalenes	22.82	11847700	613.3155	674.8877
16)	Benzothiophene	14.08	114378	7.2932	8.0254
17)	C1-Benzothiophenes	15.65	428899	27.3484	30.0939
18)	C2-Benzothiophenes	18.37	284216	18.1228	19.9422
19)	C3-Benzothiophenes	20.32	389595	24.8423	27.3363
20)	C4-Benzothiophenes	22.11	374595	23.8858	26.2838
22)	Biphenyl	17.70	2317070	144.2991	158.7856
23)	Acenaphthylene	19.18	147609	7.7344	8.5109
24)	Acenaphthene	19.78	179236	15.5188	17.0768
25)	Dibenzofuran	20.36	461610	26.3624	29.0089
26)	Fluorene	21.55	1466830	101.7932	112.0125
28)	C1-Fluorenes	23.52	3274260	227.2231	250.0346
29)	C2-Fluorenes	25.36	5290450	367.1400	403.9981
30)	C3-Fluorenes	26.91	3753960	260.5121	286.6655
33)	Carbazole	25.59	72028	3.8558	4.2429
42)	Anthracene	25.02	68342	3.2340	3.5587
41)	Phenanthrene	24.85	4308960	187.6051	206.4392
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.74	10773411	469.0568	516.1465
50)	C2-Phenanthrenes/Anthracenes	28.41	12469600	542.9046	597.4080
51)	C3-Phenanthrenes/Anthracenes	29.96	9360540	407.5423	448.4564
52)	C4-Phenanthrenes/Anthracenes	31.80	5544960	241.4183	265.6549
34)	Dibenzothiophene	24.40	823559	37.0797	40.8022
35)+36)+37)	C1-Dibenzothiophenes	26.23	2224952	100.1756	110.2325
38)	C2-Dibenzothiophenes	27.99	3099980	139.5728	153.5848
39)	C3-Dibenzothiophenes	28.83	2487220	111.9839	123.2263
40)	C4-Dibenzothiophenes	29.82	1309570	58.9618	64.8811
58)	Fluoranthene	28.98	85475	3.1745	3.4932
59)	Pyrene	29.74	315336	10.9609	12.0613
62)	C1-Fluoranthenes/Pyrenes	30.87	1967600	73.0767	80.4131
63)	C2-Fluoranthenes/Pyrenes	32.32	3093180	114.8804	126.4135
64)	C3-Fluoranthenes/Pyrenes	34.04	3107670	115.4185	127.0056
65)	C4-Fluoranthenes/Pyrenes	35.17	2523190	93.7111	103.1189
53)	Naphthobenzothiophene	33.00	614323	23.1002	25.4192
54)	C1-Naphthobenzothiophenes	34.17	1273030	47.8692	52.6749
55)	C2-Naphthobenzothiophenes	35.88	1691540	63.6062	69.9918
56)	C3-Naphthobenzothiophenes	37.25	1349480	50.7439	55.8381
57)	C4-Naphthobenzothiophenes	38.22	545490	20.5118	22.5711
67)	Benz(a)anthracene	33.81	156095	5.6662	6.2350
68)	Chrysene/Triphenylene	33.94	993750	37.4833	41.2463
69)	C1-Chrysenes	35.30	2459910	92.7852	102.1001
70)	C2-Chrysenes	36.63	3369280	127.0857	139.8441
71)	C3-Chrysenes	38.06	2358290	88.9519	97.8820
72)	C4-Chrysenes	39.48	1206480	45.5072	50.0758
77)	Benzo(b)fluoranthene	37.38	128830	4.2370	4.6624
78)	Benzo(k,j)fluoranthene	37.41	15914	0.5232	0.5757
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.35	245156	7.7523	8.5305
81)	Benzo(a)pyrene	38.54	51172	1.7946	1.9748
89)	Perylene	38.87	16103	0.5172	0.5691
82)	Indeno(1,2,3-c,d)pyrene	43.30	11376	0.3581	0.3940
83)	Dibenzo(a,h)anthracene	43.34	14950	0.6007	0.6611
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	44.68	39085	1.4116	1.5533

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.14	15397200	1234.2482	1358.1573
10)	1-Methylnaphthalene	16.47	9892600	826.4271	909.3940
11)	2,6-Dimethylnaphthalene	18.22	5016570	434.2023	477.7929
12)	1,6,7-Trimethylnaphthalene	21.08	2432780	212.6661	234.0162
27)	1-Methylfluorene	23.52	1698790	185.5017	204.1247
35)	4-Methyldibenzothiophene	25.92	1230130	75.2384	82.7917
36)	2/3-Methyldibenzothiophene	26.21	573942	35.1040	38.6282
37)	1-Methyldibenzothiophene	26.55	420880	25.7423	28.3266
43)	3-Methylphenanthrene	26.49	2348750	132.7256	146.0503
44)	2-Methylphenanthrene	26.60	2849130	161.0011	177.1644
45)	2-Methylanthracene	26.74	163151	9.2195	10.1451
46)	4/9-Methylphenanthrene	26.88	3150190	178.0137	195.8849
47)	1-Methylphenanthrene	26.97	2262190	127.8342	140.6677
48)	3,6-Dimethylphenanthrene	28.04	527707	29.0812	32.0007
49)	Retene	30.78	111433	12.7415	14.0207
60)	2-Methylfluoranthene	30.50	92734	4.8676	5.3563
61)	Benzo(b)fluorene	31.09	213553	11.4556	12.6057
74)	C29-Hopane	40.82	209492	17.8348	19.6252
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.13	467395	39.7910	43.7857
91)	C20-TAS	33.39	226483	5.4909	6.0422
92)	C21-TAS	34.46	244681	5.9321	6.5277
93)	C26(20S)-TAS	38.61	139078	3.3719	3.7104
94)	C26(20R)/C27(20S)-TAS	39.52	440736	10.6853	11.7581
95)	C28(20S)-TAS	40.30	327224	7.9333	8.7298
96)	C27(20R)-TAS	40.75	289252	7.0127	7.7167
97)	C28(20R)-TAS	41.90	226909	5.5013	6.0535
	Surrogate Standards				
2)	Naphthalene-d8	13.81	1002010	54.91	89.74
21)	Acenaphthene-d10	19.67	629009	56.58	92.46
32)	Phenanthrene-d10	24.77	1136840	55.62	90.88
66)	Chrysene-d12	33.84	1416080	53.36	87.25
88)	Perylene-d12	38.77	1538940	54.28	88.75
90)	5(b)H-Cholane	34.26	438212	71.87	117.52
	Internal Standards				
1)	Fluorene-d10	21.46	695109	61.41	
31)	Pyrene-d10	29.68	1429060	61.31	
73)	Benzo(a)pyrene-d12	38.45	1480850	61.23	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168J.D
Acq On : 21 Sep 2013 6:22 am
Operator : ECM(YMIAO)
Sample : AR-SRM2779-WK-4.0-002
Misc :
ALS Vial : 10 Sample Multiplier: 0.24461

Quant Time: Sep 23 16:52:53 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Fluorene-d10	21.459	176	695109m	251.05	0.02
31) Pyrene-d10	29.682	212	1429056m	250.63	0.03
73) Benzo(a)pyrene-d12	38.446	264	1480849m	250.32	0.00
System Monitoring Compounds					
2) Naphthalene-d8	13.813	136	1002011m	54.91	0.00
21) Acenaphthene-d10	19.670	164	629009m	56.58	0.00
32) Phenanthrene-d10	24.766	188	1136837m	55.62	0.00
66) Chrysene-d12	33.842	240	1416076m	53.36	0.00
88) Perylene-d12	38.770	264	1538936m	54.28	0.03
90) 5(b)H-Cholane	34.264	217	438212m	71.87	0.03
Target Compounds					Qvalue
3) cis/trans Decalin	11.197	138	2156551m	634.13	
4) C1-Decalins	12.337	152	2920829m	858.87	
5) C2-Decalins	14.707	166	2359481m	693.80	
6) C3-Decalins	16.674	180	2578690m	758.26	
7) C4-Decalins	17.725	194	1541021m	453.14	
8) Naphthalene	13.880	128	11911933m	616.64	
9) 2-Methylnaphthalene	16.138	142	15397183m	1234.25	
10) 1-Methylnaphthalene	16.473	142	9892599m	826.43	
11) 2,6-Dimethylnaphthalene	18.217	156	5016568m	434.20	
12) 1,6,7-Trimethylnaphtha...	21.078	170	2432783m	212.67	
13) C2-Naphthalenes	18.507	156	31394747m	1625.21	
14) C3-Naphthalenes	20.497	170	21075982m	1091.04	
15) C4-Naphthalenes	22.822	184	11847662m	613.32	
16) Benzothiophene	14.081	134	114378m	7.29	
17) C1-Benzothiophenes	15.646	148	428899m	27.35	
18) C2-Benzothiophenes	18.373	162	284216m	18.12	
19) C3-Benzothiophenes	20.318	176	389595m	24.84	
20) C4-Benzothiophenes	22.107	190	374595m	23.89	
22) Biphenyl	17.703	154	2317072m	144.30	
23) Acenaphthylene	19.178	152	147609m	7.73	
24) Acenaphthene	19.782	154	179236m	15.52	
25) Dibenzofuran	20.363	168	461610m	26.36	
26) Fluorene	21.548	166	1466828m	101.79	
27) 1-Methylfluorene	23.523	180	1698793m	185.50	
28) C1-Fluorenes	23.523	180	3274258m	227.22	
29) C2-Fluorenes	25.359	194	5290446m	367.14	
30) C3-Fluorenes	26.913	208	3753957m	260.51	
33) Carbazole	25.585	167	72028m	3.86	
34) Dibenzothiophene	24.399	184	823559m	37.08	
35) 4-Methyldibenzothiophene	25.924	198	1230126m	75.24	
36) 2/3-Methyldibenzothiop...	26.207	198	573942m	35.10	
37) 1-Methyldibenzothiophene	26.546	198	420880m	25.74	
38) C2-Dibenzothiophenes	27.987	212	3099982m	139.57	
39) C3-Dibenzothiophenes	28.834	226	2487222m	111.98	
40) C4-Dibenzothiophenes	29.823	240	1309574m	58.96	
41) Phenanthrene	24.851	178	4308964m	187.61	
42) Anthracene	25.020	178	68342m	3.23	
43) 3-Methylphenanthrene	26.489	192	2348753m	132.73	

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168J.D
Acq On : 21 Sep 2013 6:22 am
Operator : ECM(YMIAO)
Sample : AR-SRM2779-WK-4.0-002
Misc :
ALS Vial : 10 Sample Multiplier: 0.24461

Quant Time: Sep 23 16:52:53 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.602	192	2849125m	161.00		
45) 2-Methylanthracene	26.743	192	163151m	9.22		
46) 4/9-Methylphenanthrene	26.885	192	3150185m	178.01		
47) 1-Methylphenanthrene	26.970	192	2262194m	127.83		
48) 3,6-Dimethylphenanthrene	28.043	206	527707m	29.08		
49) Retene	30.784	234	111433m	12.74		
50) C2-Phenanthrenes/Anthr...	28.410	206	12469563m	542.90		
51) C3-Phenanthrenes/Anthr...	29.964	220	9360537m	407.54		
52) C4-Phenanthrenes/Anthr...	31.801	234	5544961m	241.42		
53) Naphthobenzothiophene	32.999	234	614323m	23.10		
54) C1-Naphthobenzothiophenes	34.166	248	1273030m	47.87		
55) C2-Naphthobenzothiophenes	35.885	262	1691536m	63.61		
56) C3-Naphthobenzothiophenes	37.246	276	1349476m	50.74		
57) C4-Naphthobenzothiophenes	38.219	290	545490m	20.51		
58) Fluoranthene	28.975	202	85475m	3.17		
59) Pyrene	29.738	202	315336m	10.96		
60) 2-Methylfluoranthene	30.501	216	92734m	4.87		
61) Benzo(b)fluorene	31.094	216	213553m	11.46		
62) C1-Fluoranthenes/Pyrenes	30.868	216	1967603m	73.08		
63) C2-Fluoranthenes/Pyrenes	32.318	230	3093175m	114.88		
64) C3-Fluoranthenes/Pyrenes	34.037	244	3107668m	115.42		
65) C4-Fluoranthenes/Pyrenes	35.171	258	2523188m	93.71		
67) Benz(a)anthracene	33.810	228	156095m	5.67		
68) Chrysene/Triphenylene	33.939	228	993750m	37.48		
69) C1-Chrysenes	35.301	242	2459912m	92.79		
70) C2-Chrysenes	36.630	256	3369282m	127.09		
71) C3-Chrysenes	38.057	270	2358285m	88.95		
72) C4-Chrysenes	39.483	284	1206481m	45.51		
74) C29-Hopane	40.819	191	209492m	17.83		
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.127	191	467395m	39.79		
77) Benzo(b)fluoranthene	37.376	252	128830m	4.24		
78) Benzo(k,j)fluoranthene	37.408	252	15914m	0.52		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.349	252	245156m	7.75		
81) Benzo(a)pyrene	38.543	252	51172m	1.79		
82) Indeno(1,2,3-c,d)pyrene	43.304	276	11376m	0.36		
83) Dibenzo(a,h)anthracene	43.337	278	14950m	0.60		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.678	276	39085m	1.41		
89) Perylene	38.867	252	16103m	0.52		
91) C20-TAS	33.388	231	226483m	5.49		
92) C21-TAS	34.458	231	244681m	5.93		
93) C26(20S)-TAS	38.608	231	139078m	3.37		
94) C26(20R)/C27(20S)-TAS	39.516	231	440736m	10.69		
95) C28(20S)-TAS	40.296	231	327224m	7.93		
96) C27(20R)-TAS	40.754	231	289252m	7.01		
97) C28(20R)-TAS	41.898	231	226909m	5.50		

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168J.D
Acq On : 21 Sep 2013 6:22 am
Operator : ECM(YMIAO)
Sample : AR-SRM2779-WK-4.0-002
Misc :
ALS Vial : 10 Sample Multiplier: 0.24461

Quant Time: Sep 23 16:52:53 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

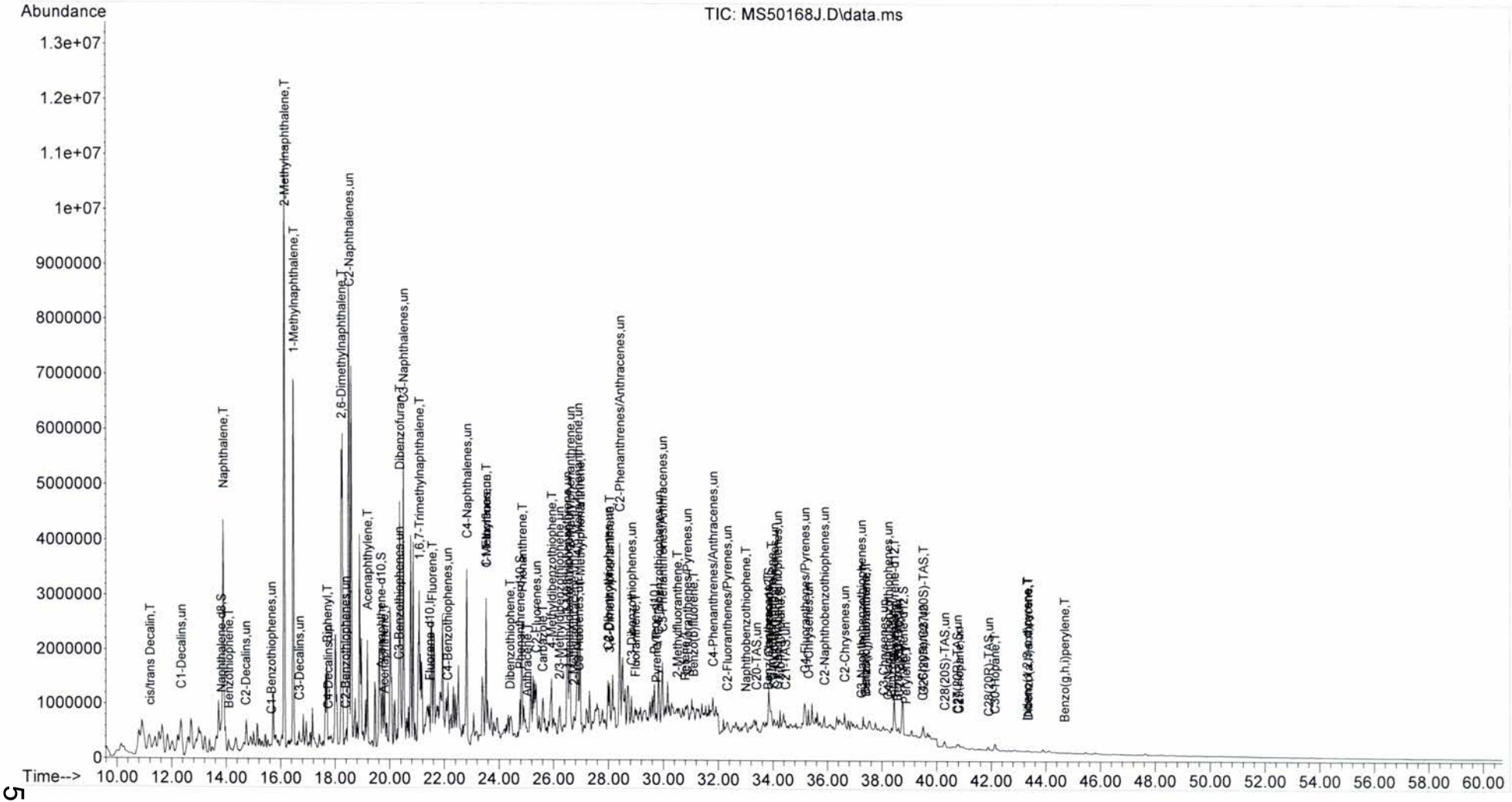
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : MS50168J.D
Acq On : 21 Sep 2013 6:22 am
Operator : ECM(YMIAO)
Sample : AR-SRM2779-WK-4.0-002
Misc :
ALS Vial : 10 Sample Multiplier: 0.24461

Quant Time: Sep 23 16:52:53 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ENV3091A.D
Data File Path	P:\2013\J13034\PAH\ENV3091\MS50168\
Operator	ECM(YMIAO)
Date Acquired	9/21/2013 8:34
Acq. Method File	PAH-2012.M
Sample Name	Procedural Blank
Misc Info	0
Instrument Name	GCMS5
Vial Number	12
Sample Multiplier	0.06667
Sample Amount	0

Surrogate/Internal Multiplier Factor:	1.00
AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

ENV3091A.D
Procedural Blank
9/21/2013
PAH-2012.M
14.99925004

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.88	4056	0.1281	0.1577
9)+10)	C1-Naphthalenes	0.00	0	0.0000	0.0000
13)	C2-Naphthalenes	0.00	0	0.0000	0.0000
14)	C3-Naphthalenes	0.00	0	0.0000	0.0000
15)	C4-Naphthalenes	0.00	0	0.0000	0.0000
16)	Benzothiophene	0.00	0	0.0000	0.0000
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	17.70	2212	0.0841	0.1035
23)	Acenaphthylene	0.00	0	0.0000	0.0000
24)	Acenaphthene	0.00	0	0.0000	0.0000
25)	Dibenzofuran	20.39	1206	0.0420	0.0517
26)	Fluorene	21.55	366	0.0155	0.0191
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	0.00	0	0.0000	0.0000
42)	Anthracene	0.00	0	0.0000	0.0000
41)	Phenanthrene	24.85	2889	0.0794	0.0977
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	0.00	0	0.0000	0.0000
35)+36)+37)	C1-Dibenzothiophenes	0.00	0	0.0000	0.0000
38)	C2-Dibenzothiophenes	0.00	0	0.0000	0.0000
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.95	1683	0.0395	0.0486
59)	Pyrene	29.74	3536	0.0776	0.0955
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	0.00	0	0.0000	0.0000
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	0.00	0	0.0000	0.0000
68)	Chrysene/Triphenylene	0.00	0	0.0000	0.0000
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	0.00	0	0.0000	0.0000
78)	Benzo(k,j)fluoranthene	0.00	0	0.0000	0.0000
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	0.00	0	0.0000	0.0000
81)	Benzo(a)pyrene	0.00	0	0.0000	0.0000
89)	Perylene	0.00	0	0.0000	0.0000
82)	Indeno(1,2,3-c,d)pyrene	0.00	0	0.0000	0.0000
83)	Dibenzo(a,h)anthracene	0.00	0	0.0000	0.0000
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	0.00	0	0.0000	0.0000

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	0.00	0	0.0000	0.0000
10)	1-Methylnaphthalene	0.00	0	0.0000	0.0000
11)	2,6-Dimethylnaphthalene	0.00	0	0.0000	0.0000
12)	1,6,7-Trimethylnaphthalene	0.00	0	0.0000	0.0000
27)	1-Methylfluorene	0.00	0	0.0000	0.0000
35)	4-Methyldibenzothiophene	0.00	0	0.0000	0.0000
36)	2/3-Methyldibenzothiophene	0.00	0	0.0000	0.0000
37)	1-Methyldibenzothiophene	0.00	0	0.0000	0.0000
43)	3-Methylphenanthrene	0.00	0	0.0000	0.0000
44)	2-Methylphenanthrene	0.00	0	0.0000	0.0000
45)	2-Methylanthracene	0.00	0	0.0000	0.0000
46)	4/9-Methylphenanthrene	0.00	0	0.0000	0.0000
47)	1-Methylphenanthrene	0.00	0	0.0000	0.0000
48)	3,6-Dimethylphenanthrene	0.00	0	0.0000	0.0000
49)	Retene	0.00	0	0.0000	0.0000
60)	2-Methylfluoranthene	0.00	0	0.0000	0.0000
61)	Benzo(b)fluorene	0.00	0	0.0000	0.0000
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	0.00	0	0.0000	0.0000
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.81	414160	13.85	83.05
21)	Acenaphthene-d10	19.67	252614	13.87	83.14
32)	Phenanthrene-d10	24.77	438846	13.55	81.25
66)	Chrysene-d12	33.84	602888	14.34	86.03
88)	Perylene-d12	38.74	628538	15.33	91.94
90)	5(b)H-Cholane	34.23	149094	16.90	101.42
	Internal Standards				
1)	Fluorene-d10	21.44	310447	16.74	
31)	Pyrene-d10	29.65	617026	16.71	
73)	Benzo(a)pyrene-d12	38.45	583830	16.69	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091A.D
Acq On : 21 Sep 2013 8:34 am
Operator : ECM(YMIAO)
Sample : Procedural Blank
Misc :
ALS Vial : 12 Sample Multiplier: 0.06667

Quant Time: Sep 22 17:55:07 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	310447m	251.05		0.00
31) Pyrene-d10	29.654	212	617026m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	583830m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	414160m	13.85		0.00
21) Acenaphthene-d10	19.670	164	252614m	13.87		0.00
32) Phenanthrene-d10	24.766	188	438846m	13.55		0.00
66) Chrysene-d12	33.842	240	602888m	14.34		0.00
88) Perylene-d12	38.738	264	628538m	15.33		0.00
90) 5(b)H-Cholane	34.231	217	149094m	16.90		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	0.000		0	N.D.	d	
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	4056m	0.13		
9) 2-Methylnaphthalene	0.000		0	N.D.	d	
10) 1-Methylnaphthalene	0.000		0	N.D.	d	
11) 2,6-Dimethylnaphthalene	0.000		0	N.D.	d	
12) 1,6,7-Trimethylnaphtha...	0.000		0	N.D.	d	
13) C2-Naphthalenes	0.000		0	N.D.	d	
14) C3-Naphthalenes	0.000		0	N.D.	d	
15) C4-Naphthalenes	0.000		0	N.D.	d	
16) Benzothiophene	0.000		0	N.D.	d	
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.703	154	2212m	0.08		
23) Acenaphthylene	0.000		0	N.D.	d	
24) Acenaphthene	0.000		0	N.D.	d	
25) Dibenzofuran	20.386	168	1206m	0.04		
26) Fluorene	21.548	166	366m	0.02		
27) 1-Methylfluorene	0.000		0	N.D.	d	
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	0.000		0	N.D.	d	
34) Dibenzothiophene	0.000		0	N.D.	d	
35) 4-Methyldibenzothiophene	0.000		0	N.D.	d	
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.	d	
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.851	178	2889m	0.08		
42) Anthracene	0.000		0	N.D.	d	
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091A.D
Acq On : 21 Sep 2013 8:34 am
Operator : ECM(YMIAO)
Sample : Procedural Blank
Misc :
ALS Vial : 12 Sample Multiplier: 0.06667

Quant Time: Sep 22 17:55:07 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	0.000		0		N.D.	d
45) 2-Methylanthracene	0.000		0		N.D.	d
46) 4/9-Methylphenanthrene	0.000		0		N.D.	d
47) 1-Methylphenanthrene	0.000		0		N.D.	d
48) 3,6-Dimethylphenanthrene	0.000		0		N.D.	d
49) Retene	0.000		0		N.D.	d
50) C2-Phenanthrenes/Anthr...	0.000		0		N.D.	d
51) C3-Phenanthrenes/Anthr...	0.000		0		N.D.	d
52) C4-Phenanthrenes/Anthr...	0.000		0		N.D.	d
53) Naphthobenzothiophene	0.000		0		N.D.	d
54) C1-Naphthobenzothiophenes	0.000		0		N.D.	d
55) C2-Naphthobenzothiophenes	0.000		0		N.D.	d
56) C3-Naphthobenzothiophenes	0.000		0		N.D.	d
57) C4-Naphthobenzothiophenes	0.000		0		N.D.	d
58) Fluoranthene	28.947	202	1683m	0.04		
59) Pyrene	29.738	202	3536m	0.08		
60) 2-Methylfluoranthene	0.000		0		N.D.	d
61) Benzo(b)fluorene	0.000		0		N.D.	d
62) C1-Fluoranthenes/Pyrenes	0.000		0		N.D.	d
63) C2-Fluoranthenes/Pyrenes	0.000		0		N.D.	d
64) C3-Fluoranthenes/Pyrenes	0.000		0		N.D.	d
65) C4-Fluoranthenes/Pyrenes	0.000		0		N.D.	d
67) Benz(a)anthracene	0.000		0		N.D.	d
68) Chrysene/Triphenylene	0.000		0		N.D.	d
69) C1-Chrysenes	0.000		0		N.D.	d
70) C2-Chrysenes	0.000		0		N.D.	d
71) C3-Chrysenes	0.000		0		N.D.	d
72) C4-Chrysenes	0.000		0		N.D.	d
74) C29-Hopane	0.000		0		N.D.	d
75) 18a-Oleanane	0.000		0		N.D.	d
76) C30-Hopane	0.000		0		N.D.	d
77) Benzo(b)fluoranthene	0.000		0		N.D.	d
78) Benzo(k,j)fluoranthene	0.000		0		N.D.	d
79) Benzo(a)fluoranthene	0.000		0		N.D.	d
80) Benzo(e)pyrene	0.000		0		N.D.	d
81) Benzo(a)pyrene	0.000		0		N.D.	d
82) Indeno(1,2,3-c,d)pyrene	0.000		0		N.D.	d
83) Dibenzo(a,h)anthracene	0.000		0		N.D.	d
84) C1-Dibenzo(a,h)anthrac...	0.000		0		N.D.	d
85) C2-Dibenzo(a,h)anthrac...	0.000		0		N.D.	d
86) C3-Dibenzo(a,h)anthrac...	0.000		0		N.D.	d
87) Benzo(g,h,i)perylene	0.000		0		N.D.	d
89) Perylene	0.000		0		N.D.	d
91) C20-TAS	0.000		0		N.D.	d
92) C21-TAS	0.000		0		N.D.	d
93) C26(20S)-TAS	0.000		0		N.D.	d
94) C26(20R)/C27(20S)-TAS	0.000		0		N.D.	d
95) C28(20S)-TAS	0.000		0		N.D.	d
96) C27(20R)-TAS	0.000		0		N.D.	d
97) C28(20R)-TAS	0.000		0		N.D.	d

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091A.D
Acq On : 21 Sep 2013 8:34 am
Operator : ECM(YMIAO)
Sample : Procedural Blank
Misc :
ALS Vial : 12 Sample Multiplier: 0.06667

Quant Time: Sep 22 17:55:07 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

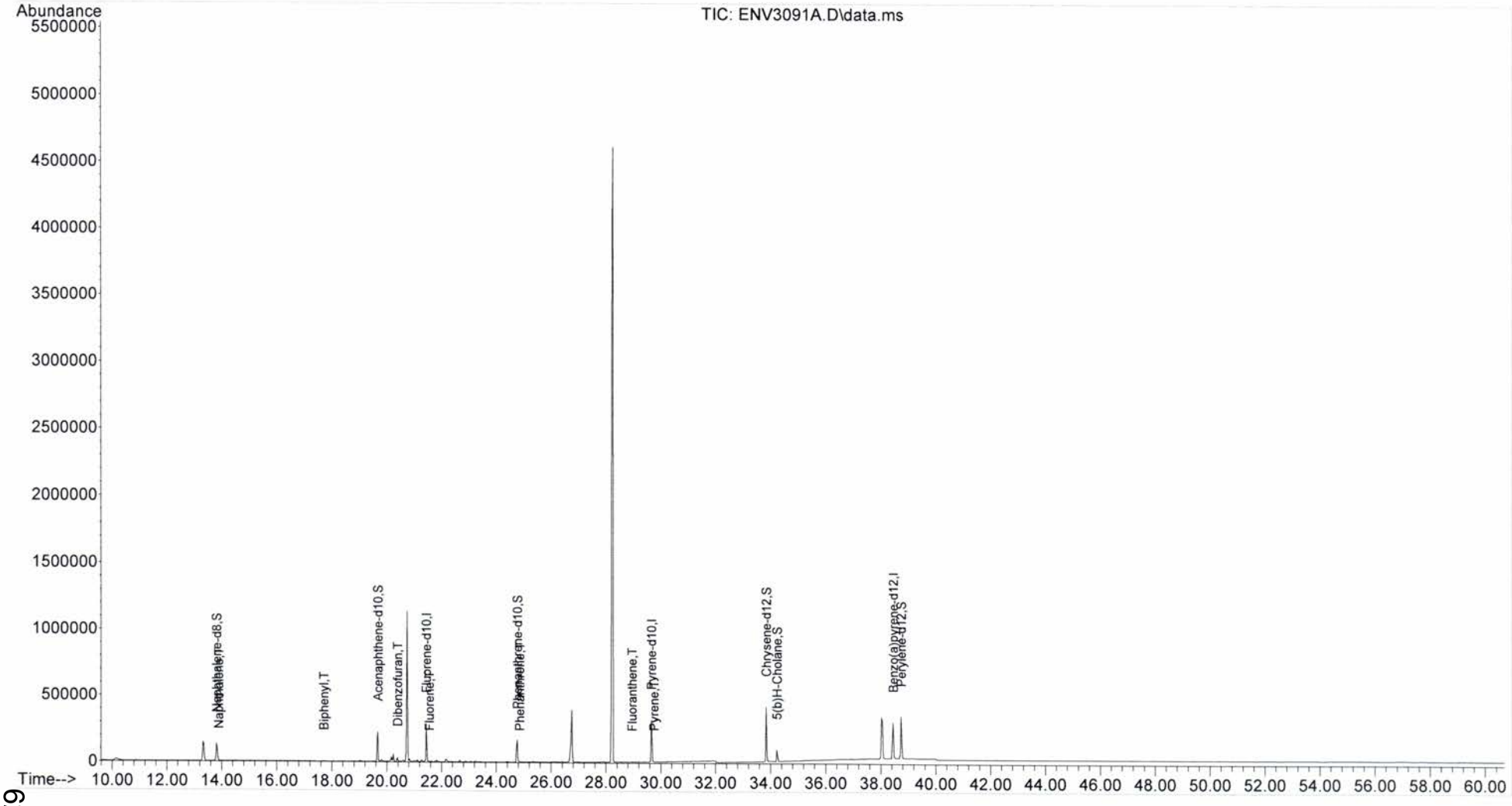
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091A.D
Acq On : 21 Sep 2013 8:34 am
Operator : ECM(YMIAO)
Sample : Procedural Blank
Misc :
ALS Vial : 12 Sample Multiplier: 0.06667

Quant Time: Sep 22 17:55:07 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ENV3091B.D
Data File Path	P:\2013\J13034\PAH\ENV3091\MS50168\
Operator	ECM(YMIAO)
Date Acquired	9/21/2013 9:41
Acq. Method File	PAH-2012.M
Sample Name	SRM 1941b
Misc Info	0
Instrument Name	GCMS5
Vial Number	13
Sample Multiplier	0.24691
Sample Amount	0

Surrogate/Internal Multiplier Factor:	1.00
AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

ENV3091B.D
SRM 1941b
9/21/2013
PAH-2012.M
4.050058726

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.42	68096	37.1767	45.5683
4)	C1-Decalins	12.34	12680	6.9226	8.4852
5)	C2-Decalins	14.71	20059	10.9511	13.4230
6)	C3-Decalins	17.30	52144	28.4680	34.8938
7)	C4-Decalins	17.59	65696	35.8666	43.9625
8)	Naphthalene	13.88	6592960	633.6698	776.7019
9)+10)	C1-Naphthalenes	16.28	2038184	195.8962	240.1139
13)	C2-Naphthalenes	18.49	1916060	184.1586	225.7269
14)	C3-Naphthalenes	20.50	1361900	130.8964	160.4423
15)	C4-Naphthalenes	22.82	981241	94.3100	115.5977
16)	Benzothiophene	14.06	217630	25.7648	31.5804
17)	C1-Benzothiophenes	16.14	66883	7.9182	9.7054
18)	C2-Benzothiophenes	18.24	129110	15.2851	18.7352
19)	C3-Benzothiophenes	20.32	137686	16.3004	19.9797
20)	C4-Benzothiophenes	22.17	145933	17.2767	21.1764
22)	Biphenyl	17.68	517265	59.8090	73.3091
23)	Acenaphthylene	19.18	481429	46.8359	57.4077
24)	Acenaphthene	19.76	147439	23.7015	29.0514
25)	Dibenzofuran	20.36	730199	77.4251	94.9014
26)	Fluorene	21.55	345560	44.5238	54.5737
28)	C1-Fluorenes	23.52	375691	48.4062	59.3325
29)	C2-Fluorenes	26.74	674389	86.8921	106.5054
30)	C3-Fluorenes	27.62	1335880	172.1219	210.9733
33)	Carbazole	25.59	177730	18.4858	22.6584
42)	Anthracene	24.99	1932060	177.6367	217.7329
41)	Phenanthrene	24.82	4407370	372.8292	456.9842
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.74	3294448	278.6846	341.5894
50)	C2-Phenanthrenes/Anthracenes	28.41	3528930	298.5191	365.9009
51)	C3-Phenanthrenes/Anthracenes	29.96	2727640	230.7369	282.8189
52)	C4-Phenanthrenes/Anthracenes	31.80	1735940	146.8470	179.9933
34)	Dibenzothiophene	24.40	550867	48.1889	59.0661
35)+36)+37)	C1-Dibenzothiophenes	26.22	655203	57.3161	70.2535
38)	C2-Dibenzothiophenes	27.31	1239420	108.4219	132.8949
39)	C3-Dibenzothiophenes	28.83	1328740	116.2356	142.4723
40)	C4-Dibenzothiophenes	30.25	832060	72.7871	89.2166
58)	Fluoranthene	28.95	8903110	642.4524	787.4669
59)	Pyrene	29.74	6579930	444.3787	544.6840
62)	C1-Fluoranthenes/Pyrenes	30.87	4695780	338.8494	415.3346
63)	C2-Fluoranthenes/Pyrenes	33.32	4882730	352.3406	431.8709
64)	C3-Fluoranthenes/Pyrenes	34.17	2394010	172.7533	211.7472
65)	C4-Fluoranthenes/Pyrenes	35.33	1684010	121.5190	148.9483
53)	Naphthobenzothiophene	33.00	1708100	124.7933	152.9616
54)	C1-Naphthobenzothiophenes	34.17	1683680	123.0088	150.7744
55)	C2-Naphthobenzothiophenes	35.88	1739190	127.0646	155.7456
56)	C3-Naphthobenzothiophenes	37.25	1300190	94.9915	116.4330
57)	C4-Naphthobenzothiophenes	38.06	558889	40.8322	50.0489
67)	Benz(a)anthracene	33.81	4383230	309.1412	378.9206
68)	Chrysene/Triphenylene	33.94	5348560	391.9721	480.4481
69)	C1-Chrysenes	35.17	3665670	268.6405	329.2781
70)	C2-Chrysenes	36.63	2593440	190.0617	232.9624
71)	C3-Chrysenes	38.06	1427940	104.6469	128.2678
72)	C4-Chrysenes	39.52	654637	47.9754	58.8044
77)	Benzo(b)fluoranthene	37.38	7056720	427.2432	523.6806
78)	Benzo(k,j)fluoranthene	37.38	5989600	362.5009	444.3247
79)	Benzo(a)fluoranthene	37.73	1037670	62.8011	76.9765
80)	Benzo(e)pyrene	38.35	5049290	293.9291	360.2748
81)	Benzo(a)pyrene	38.54	3643170	235.2062	288.2970
89)	Perylene	38.83	5138630	303.8203	372.3987
82)	Indeno(1,2,3-c,d)pyrene	43.30	4273010	247.6038	303.4930
83)	Dibenzo(a,h)anthracene	43.34	827851	61.2396	75.0626
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	44.68	3303920	219.6571	269.2381

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.12	1400450	208.4298	255.4766
10)	1-Methylnaphthalene	16.45	637734	98.9154	121.2425
11)	2,6-Dimethylnaphthalene	18.22	412258	66.2497	81.2035
12)	1,6,7-Trimethylnaphthalene	21.08	95126	15.4392	18.9241
27)	1-Methylfluorene	23.52	137356	27.8475	34.1332
35)	4-Methyldibenzothiophene	25.90	323951	38.4970	47.1865
36)	2/3-Methyldibenzothiophene	26.21	237556	28.2302	34.6023
37)	1-Methyldibenzothiophene	26.55	93696	11.1345	13.6477
43)	3-Methylphenanthrene	26.49	778722	85.4985	104.7973
44)	2-Methylphenanthrene	26.60	878997	96.5080	118.2918
45)	2-Methylanthracene	26.74	474940	52.1452	63.9154
46)	4/9-Methylphenanthrene	26.88	619033	67.9657	83.3069
47)	1-Methylphenanthrene	26.97	542756	59.5910	73.0419
48)	3,6-Dimethylphenanthrene	28.04	219126	23.4624	28.7584
49)	Retene	30.73	133808	29.7267	36.4367
60)	2-Methylfluoranthene	30.50	638149	65.0815	79.7717
61)	Benzo(b)fluorene	31.09	700427	73.0019	89.4799
74)	C29-Hopane	40.82	1287790	201.8232	247.3788
75)	18a-Oleanane	41.90	184267	28.8783	35.3968
76)	C30-Hopane	42.13	1763020	276.3022	338.6691
91)	C20-TAS	33.39	43109	1.9240	2.3583
92)	C21-TAS	34.36	142650	6.3666	7.8037
93)	C26(20S)-TAS	38.93	122381	5.4620	6.6949
94)	C26(20R)/C27(20S)-TAS	39.52	182597	8.1495	9.9890
95)	C28(20S)-TAS	40.30	122248	5.4561	6.6876
96)	C27(20R)-TAS	40.75	120435	5.3751	6.5884
97)	C28(20R)-TAS	41.47	115568	5.1579	6.3222
	Surrogate Standards				
2)	Naphthalene-d8	13.81	400820	40.78	66.03
21)	Acenaphthene-d10	19.67	275525	46.01	74.49
32)	Phenanthrene-d10	24.77	530225	50.40	81.58
66)	Chrysene-d12	33.84	717839	52.56	85.14
88)	Perylene-d12	38.74	780642	50.69	82.10
90)	5(b)H-Cholane	34.23	182130	54.99	89.08
	Internal Standards				
1)	Fluorene-d10	21.44	377909	61.99	
31)	Pyrene-d10	29.65	742429	61.88	
73)	Benzo(a)pyrene-d12	38.45	811986	61.81	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091B.D
Acq On : 21 Sep 2013 9:41 am
Operator : ECM(YMIAO)
Sample : SRM 1941b
Misc :
ALS Vial : 13 Sample Multiplier: 0.24691

Quant Time: Sep 22 22:16:10 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	377909m	251.05		0.00
31) Pyrene-d10	29.653	212	742429m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	811986m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	400820m	40.78		0.00
21) Acenaphthene-d10	19.670	164	275525m	46.01		0.00
32) Phenanthrene-d10	24.766	188	530225m	50.40		0.00
66) Chrysene-d12	33.842	240	717839m	52.56		0.00
88) Perylene-d12	38.738	264	780642m	50.69		0.00
90) 5(b)H-Cholane	34.231	217	182130m	54.99		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.420	138	68096m	37.18		
4) C1-Decalins	12.337	152	12680m	6.92		
5) C2-Decalins	14.707	166	20059m	10.95		
6) C3-Decalins	17.300	180	52144m	28.47		
7) C4-Decalins	17.591	194	65696m	35.87		
8) Naphthalene	13.880	128	6592957m	633.67		
9) 2-Methylnaphthalene	16.115	142	1400452m	208.43		
10) 1-Methylnaphthalene	16.451	142	637734m	98.92		
11) 2,6-Dimethylnaphthalene	18.217	156	412258m	66.25		
12) 1,6,7-Trimethylnaphtha...	21.078	170	95126m	15.44		
13) C2-Naphthalenes	18.485	156	1916061m	184.16		
14) C3-Naphthalenes	20.497	170	1361901m	130.90		
15) C4-Naphthalenes	22.822	184	981241m	94.31		
16) Benzothiophene	14.059	134	217630m	25.76		
17) C1-Benzothiophenes	16.138	148	66883m	7.92		
18) C2-Benzothiophenes	18.239	162	129110m	15.29		
19) C3-Benzothiophenes	20.318	176	137686m	16.30		
20) C4-Benzothiophenes	22.174	190	145933m	17.28		
22) Biphenyl	17.680	154	517265m	59.81		
23) Acenaphthylene	19.178	152	481429m	46.84		
24) Acenaphthene	19.759	154	147439m	23.70		
25) Dibenzofuran	20.363	168	730199m	77.42		
26) Fluorene	21.548	166	345560m	44.52		
27) 1-Methylfluorene	23.523	180	137356m	27.85		
28) C1-Fluorenes	23.523	180	375691m	48.41		
29) C2-Fluorenes	26.743	194	674389m	86.89		
30) C3-Fluorenes	27.619	208	1335876m	172.12		
33) Carbazole	25.585	167	177730m	18.49		
34) Dibenzothiophene	24.399	184	550867m	48.19		
35) 4-Methyldibenzothiophene	25.896	198	323951m	38.50		
36) 2/3-Methyldibenzothiop...	26.207	198	237556m	28.23		
37) 1-Methyldibenzothiophene	26.546	198	93696m	11.13		
38) C2-Dibenzothiophenes	27.309	212	1239415m	108.42		
39) C3-Dibenzothiophenes	28.834	226	1328738m	116.24		
40) C4-Dibenzothiophenes	30.247	240	832060m	72.79		
41) Phenanthrene	24.822	178	4407373m	372.83		
42) Anthracene	24.992	178	1932058m	177.64		
43) 3-Methylphenanthrene	26.489	192	778722m	85.50		

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091B.D
Acq On : 21 Sep 2013 9:41 am
Operator : ECM(YMIAO)
Sample : SRM 1941b
Misc :
ALS Vial : 13 Sample Multiplier: 0.24691

Quant Time: Sep 22 22:16:10 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.602	192	878997m	96.51		
45) 2-Methylanthracene	26.743	192	474940m	52.15		
46) 4/9-Methylphenanthrene	26.885	192	619033m	67.97		
47) 1-Methylphenanthrene	26.970	192	542756m	59.59		
48) 3,6-Dimethylphenanthrene	28.043	206	219126m	23.46		
49) Retene	30.727	234	133808m	29.73		
50) C2-Phenanthrenes/Anthr...	28.410	206	3528933m	298.52		
51) C3-Phenanthrenes/Anthr...	29.964	220	2727637m	230.74		
52) C4-Phenanthrenes/Anthr...	31.801	234	1735941m	146.85		
53) Naphthobenzothiophene	32.999	234	1708103m	124.79		
54) C1-Naphthobenzothiophenes	34.166	248	1683679m	123.01		
55) C2-Naphthobenzothiophenes	35.885	262	1739193m	127.06		
56) C3-Naphthobenzothiophenes	37.246	276	1300193m	94.99		
57) C4-Naphthobenzothiophenes	38.057	290	558889m	40.83		
58) Fluoranthene	28.947	202	8903107m	642.45		
59) Pyrene	29.738	202	6579932m	444.38		
60) 2-Methylfluoranthene	30.501	216	638149m	65.08		
61) Benzo(b)fluorene	31.094	216	700427m	73.00		
62) C1-Fluoranthenes/Pyrenes	30.868	216	4695777m	338.85		
63) C2-Fluoranthenes/Pyrenes	33.323	230	4882725m	352.34		
64) C3-Fluoranthenes/Pyrenes	34.166	244	2394013m	172.75		
65) C4-Fluoranthenes/Pyrenes	35.334	258	1684010m	121.52		
67) Benz(a)anthracene	33.810	228	4383229m	309.14		
68) Chrysene/Triphenylene	33.939	228	5348557m	391.97		
69) C1-Chrysenes	35.171	242	3665673m	268.64		
70) C2-Chrysenes	36.630	256	2593443m	190.06		
71) C3-Chrysenes	38.057	270	1427935m	104.65		
72) C4-Chrysenes	39.516	284	654637m	47.98		
74) C29-Hopane	40.819	191	1287790m	201.82		
75) 18a-Oleanane	41.898	191	184267m	28.88		
76) C30-Hopane	42.127	191	1763017m	276.30		
77) Benzo(b)fluoranthene	37.376	252	7056721m	427.24		
78) Benzo(k,j)fluoranthene	37.376	252	5989604m	362.50		
79) Benzo(a)fluoranthene	37.733	252	1037666m	62.80		
80) Benzo(e)pyrene	38.349	252	5049293m	293.93		
81) Benzo(a)pyrene	38.543	252	3643165m	235.21		
82) Indeno(1,2,3-c,d)pyrene	43.304	276	4273010m	247.60		
83) Dibenzo(a,h)anthracene	43.337	278	827851m	61.24		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.678	276	3303916m	219.66		
89) Perylene	38.835	252	5138627m	303.82		
91) C20-TAS	33.388	231	43109m	1.92		
92) C21-TAS	34.361	231	142650m	6.37		
93) C26(20S)-TAS	38.932	231	122381m	5.46		
94) C26(20R)/C27(20S)-TAS	39.516	231	182597m	8.15		
95) C28(20S)-TAS	40.296	231	122248m	5.46		
96) C27(20R)-TAS	40.754	231	120435m	5.38		
97) C28(20R)-TAS	41.473	231	115568m	5.16		

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091B.D
Acq On : 21 Sep 2013 9:41 am
Operator : ECM(YMIAO)
Sample : SRM 1941b
Misc :
ALS Vial : 13 Sample Multiplier: 0.24691

Quant Time: Sep 22 22:16:10 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

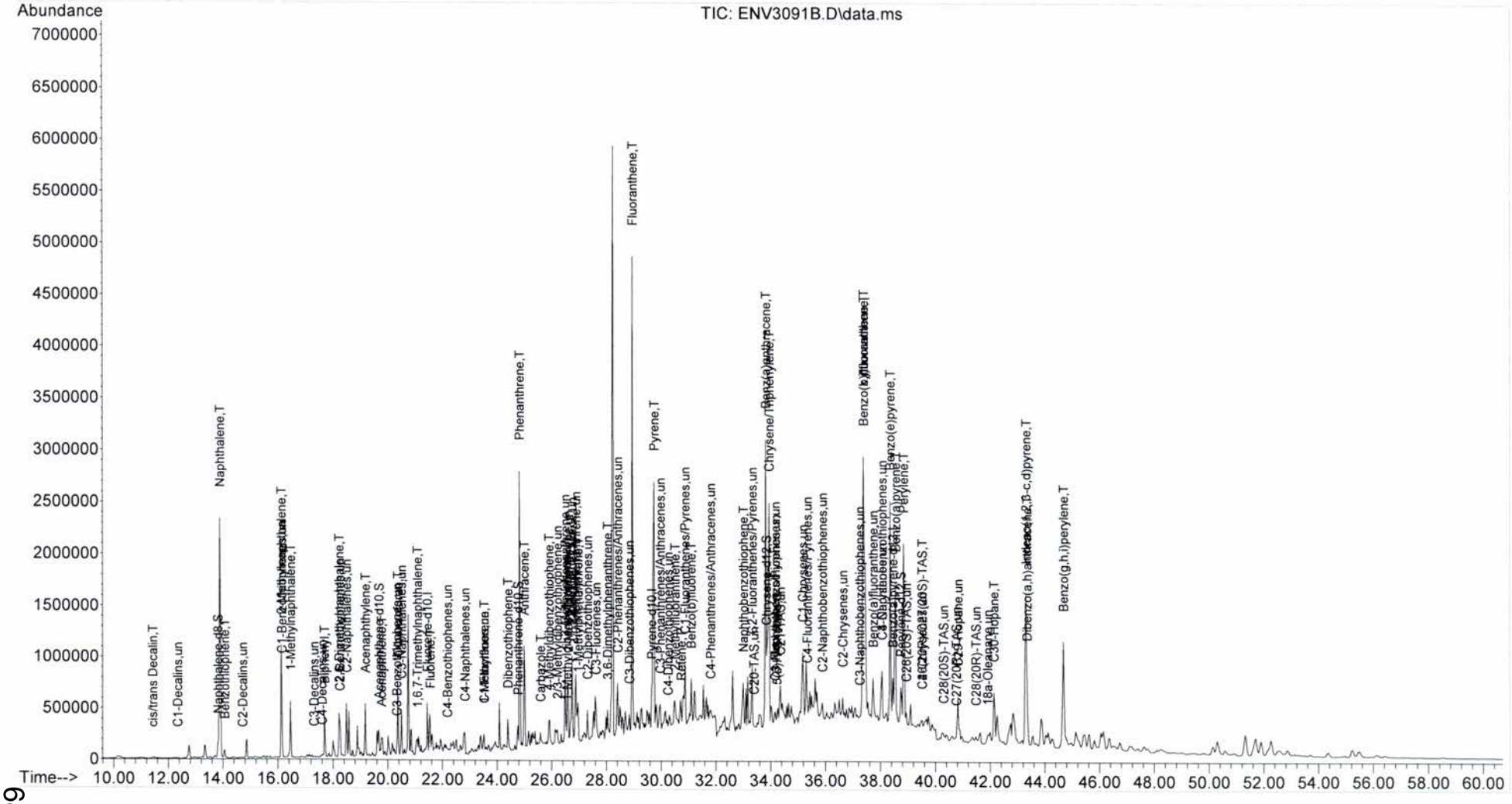
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091B.D
Acq On : 21 Sep 2013 9:41 am
Operator : ECM(YMIAO)
Sample : SRM 1941b
Misc :
ALS Vial : 13 Sample Multiplier: 0.24691

Quant Time: Sep 22 22:16:10 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ENV3091C.D
Data File Path	P:\2013\J13034\PAH\ENV3091\MS50168\
Operator	ECM(YMIAO)
Date Acquired	9/21/2013 10:47
Acq. Method File	PAH-2012.M
Sample Name	SO-DA-019 (0-0.5) MS
Misc Info	0
Instrument Name	GCMS5
Vial Number	14
Sample Multiplier	0.06662
Sample Amount	0

Surrogate/Internal Multiplier Factor: 1.00

AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

ENV3091C.D
SO-DA-019 (0-0.5) MS
9/21/2013
PAH-2012.M
15.01050736

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.20	40146	5.4441	6.1919
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.88	393129	9.3854	10.6746
9)+10)	C1-Naphthalenes	16.28	616898	14.7276	16.7506
13)	C2-Naphthalenes	0.00	0	0.0000	0.0000
14)	C3-Naphthalenes	0.00	0	0.0000	0.0000
15)	C4-Naphthalenes	0.00	0	0.0000	0.0000
16)	Benzothiophene	14.06	179178	5.2690	5.9928
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	17.68	289399	8.3116	9.4533
23)	Acenaphthylene	19.18	230641	5.5734	6.3390
24)	Acenaphthene	19.78	142583	5.6934	6.4754
25)	Dibenzofuran	20.36	322019	8.4812	9.6462
26)	Fluorene	21.55	284763	9.1136	10.3655
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	25.61	130022	3.0617	3.4822
42)	Anthracene	25.02	275400	5.7325	6.5199
41)	Phenanthrene	24.85	1170120	22.4092	25.4873
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	5.39	704618	13.4943	15.3478
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	24.43	756451	14.9812	17.0390
35)+36)+37)	C1-Dibenzothiophenes	8.64	1086430	21.5164	24.4718
38)	C2-Dibenzothiophenes	0.00	0	0.0000	0.0000
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.98	894482	14.6130	16.6202
59)	Pyrene	29.74	2098380	32.0837	36.4906
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	0.00	0	0.0000	0.0000
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	33.84	607415	9.6987	11.0309
68)	Chrysene/Triphenylene	33.91	2724630	45.2055	51.4149
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	37.41	1608520	26.0122	29.5853
78)	Benzo(k,j)fluoranthene	37.47	619754	10.0186	11.3948
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.38	1797800	27.9535	31.7932
81)	Benzo(a)pyrene	38.58	228754	3.9448	4.4866
89)	Perylene	38.90	86764	1.3702	1.5584
82)	Indeno(1,2,3-c,d)pyrene	43.37	699166	10.8214	12.3078
83)	Dibenzo(a,h)anthracene	43.43	446811	8.8284	10.0411
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	44.78	1032910	18.3424	20.8619

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.12	385913	14.2665	16.2262
10)	1-Methylnaphthalene	16.45	230985	8.8991	10.1215
11)	2,6-Dimethylnaphthalene	18.22	346073	13.8140	15.7115
12)	1,6,7-Trimethylnaphthalene	21.08	187974	7.5781	8.6190
27)	1-Methylfluorene	23.52	200623	10.1031	11.4909
35)	4-Methyldibenzothiophene	25.92	1086430	29.2293	33.2442
36)	2/3-Methyldibenzothiophene	0.00	0	0.0000	0.0000
37)	1-Methyldibenzothiophene	0.00	0	0.0000	0.0000
43)	3-Methylphenanthrene	0.00	0	0.0000	0.0000
44)	2-Methylphenanthrene	0.00	0	0.0000	0.0000
45)	2-Methylanthracene	0.00	0	0.0000	0.0000
46)	4/9-Methylphenanthrene	0.00	0	0.0000	0.0000
47)	1-Methylphenanthrene	26.97	704618	17.5145	19.9202
48)	3,6-Dimethylphenanthrene	28.07	533693	12.9371	14.7142
49)	Retene	30.73	541761	27.2484	30.9912
60)	2-Methylfluoranthene	30.50	468251	10.8114	12.2964
61)	Benzo(b)fluorene	31.12	282468	6.6651	7.5806
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	0.00	0	0.0000	0.0000
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	39.48	355427	4.2371	4.8191
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.81	524751	13.26	79.58
21)	Acenaphthene-d10	19.67	348392	14.45	86.72
32)	Phenanthrene-d10	24.77	681009	14.65	87.92
66)	Chrysene-d12	33.87	957247	15.87	95.26
88)	Perylene-d12	38.77	48942	0.85	5.10
90)	5(b)H-Cholane	34.26	220149	17.75	106.59
	Internal Standards				
1)	Fluorene-d10	21.46	410503	16.72	
31)	Pyrene-d10	29.68	884819	16.70	
73)	Benzo(a)pyrene-d12	38.48	820226	16.68	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091C.D
Acq On : 21 Sep 2013 10:47 am
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5) MS
Misc :
ALS Vial : 14 Sample Multiplier: 0.06662

Quant Time: Sep 22 19:45:31 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.458	176	410503m	251.05		0.02
31) Pyrene-d10	29.682	212	884819m	250.63		0.03
73) Benzo(a)pyrene-d12	38.478	264	820226m	250.32		0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.812	136	524751m	13.26		0.00
21) Acenaphthene-d10	19.670	164	348392m	14.45		0.00
32) Phenanthrene-d10	24.766	188	681009m	14.65		0.00
66) Chrysene-d12	33.874	240	957247m	15.87		0.03
88) Perylene-d12	38.770	264	48942m	0.85		0.03
90) 5(b)H-Cholane	34.264	217	220149m	17.75		0.03
Target Compounds						Qvalue
3) cis/trans Decalin	11.197	138	40146m	5.44		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	393129m	9.39		
9) 2-Methylnaphthalene	16.115	142	385913m	14.27		
10) 1-Methylnaphthalene	16.451	142	230985m	8.90		
11) 2,6-Dimethylnaphthalene	18.217	156	346073m	13.81		
12) 1,6,7-Trimethylnaphtha...	21.078	170	187974m	7.58		
13) C2-Naphthalenes	0.000		0	N.D.	d	
14) C3-Naphthalenes	0.000		0	N.D.	d	
15) C4-Naphthalenes	0.000		0	N.D.	d	
16) Benzothiophene	14.058	134	179178m	5.27		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.680	154	289399m	8.31		
23) Acenaphthylene	19.178	152	230641m	5.57		
24) Acenaphthene	19.782	154	142583m	5.69		
25) Dibenzofuran	20.363	168	322019m	8.48		
26) Fluorene	21.548	166	284763m	9.11		
27) 1-Methylfluorene	23.523	180	200623m	10.10		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.613	167	130022m	3.06		
34) Dibenzothiophene	24.427	184	756451m	14.98		
35) 4-Methyldibenzothiophene	25.924	198	1086434m	29.23		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.	d	
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.850	178	1170116m	22.41		
42) Anthracene	25.020	178	275400m	5.73		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091C.D
Acq On : 21 Sep 2013 10:47 am
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5) MS
Misc :
ALS Vial : 14 Sample Multiplier: 0.06662

Quant Time: Sep 22 19:45:31 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.969	192	704618m	17.51		
48) 3,6-Dimethylphenanthrene	28.071	206	533693m	12.94		
49) Retene	30.727	234	541761m	27.25		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53) Naphthobenzothiophene	0.000		0	N.D.	d	
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.975	202	894482m	14.61		
59) Pyrene	29.738	202	2098383m	32.08		
60) 2-Methylfluoranthene	30.501	216	468251m	10.81		
61) Benzo(b)fluorene	31.122	216	282468m	6.67		
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	33.842	228	607415m	9.70		
68) Chrysene/Triphenylene	33.907	228	2724626m	45.21		
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	0.000		0	N.D.	d	
77) Benzo(b)fluoranthene	37.408	252	1608517m	26.01		
78) Benzo(k,j)fluoranthene	37.473	252	619754m	10.02		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.381	252	1797801m	27.95		
81) Benzo(a)pyrene	38.575	252	228754m	3.94		
82) Indeno(1,2,3-c,d)pyrene	43.369	276	699166m	10.82		
83) Dibenzo(a,h)anthracene	43.435	278	446811m	8.83		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.775	276	1032905m	18.34		
89) Perylene	38.900	252	86764m	1.37		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	39.483	231	355427m	4.24		
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091C.D
Acq On : 21 Sep 2013 10:47 am
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5) MS
Misc :
ALS Vial : 14 Sample Multiplier: 0.06662

Quant Time: Sep 22 19:45:31 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

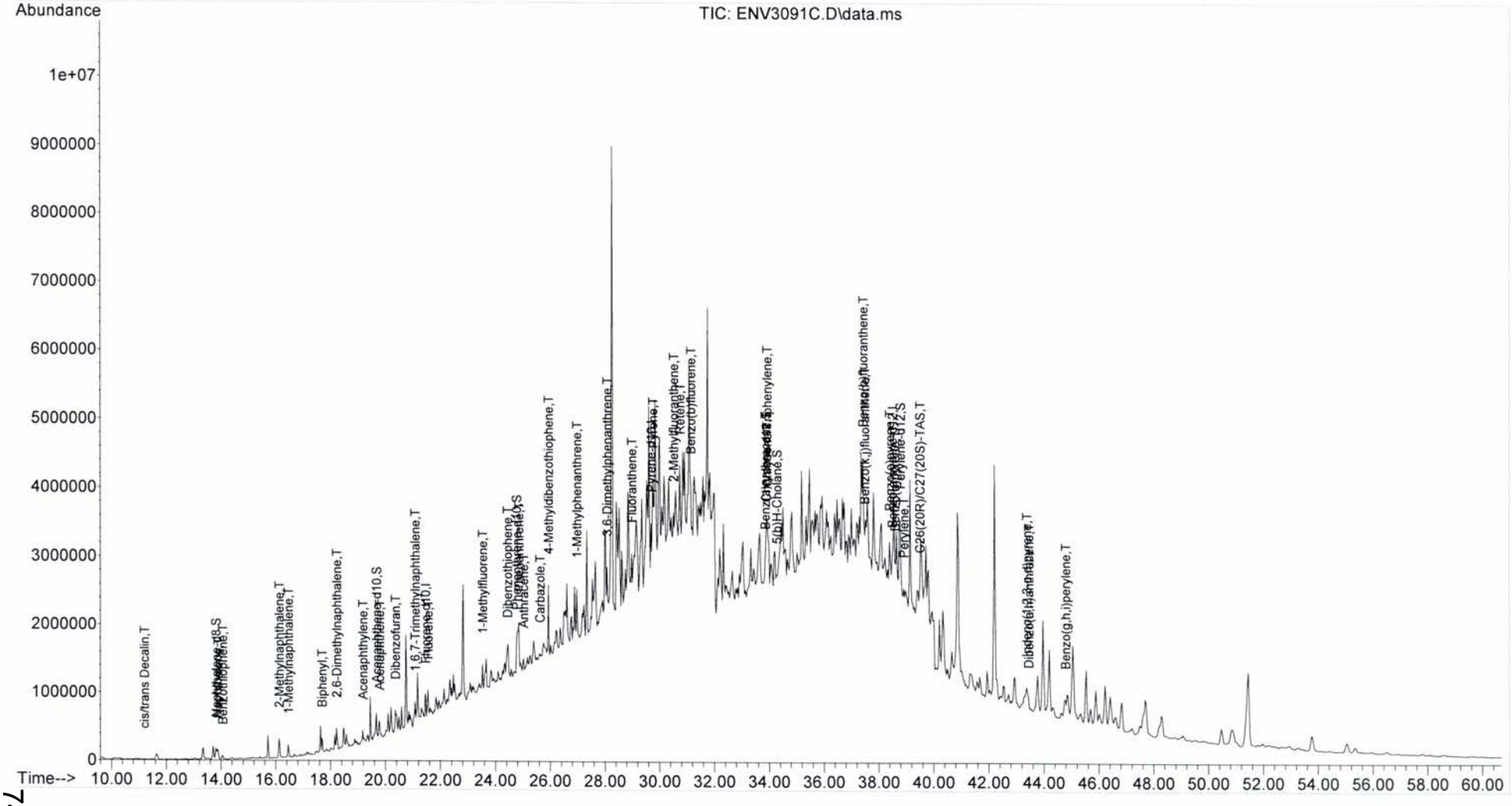
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091C.D
Acq On : 21 Sep 2013 10:47 am
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5) MS
Misc :
ALS Vial : 14 Sample Multiplier: 0.06662

Quant Time: Sep 22 19:45:31 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ENV3091D.D
Data File Path	P:\2013\J13034\PAH\ENV3091\MS50168\
Operator	ECM(YMIAO)
Date Acquired	9/21/2013 11:53
Acq. Method File	PAH-2012.M
Sample Name	SO-DA-019 (0-0.5) MSD
Misc Info	0
Instrument Name	GCMS5
Vial Number	15
Sample Multiplier	0.0657
Sample Amount	0

Surrogate/Internal Multiplier Factor: 1.00

AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

ENV3091D.D
SO-DA-019 (0-0.5) MSD
9/21/2013
PAH-2012.M
15.22070015

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.20	49099	6.4287	7.0451
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.88	373958	8.6199	9.4464
9)+10)	C1-Naphthalenes	16.28	569119	13.1185	14.3763
13)	C2-Naphthalenes	0.00	0	0.0000	0.0000
14)	C3-Naphthalenes	0.00	0	0.0000	0.0000
15)	C4-Naphthalenes	0.00	0	0.0000	0.0000
16)	Benzothiophene	14.06	172544	4.8990	5.3687
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	17.68	265122	7.3519	8.0568
23)	Acenaphthylene	19.18	203261	4.7424	5.1971
24)	Acenaphthene	19.78	139658	5.3843	5.9006
25)	Dibenzofuran	20.36	346386	8.8084	9.6530
26)	Fluorene	21.55	325797	10.0673	11.0327
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	25.59	113940	2.7288	2.9904
42)	Anthracene	25.02	243624	5.1576	5.6521
41)	Phenanthrene	24.85	1358820	26.4671	29.0049
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	5.39	631921	12.3086	13.4888
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	24.43	706614	14.2330	15.5977
35)+36)+37)	C1-Dibenzothiophenes	8.64	955194	19.2400	21.0849
38)	C2-Dibenzothiophenes	0.00	0	0.0000	0.0000
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.98	800291	13.2972	14.5722
59)	Pyrene	29.74	1815830	28.2371	30.9447
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	0.00	0	0.0000	0.0000
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	33.84	556369	9.0352	9.9015
68)	Chrysene/Triphenylene	33.91	2358870	39.8049	43.6217
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	37.41	1407160	22.6949	24.8711
78)	Benzo(k,j)fluoranthene	37.47	581157	9.3695	10.2679
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.38	1594820	24.7309	27.1022
81)	Benzo(a)pyrene	38.58	174006	2.9926	3.2795
89)	Perylene	38.90	76226	1.2006	1.3157
82)	Indeno(1,2,3-c,d)pyrene	43.37	604849	9.3364	10.2317
83)	Dibenzo(a,h)anthracene	43.40	395981	7.8031	8.5513
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	44.74	833027	14.7533	16.1679

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.12	350311	12.5038	13.7028
10)	1-Methylnaphthalene	16.45	218808	8.1393	8.9198
11)	2,6-Dimethylnaphthalene	18.22	318245	12.2652	13.4413
12)	1,6,7-Trimethylnaphthalene	21.08	178189	6.9359	7.6010
27)	1-Methylfluorene	23.52	168891	8.2119	8.9993
35)	4-Methyldibenzothiophene	25.92	955194	26.1369	28.6431
36)	2/3-Methyldibenzothiophene	0.00	0	0.0000	0.0000
37)	1-Methyldibenzothiophene	0.00	0	0.0000	0.0000
43)	3-Methylphenanthrene	0.00	0	0.0000	0.0000
44)	2-Methylphenanthrene	0.00	0	0.0000	0.0000
45)	2-Methylanthracene	0.00	0	0.0000	0.0000
46)	4/9-Methylphenanthrene	0.00	0	0.0000	0.0000
47)	1-Methylphenanthrene	26.97	631921	15.9754	17.5072
48)	3,6-Dimethylphenanthrene	28.07	526989	12.9926	14.2384
49)	Retene	30.73	510465	26.1124	28.6162
60)	2-Methylfluoranthene	30.50	525983	12.3515	13.5359
61)	Benzo(b)fluorene	31.12	269134	6.4588	7.0782
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	0.00	0	0.0000	0.0000
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	39.48	362435	4.3090	4.7222
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.81	530660	12.95	78.79
21)	Acenaphthene-d10	19.67	347370	13.91	84.65
32)	Phenanthrene-d10	24.77	685329	15.00	91.25
66)	Chrysene-d12	33.87	945111	15.93	97.00
88)	Perylene-d12	38.77	58513	1.01	6.16
90)	5(b)H-Cholane	34.26	240145	19.31	117.59
	Internal Standards				
1)	Fluorene-d10	21.46	419291	16.49	
31)	Pyrene-d10	29.68	857961	16.47	
73)	Benzo(a)pyrene-d12	38.48	811076	16.45	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091D.D
Acq On : 21 Sep 2013 11:53 am
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5) MSD
Misc :
ALS Vial : 15 Sample Multiplier: 0.0657

Quant Time: Sep 23 07:51:22 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Fluorene-d10	21.459	176	419291m	251.05	0.02
31) Pyrene-d10	29.682	212	857961m	250.63	0.03
73) Benzo(a)pyrene-d12	38.478	264	811076m	250.32	0.03
System Monitoring Compounds					
2) Naphthalene-d8	13.813	136	530660m	12.95	0.00
21) Acenaphthene-d10	19.670	164	347370m	13.91	0.00
32) Phenanthrene-d10	24.766	188	685329m	15.00	0.00
66) Chrysene-d12	33.875	240	945111m	15.93	0.03
88) Perylene-d12	38.770	264	58513m	1.01	0.03
90) 5(b)H-Cholane	34.264	217	240145m	19.31	0.03
Target Compounds					Qvalue
3) cis/trans Decalin	11.197	138	49099m	6.43	
4) C1-Decalins	0.000		0	N.D. d	
5) C2-Decalins	0.000		0	N.D. d	
6) C3-Decalins	0.000		0	N.D. d	
7) C4-Decalins	0.000		0	N.D. d	
8) Naphthalene	13.880	128	373958m	8.62	
9) 2-Methylnaphthalene	16.115	142	350311m	12.50	
10) 1-Methylnaphthalene	16.451	142	218808m	8.14	
11) 2,6-Dimethylnaphthalene	18.217	156	318245m	12.27	
12) 1,6,7-Trimethylnaphtha...	21.078	170	178189m	6.94	
13) C2-Naphthalenes	0.000		0	N.D. d	
14) C3-Naphthalenes	0.000		0	N.D. d	
15) C4-Naphthalenes	0.000		0	N.D. d	
16) Benzothiophene	14.059	134	172544m	4.90	
17) C1-Benzothiophenes	0.000		0	N.D. d	
18) C2-Benzothiophenes	0.000		0	N.D. d	
19) C3-Benzothiophenes	0.000		0	N.D. d	
20) C4-Benzothiophenes	0.000		0	N.D. d	
22) Biphenyl	17.680	154	265122m	7.35	
23) Acenaphthylene	19.178	152	203261m	4.74	
24) Acenaphthene	19.782	154	139658m	5.38	
25) Dibenzofuran	20.363	168	346386m	8.81	
26) Fluorene	21.548	166	325797m	10.07	
27) 1-Methylfluorene	23.523	180	168891m	8.21	
28) C1-Fluorenes	0.000		0	N.D. d	
29) C2-Fluorenes	0.000		0	N.D. d	
30) C3-Fluorenes	0.000		0	N.D. d	
33) Carbazole	25.585	167	113940m	2.73	
34) Dibenzothiophene	24.427	184	706614m	14.23	
35) 4-Methyldibenzothiophene	25.924	198	955194m	26.14	
36) 2/3-Methyldibenzothiop...	0.000		0	N.D. d	
37) 1-Methyldibenzothiophene	0.000		0	N.D. d	
38) C2-Dibenzothiophenes	0.000		0	N.D. d	
39) C3-Dibenzothiophenes	0.000		0	N.D. d	
40) C4-Dibenzothiophenes	0.000		0	N.D. d	
41) Phenanthrene	24.851	178	1358820m	26.47	
42) Anthracene	25.020	178	243624m	5.16	
43) 3-Methylphenanthrene	0.000		0	N.D. d	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091D.D
Acq On : 21 Sep 2013 11:53 am
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5) MSD
Misc :
ALS Vial : 15 Sample Multiplier: 0.0657

Quant Time: Sep 23 07:51:22 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.970	192	631921m	15.98		
48) 3,6-Dimethylphenanthrene	28.071	206	526989m	12.99		
49) Retene	30.727	234	510465m	26.11		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53) Naphthobenzothiophene	0.000		0	N.D.	d	
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.975	202	800291m	13.30		
59) Pyrene	29.738	202	1815826m	28.24		
60) 2-Methylfluoranthene	30.501	216	525983m	12.35		
61) Benzo(b)fluorene	31.123	216	269134m	6.46		
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	33.842	228	556369m	9.04		
68) Chrysene/Triphenylene	33.907	228	2358872m	39.80		
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	0.000		0	N.D.	d	
77) Benzo(b)fluoranthene	37.408	252	1407163m	22.69		
78) Benzo(k,j)fluoranthene	37.473	252	581157m	9.37		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.381	252	1594822m	24.73		
81) Benzo(a)pyrene	38.576	252	174006m	2.99		
82) Indeno(1,2,3-c,d)pyrene	43.370	276	604849m	9.34		
83) Dibenzo(a,h)anthracene	43.402	278	395981m	7.80		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.743	276	833027m	14.75		
89) Perylene	38.900	252	76226m	1.20		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	39.483	231	362435m	4.31		
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091D.D
Acq On : 21 Sep 2013 11:53 am
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5) MSD
Misc :
ALS Vial : 15 Sample Multiplier: 0.0657

Quant Time: Sep 23 07:51:22 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

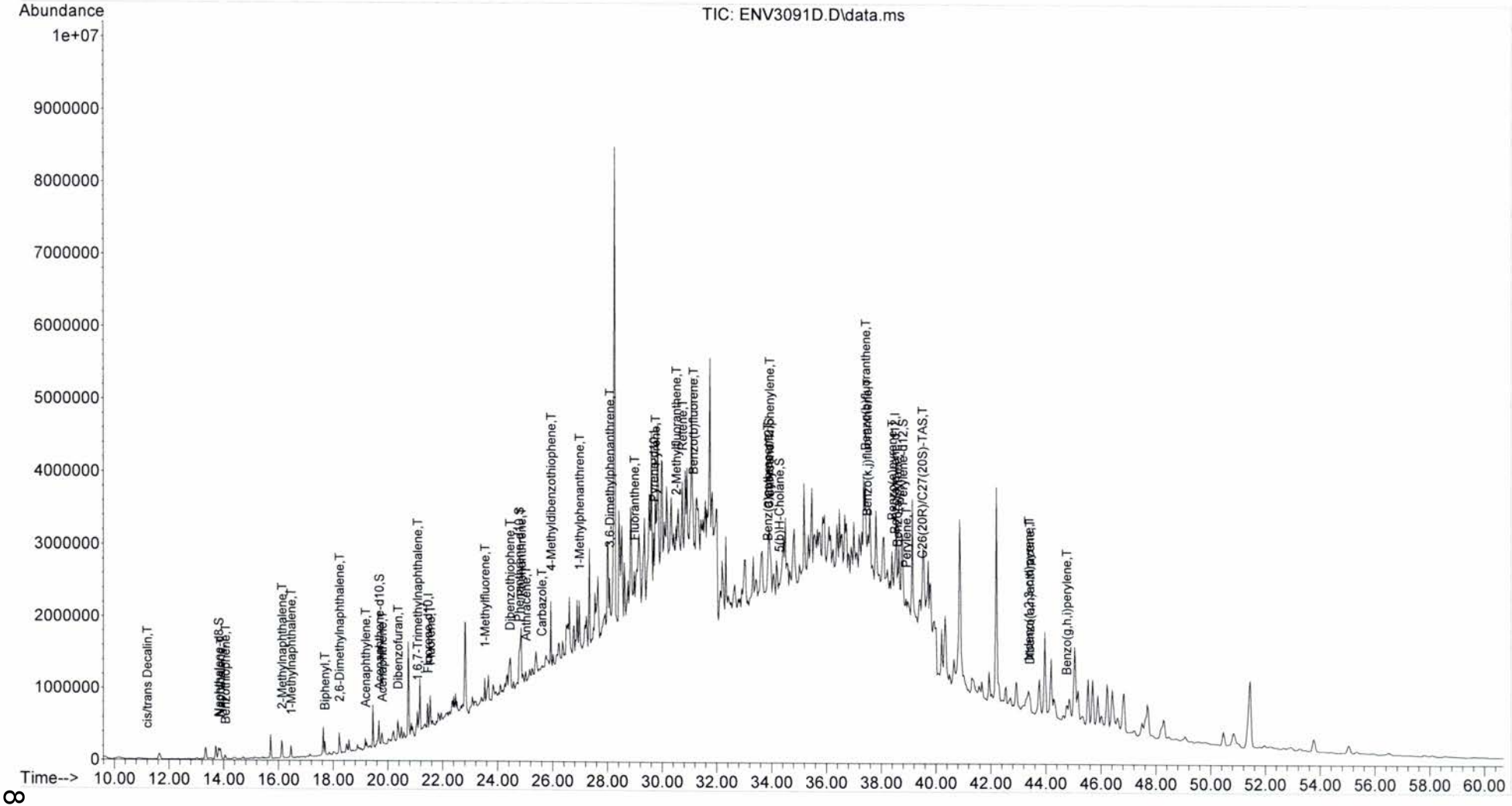
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091D.D
Acq On : 21 Sep 2013 11:53 am
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5) MSD
Misc :
ALS Vial : 15 Sample Multiplier: 0.0657

Quant Time: Sep 23 07:51:22 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name ENV3091E.D
Data File Path C:\GCMS5\MS50168\
Operator ECM(YMIAO)
Date Acquired 9/21/2013 12:59
Acq. Method File PAH-2012.M
Sample Name Dupl. (SO-DA-019 (0.5-1.0))
Misc Info 0
Instrument Name GCMS5
Vial Number 16
Sample Multiplier 0.06649
Sample Amount 0

Surrogate/Internal Multiplier Factor: 1.00

AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

ENV3091E.D
Dupl. (SO-DA-019 (0.5-1.0))
9/21/2013
PAH-2012.M
15.03985562

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.88	121753	2.8114	3.4028
9)+10)	C1-Naphthalenes	16.28	340743	7.8682	9.5232
13)	C2-Naphthalenes	18.49	1234410	28.5042	34.4996
14)	C3-Naphthalenes	20.86	2705980	62.4849	75.6276
15)	C4-Naphthalenes	23.07	7223720	166.8061	201.8910
16)	Benzothiophene	14.06	8935	0.2541	0.3076
17)	C1-Benzothiophenes	16.41	115889	3.2962	3.9895
18)	C2-Benzothiophenes	18.37	331944	9.4415	11.4274
19)	C3-Benzothiophenes	20.32	598907	17.0347	20.6177
20)	C4-Benzothiophenes	22.26	1883660	53.5770	64.8460
22)	Biphenyl	17.70	72389	2.0109	2.4339
23)	Acenaphthylene	19.18	50253	1.1746	1.4216
24)	Acenaphthene	20.01	35751	1.3808	1.6712
25)	Dibenzofuran	20.36	113633	2.8948	3.5036
26)	Fluorene	21.55	96685	2.9929	3.6224
28)	C1-Fluorenes	23.52	723349	22.3916	27.1013
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	0.00	0	0.0000	0.0000
42)	Anthracene	25.02	41631	0.8171	0.9890
41)	Phenanthrene	24.85	934052	16.8676	20.4154
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.75	4669552	84.3251	102.0615
50)	C2-Phenanthrenes/Anthracenes	28.44	19117900	345.2407	417.8562
51)	C3-Phenanthrenes/Anthracenes	29.99	33796600	610.3177	738.6877
52)	C4-Phenanthrenes/Anthracenes	31.83	24633900	444.8513	538.4183
34)	Dibenzothiophene	24.43	781666	14.5973	17.6677
35)+36)+37)	C1-Dibenzothiophenes	26.24	3879120	72.4413	87.6780
38)	C2-Dibenzothiophenes	28.01	16351900	305.3646	369.5929
39)	C3-Dibenzothiophenes	28.86	33773400	630.7049	763.3629
40)	C4-Dibenzothiophenes	29.85	26975700	503.7615	609.7192
58)	Fluoranthene	28.98	647198	9.9698	12.0668
59)	Pyrene	29.77	2120280	30.5688	36.9984
62)	C1-Fluoranthenes/Pyrenes	31.26	7435000	114.5337	138.6239
63)	C2-Fluoranthenes/Pyrenes	32.64	9831590	151.4523	183.3077
64)	C3-Fluoranthenes/Pyrenes	34.49	9343930	143.9402	174.2156
65)	C4-Fluoranthenes/Pyrenes	35.43	11042100	170.1000	205.8777
53)	Naphthobenzothiophene	33.03	5117560	79.8166	96.6047
54)	C1-Naphthobenzothiophenes	34.78	14443800	225.2741	272.6567
55)	C2-Naphthobenzothiophenes	35.92	23056600	359.6039	435.2404
56)	C3-Naphthobenzothiophenes	37.28	20428900	318.6201	385.6364
57)	C4-Naphthobenzothiophenes	38.28	9893730	154.3080	186.7641
67)	Benz(a)anthracene	33.84	362941	5.4645	6.6138
68)	Chrysene/Triphenylene	33.97	2379220	37.2224	45.0515
69)	C1-Chrysenes	35.33	6786150	106.1679	128.4985
70)	C2-Chrysenes	36.66	10035700	157.0068	190.0306
71)	C3-Chrysenes	38.09	6056050	94.7456	114.6737
72)	C4-Chrysenes	39.58	3920190	61.3306	74.2305
77)	Benzo(b)fluoranthene	37.41	917355	17.9774	21.7587
78)	Benzo(k,j)fluoranthene	37.47	332636	6.5163	7.8869
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.41	1204110	22.6881	27.4602
81)	Benzo(a)pyrene	38.58	416128	8.6960	10.5250
89)	Perylene	38.90	193615	3.7053	4.4847
82)	Indeno(1,2,3-c,d)pyrene	43.37	281239	5.2749	6.3844
83)	Dibenzo(a,h)anthracene	43.40	154260	3.6936	4.4705
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	44.74	754351	16.2334	19.6478

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.12	215350	7.7003	9.3199
10)	1-Methylnaphthalene	16.45	125393	4.6727	5.6555
11)	2,6-Dimethylnaphthalene	18.22	309978	11.9678	14.4850
12)	1,6,7-Trimethylnaphthalene	21.08	181371	7.0723	8.5599
27)	1-Methylfluorene	23.52	157923	7.6922	9.3102
35)	4-Methyldibenzothiophene	25.92	1653210	41.9399	50.7612
36)	2/3-Methyldibenzothiophene	26.24	1202020	30.4938	36.9076
37)	1-Methyldibenzothiophene	26.57	1023890	25.9748	31.4381
43)	3-Methylphenanthrene	26.52	946441	22.1831	26.8489
44)	2-Methylphenanthrene	26.60	1118200	26.2087	31.7213
45)	2-Methylanthracene	26.77	240376	5.6340	6.8191
46)	4/9-Methylphenanthrene	26.88	1473360	34.5332	41.7967
47)	1-Methylphenanthrene	26.97	891175	20.8877	25.2811
48)	3,6-Dimethylphenanthrene	28.07	964974	22.0571	26.6964
49)	Retene	30.76	846644	40.1531	48.5986
60)	2-Methylfluoranthene	30.53	379792	8.2686	10.0078
61)	Benzo(b)fluorene	31.12	171666	3.8195	4.6229
74)	C29-Hopane	40.88	7346940	372.6937	451.0836
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.19	8864450	449.6739	544.2551
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.81	498759	12.19	73.30
21)	Acenaphthene-d10	19.67	329615	13.22	79.51
32)	Phenanthrene-d10	24.77	677347	13.74	82.62
66)	Chrysene-d12	33.87	911918	14.25	85.74
88)	Perylene-d12	38.80	218473	4.59	27.62
90)	5(b)H-Cholane	34.26	199468	19.49	117.27
	Internal Standards				
1)	Fluorene-d10	21.46	423581	16.69	
31)	Pyrene-d10	29.68	936528	16.66	
73)	Benzo(a)pyrene-d12	38.51	675533	16.64	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091E.D
Acq On : 21 Sep 2013 12:59 pm
Operator : ECM(YMIAO)
Sample : Dupl. (SO-DA-019 (0.5-1.0))
Misc :
ALS Vial : 16 Sample Multiplier: 0.06649

Quant Time: Sep 22 20:43:17 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.459	176	423581m	251.05		0.02
31) Pyrene-d10	29.682	212	936528m	250.63		0.03
73) Benzo(a)pyrene-d12	38.511	264	675533m	250.32		0.06
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	498759m	12.19		0.00
21) Acenaphthene-d10	19.670	164	329615m	13.22		0.00
32) Phenanthrene-d10	24.766	188	677347m	13.74		0.00
66) Chrysene-d12	33.875	240	911918m	14.25		0.03
88) Perylene-d12	38.803	264	218473m	4.59		0.06
90) 5(b)H-Cholane	34.264	217	199468m	19.49		0.03
Target Compounds						Qvalue
3) cis/trans Decalin	0.000		0	N.D.	d	
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	121753m	2.81		
9) 2-Methylnaphthalene	16.115	142	215350m	7.70		
10) 1-Methylnaphthalene	16.451	142	125393m	4.67		
11) 2,6-Dimethylnaphthalene	18.217	156	309978m	11.97		
12) 1,6,7-Trimethylnaphtha...	21.079	170	181371m	7.07		
13) C2-Naphthalenes	18.485	156	1234406m	28.50		
14) C3-Naphthalenes	20.855	170	2705979m	62.48		
15) C4-Naphthalenes	23.071	184	7223722m	166.81		
16) Benzothiophene	14.059	134	8935m	0.25		
17) C1-Benzothiophenes	16.406	148	115889m	3.30		
18) C2-Benzothiophenes	18.373	162	331944m	9.44		
19) C3-Benzothiophenes	20.318	176	598907m	17.03		
20) C4-Benzothiophenes	22.263	190	1883658m	53.58		
22) Biphenyl	17.703	154	72389m	2.01		
23) Acenaphthylene	19.178	152	50253m	1.17		
24) Acenaphthene	20.005	154	35751m	1.38		
25) Dibenzofuran	20.363	168	113633m	2.89		
26) Fluorene	21.548	166	96685m	2.99		
27) 1-Methylfluorene	23.523	180	157923m	7.69		
28) C1-Fluorenes	23.523	180	723349m	22.39		
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	0.000		0	N.D.	d	
34) Dibenzothiophene	24.427	184	781666m	14.60		
35) 4-Methyldibenzothiophene	25.924	198	1653208m	41.94		
36) 2/3-Methyldibenzothiop...	26.235	198	1202019m	30.49		
37) 1-Methyldibenzothiophene	26.574	198	1023888m	25.97		
38) C2-Dibenzothiophenes	28.015	212	16351856m	305.36		
39) C3-Dibenzothiophenes	28.863	226	33773362m	630.70		
40) C4-Dibenzothiophenes	29.851	240	26975705m	503.76		
41) Phenanthrene	24.851	178	934052m	16.87		
42) Anthracene	25.020	178	41631m	0.82		
43) 3-Methylphenanthrene	26.518	192	946441m	22.18		

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091E.D
Acq On : 21 Sep 2013 12:59 pm
Operator : ECM(YMIAO)
Sample : Dupl. (SO-DA-019 (0.5-1.0))
Misc :
ALS Vial : 16 Sample Multiplier: 0.06649

Quant Time: Sep 22 20:43:17 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.602	192	1118196m	26.21		
45) 2-Methylanthracene	26.772	192	240376m	5.63		
46) 4/9-Methylphenanthrene	26.885	192	1473361m	34.53		
47) 1-Methylphenanthrene	26.970	192	891175m	20.89		
48) 3,6-Dimethylphenanthrene	28.071	206	964974m	22.06		
49) Retene	30.755	234	846644m	40.15		
50) C2-Phenanthrenes/Anthr...	28.439	206	19117872m	345.24		
51) C3-Phenanthrenes/Anthr...	29.993	220	33796643m	610.32		
52) C4-Phenanthrenes/Anthr...	31.829	234	24633858m	444.85		
53) Naphthobenzothiophene	33.032	234	5117558m	79.82		
54) C1-Naphthobenzothiophenes	34.782	248	14443818m	225.27		
55) C2-Naphthobenzothiophenes	35.917	262	23056638m	359.60		
56) C3-Naphthobenzothiophenes	37.279	276	20428876m	318.62		
57) C4-Naphthobenzothiophenes	38.284	290	9893731m	154.31		
58) Fluoranthene	28.976	202	647198m	9.97		
59) Pyrene	29.767	202	2120284m	30.57		
60) 2-Methylfluoranthene	30.529	216	379792m	8.27		
61) Benzo(b)fluorene	31.123	216	171666m	3.82		
62) C1-Fluoranthenes/Pyrenes	31.264	216	7434996m	114.53		
63) C2-Fluoranthenes/Pyrenes	32.643	230	9831593m	151.45		
64) C3-Fluoranthenes/Pyrenes	34.491	244	9343928m	143.94		
65) C4-Fluoranthenes/Pyrenes	35.431	258	11042129m	170.10		
67) Benz(a)anthracene	33.842	228	362941m	5.46		
68) Chrysene/Triphenylene	33.972	228	2379220m	37.22		
69) C1-Chrysenes	35.334	242	6786149m	106.17		
70) C2-Chrysenes	36.663	256	10035737m	157.01		
71) C3-Chrysenes	38.089	270	6056050m	94.75		
72) C4-Chrysenes	39.581	284	3920194m	61.33		
74) C29-Hopane	40.885	191	7346937m	372.69		
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.193	191	8864449m	449.67		
77) Benzo(b)fluoranthene	37.408	252	917355m	17.98		
78) Benzo(k,j)fluoranthene	37.473	252	332636m	6.52		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.414	252	1204110m	22.69		
81) Benzo(a)pyrene	38.576	252	416128m	8.70		
82) Indeno(1,2,3-c,d)pyrene	43.370	276	281239m	5.27		
83) Dibenzo(a,h)anthracene	43.402	278	154260m	3.69		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.743	276	754351m	16.23		
89) Perylene	38.900	252	193615m	3.71		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	0.000		0	N.D.	d	
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091E.D
Acq On : 21 Sep 2013 12:59 pm
Operator : ECM(YMIAO)
Sample : Dupl. (SO-DA-019 (0.5-1.0))
Misc :
ALS Vial : 16 Sample Multiplier: 0.06649

Quant Time: Sep 22 20:43:17 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

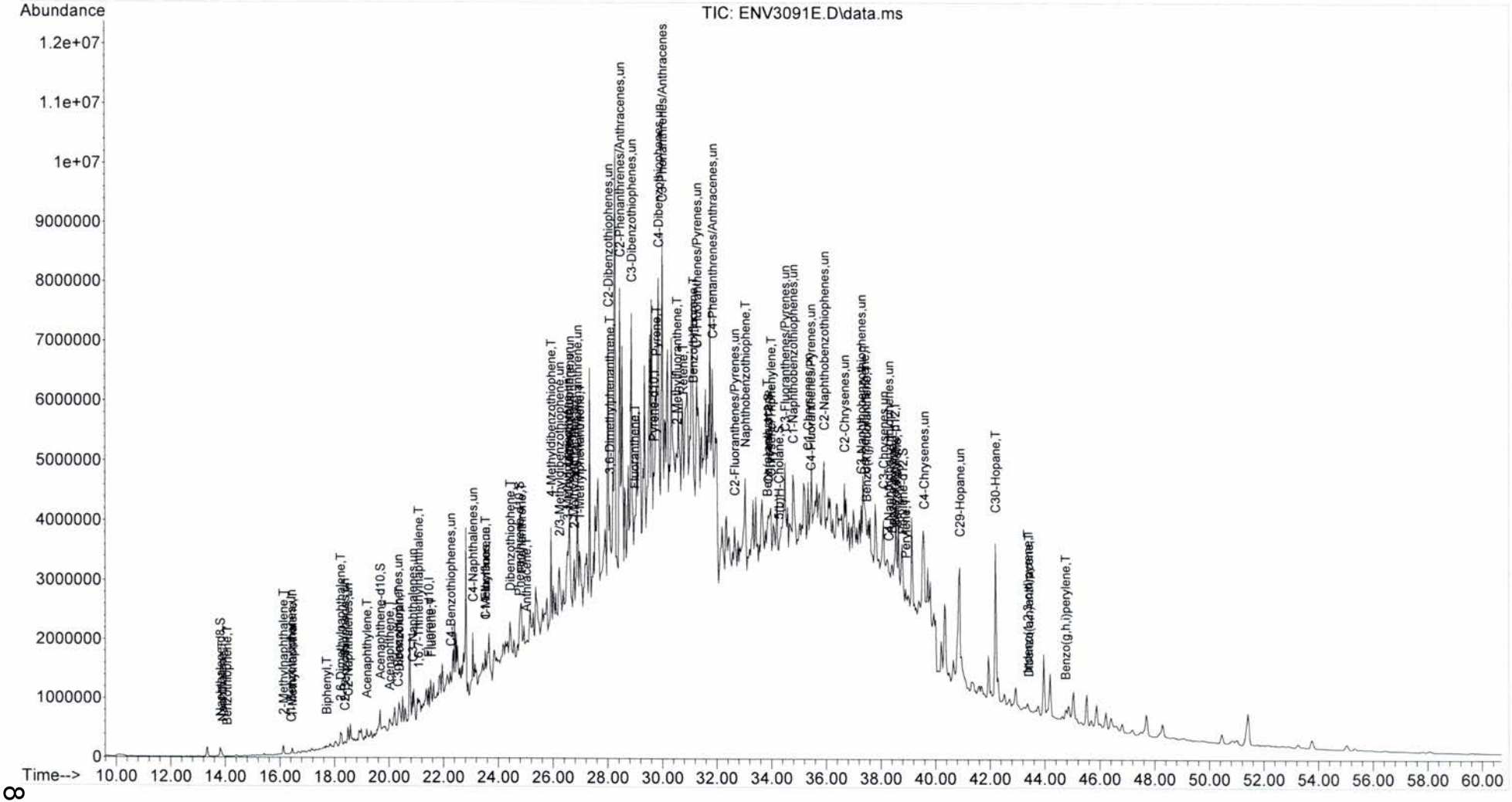
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ENV3091E.D
Acq On : 21 Sep 2013 12:59 pm
Operator : ECM(YMIAO)
Sample : Dupl. (SO-DA-019 (0.5-1.0))
Misc :
ALS Vial : 16 Sample Multiplier: 0.06649

Quant Time: Sep 22 20:43:17 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ARC1735.D
Data File Path	C:\GCMS5\MS50168\
Operator	ECM(YMIAO)
Date Acquired	9/21/2013 14:06
Acq. Method File	PAH-2012.M
Sample Name	SO-DA-019 (0-0.5)
Misc Info	0
Instrument Name	GCMS5
Vial Number	17
Sample Multiplier	0.06601
Sample Amount	0

Surrogate/Internal Multiplier Factor: 1.00

AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

ARC1735.D
SO-DA-019 (0-0.5)
9/21/2013
PAH-2012.M
15.14921982

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.88	176955	4.1323	4.2689
9)+10)	C1-Naphthalenes	16.29	380759	8.8916	9.1854
13)	C2-Naphthalenes	18.60	813449	18.9959	19.6236
14)	C3-Naphthalenes	20.85	1625880	37.9680	39.2226
15)	C4-Naphthalenes	22.82	2940960	68.6781	70.9475
16)	Benzothiophene	14.06	14237	0.4095	0.4231
17)	C1-Benzothiophenes	16.41	167227	4.8102	4.9691
18)	C2-Benzothiophenes	17.75	487085	14.0107	14.4737
19)	C3-Benzothiophenes	20.32	599367	17.2404	17.8101
20)	C4-Benzothiophenes	22.26	1199420	34.5007	35.6407
22)	Biphenyl	17.70	103211	2.8995	2.9953
23)	Acenaphthylene	19.18	99351	2.3484	2.4260
24)	Acenaphthene	20.01	41274	1.6121	1.6654
25)	Dibenzofuran	20.36	139244	3.5873	3.7058
26)	Fluorene	21.55	122495	3.8347	3.9615
28)	C1-Fluorenes	23.52	519277	16.2561	16.7933
29)	C2-Fluorenes	26.15	1954800	61.1956	63.2178
30)	C3-Fluorenes	27.34	4775970	149.5133	154.4539
33)	Carbazole	0.00	0	0.0000	0.0000
42)	Anthracene	25.02	92435	1.9714	2.0365
41)	Phenanthrene	24.85	1088720	21.3634	22.0693
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.75	4236757	83.1358	85.8829
50)	C2-Phenanthrenes/Anthracenes	28.44	12831600	251.7872	260.1073
51)	C3-Phenanthrenes/Anthracenes	29.99	22900500	449.3651	464.2139
52)	C4-Phenanthrenes/Anthracenes	31.83	17099200	335.5282	346.6154
34)	Dibenzothiophene	24.43	753644	15.2929	15.7982
35)+36)+37)	C1-Dibenzothiophenes	26.24	3641916	73.9014	76.3434
38)	C2-Dibenzothiophenes	28.01	11127300	225.7938	233.2550
39)	C3-Dibenzothiophenes	28.86	19522600	396.1504	409.2409
40)	C4-Dibenzothiophenes	29.85	18120500	367.7008	379.8512
58)	Fluoranthene	28.98	661477	11.0723	11.4382
59)	Pyrene	29.77	2514420	39.3906	40.6922
62)	C1-Fluoranthenes/Pyrenes	31.26	5463440	91.4509	94.4728
63)	C2-Fluoranthenes/Pyrenes	32.64	7553600	126.4375	130.6156
64)	C3-Fluoranthenes/Pyrenes	33.68	7464080	124.9391	129.0676
65)	C4-Fluoranthenes/Pyrenes	35.40	11521100	192.8495	199.2221
53)	Naphthobenzothiophene	33.03	3978370	67.4226	69.6505
54)	C1-Naphthobenzothiophenes	34.20	12472400	211.3726	218.3572
55)	C2-Naphthobenzothiophenes	35.88	21209800	359.4482	371.3259
56)	C3-Naphthobenzothiophenes	37.31	17803000	301.7119	311.6817
57)	C4-Naphthobenzothiophenes	38.28	7564220	128.1927	132.4288
67)	Benz(a)anthracene	33.84	388673	6.3587	6.5688
68)	Chrysene/Triphenylene	33.94	3396100	57.7327	59.6405
69)	C1-Chrysenes	35.20	5929870	100.8059	104.1369
70)	C2-Chrysenes	36.40	8460380	143.8239	148.5764
71)	C3-Chrysenes	37.60	6017290	102.2924	105.6726
72)	C4-Chrysenes	39.55	2247620	38.2089	39.4715
77)	Benzo(b)fluoranthene	37.41	1339950	27.9682	28.8924
78)	Benzo(k,j)fluoranthene	37.51	277979	5.8000	5.9917
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.41	1664930	33.4131	34.5172
81)	Benzo(a)pyrene	38.61	358860	7.9873	8.2513
89)	Perylene	38.93	171127	3.4882	3.6034
82)	Indeno(1,2,3-c,d)pyrene	43.40	272629	5.4463	5.6262
83)	Dibenzo(a,h)anthracene	43.44	168733	4.3031	4.4453
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	44.78	808417	18.5293	19.1416

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.14	269334	9.7394	10.0612
10)	1-Methylnaphthalene	16.45	111425	4.1991	4.3378
11)	2,6-Dimethylnaphthalene	18.26	250233	9.7703	10.0931
12)	1,6,7-Trimethylnaphthalene	21.08	103652	4.0874	4.2225
27)	1-Methylfluorene	23.52	104687	5.1568	5.3272
35)	4-Methyldibenzothiophene	25.92	1534280	42.2938	43.6914
36)	2/3-Methyldibenzothiophene	26.23	1112890	30.6778	31.6915
37)	1-Methyldibenzothiophene	26.57	994746	27.4210	28.3271
43)	3-Methylphenanthrene	26.52	826733	21.0555	21.7512
44)	2-Methylphenanthrene	26.60	1029060	26.2083	27.0743
45)	2-Methylanthracene	26.77	233694	5.9518	6.1485
46)	4/9-Methylphenanthrene	26.88	1270540	32.3584	33.4276
47)	1-Methylphenanthrene	27.00	876730	22.3288	23.0666
48)	3,6-Dimethylphenanthrene	28.07	664711	16.5096	17.0551
49)	Retene	30.76	443358	22.8478	23.6028
60)	2-Methylfluoranthene	30.53	346336	8.1932	8.4640
61)	Benzo(b)fluorene	31.15	67546	1.6330	1.6870
74)	C29-Hopane	40.88	8506590	459.6091	474.7965
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.23	11866800	641.1591	662.3457
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.81	512602	12.67	76.74
21)	Acenaphthene-d10	19.67	336985	13.67	82.80
32)	Phenanthrene-d10	24.77	725070	15.99	96.80
66)	Chrysene-d12	33.91	854876	14.52	87.97
88)	Perylene-d12	38.83	108717	2.43	14.75
90)	5(b)H-Cholane	34.30	159772	16.63	100.77
	Internal Standards				
1)	Fluorene-d10	21.46	415825	16.57	
31)	Pyrene-d10	29.71	855663	16.54	
73)	Benzo(a)pyrene-d12	38.51	629670	16.52	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1735.D
Acq On : 21 Sep 2013 2:06 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5)
Misc :
ALS Vial : 17 Sample Multiplier: 0.06601

Quant Time: Sep 22 20:24:21 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.459	176	415825m	251.05		0.02
31) Pyrene-d10	29.710	212	855663m	250.63		0.06
73) Benzo(a)pyrene-d12	38.511	264	629670m	250.32		0.06
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	512602m	12.67		0.00
21) Acenaphthene-d10	19.670	164	336985m	13.67		0.00
32) Phenanthrene-d10	24.766	188	725070m	15.99		0.00
66) Chrysene-d12	33.907	240	854876m	14.52		0.06
88) Perylene-d12	38.835	264	108717m	2.43		0.10
90) 5(b)H-Cholane	34.296	217	159772m	16.63		0.06
Target Compounds						Qvalue
3) cis/trans Decalin	0.000		0	N.D.	d	
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	176955m	4.13		
9) 2-Methylnaphthalene	16.138	142	269334m	9.74		
10) 1-Methylnaphthalene	16.451	142	111425m	4.20		
11) 2,6-Dimethylnaphthalene	18.262	156	250233m	9.77		
12) 1,6,7-Trimethylnaphtha...	21.078	170	103652m	4.09		
13) C2-Naphthalenes	18.597	156	813449m	19.00		
14) C3-Naphthalenes	20.855	170	1625876m	37.97		
15) C4-Naphthalenes	22.822	184	2940956m	68.68		
16) Benzothiophene	14.059	134	14237m	0.41		
17) C1-Benzothiophenes	16.406	148	167227m	4.81		
18) C2-Benzothiophenes	17.747	162	487085m	14.01		
19) C3-Benzothiophenes	20.318	176	599367m	17.24		
20) C4-Benzothiophenes	22.263	190	1199421m	34.50		
22) Biphenyl	17.703	154	103211m	2.90		
23) Acenaphthylene	19.178	152	99351m	2.35		
24) Acenaphthene	20.005	154	41274m	1.61		
25) Dibenzofuran	20.363	168	139244m	3.59		
26) Fluorene	21.548	166	122495m	3.83		
27) 1-Methylfluorene	23.523	180	104687m	5.16		
28) C1-Fluorenes	23.523	180	519277m	16.26		
29) C2-Fluorenes	26.150	194	1954803m	61.20		
30) C3-Fluorenes	27.337	208	4775971m	149.51		
33) Carbazole	0.000		0	N.D.	d	
34) Dibenzothiophene	24.427	184	753644m	15.29		
35) 4-Methyldibenzothiophene	25.924	198	1534283m	42.29		
36) 2/3-Methyldibenzothiop...	26.235	198	1112889m	30.68		
37) 1-Methyldibenzothiophene	26.574	198	994746m	27.42		
38) C2-Dibenzothiophenes	28.015	212	11127263m	225.79		
39) C3-Dibenzothiophenes	28.862	226	19522567m	396.15		
40) C4-Dibenzothiophenes	29.851	240	18120531m	367.70		
41) Phenanthrene	24.851	178	1088721m	21.36		
42) Anthracene	25.020	178	92435m	1.97		
43) 3-Methylphenanthrene	26.517	192	826733m	21.06		

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1735.D
Acq On : 21 Sep 2013 2:06 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5)
Misc :
ALS Vial : 17 Sample Multiplier: 0.06601

Quant Time: Sep 22 20:24:21 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.602	192	1029056m	26.21		
45) 2-Methylanthracene	26.772	192	233694m	5.95		
46) 4/9-Methylphenanthrene	26.885	192	1270538m	32.36		
47) 1-Methylphenanthrene	26.998	192	876730m	22.33		
48) 3,6-Dimethylphenanthrene	28.071	206	664711m	16.51		
49) Retene	30.755	234	443358m	22.85		
50) C2-Phenanthrenes/Anthr...	28.439	206	12831574m	251.79		
51) C3-Phenanthrenes/Anthr...	29.992	220	22900537m	449.36		
52) C4-Phenanthrenes/Anthr...	31.829	234	17099178m	335.53		
53) Naphthobenzothiophene	33.032	234	3978368m	67.42		
54) C1-Naphthobenzothiophenes	34.199	248	12472354m	211.37		
55) C2-Naphthobenzothiophenes	35.885	262	21209791m	359.45		
56) C3-Naphthobenzothiophenes	37.311	276	17802950m	301.71		
57) C4-Naphthobenzothiophenes	38.284	290	7564218m	128.19		
58) Fluoranthene	28.975	202	661477m	11.07		
59) Pyrene	29.766	202	2514416m	39.39		
60) 2-Methylfluoranthene	30.529	216	346336m	8.19		
61) Benzo(b)fluorene	31.151	216	67546m	1.63		
62) C1-Fluoranthenes/Pyrenes	31.264	216	5463439m	91.45		
63) C2-Fluoranthenes/Pyrenes	32.643	230	7553600m	126.44		
64) C3-Fluoranthenes/Pyrenes	33.680	244	7464077m	124.94		
65) C4-Fluoranthenes/Pyrenes	35.398	258	11521135m	192.85		
67) Benz(a)anthracene	33.842	228	388673m	6.36		
68) Chrysene/Triphenylene	33.939	228	3396101m	57.73		
69) C1-Chrysenes	35.204	242	5929871m	100.81		
70) C2-Chrysenes	36.403	256	8460382m	143.82		
71) C3-Chrysenes	37.603	270	6017293m	102.29		
72) C4-Chrysenes	39.548	284	2247623m	38.21		
74) C29-Hopane	40.885	191	8506589m	459.61		
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.225	191	11866776m	641.16		
77) Benzo(b)fluoranthene	37.408	252	1339946m	27.97		
78) Benzo(k,j)fluoranthene	37.506	252	277979m	5.80		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.413	252	1664932m	33.41		
81) Benzo(a)pyrene	38.608	252	358860m	7.99		
82) Indeno(1,2,3-c,d)pyrene	43.402	276	272629m	5.45		
83) Dibenzo(a,h)anthracene	43.435	278	168733m	4.30		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.776	276	808417m	18.53		
89) Perylene	38.932	252	171127m	3.49		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	0.000		0	N.D.	d	
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1735.D
Acq On : 21 Sep 2013 2:06 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5)
Misc :
ALS Vial : 17 Sample Multiplier: 0.06601

Quant Time: Sep 22 20:24:21 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

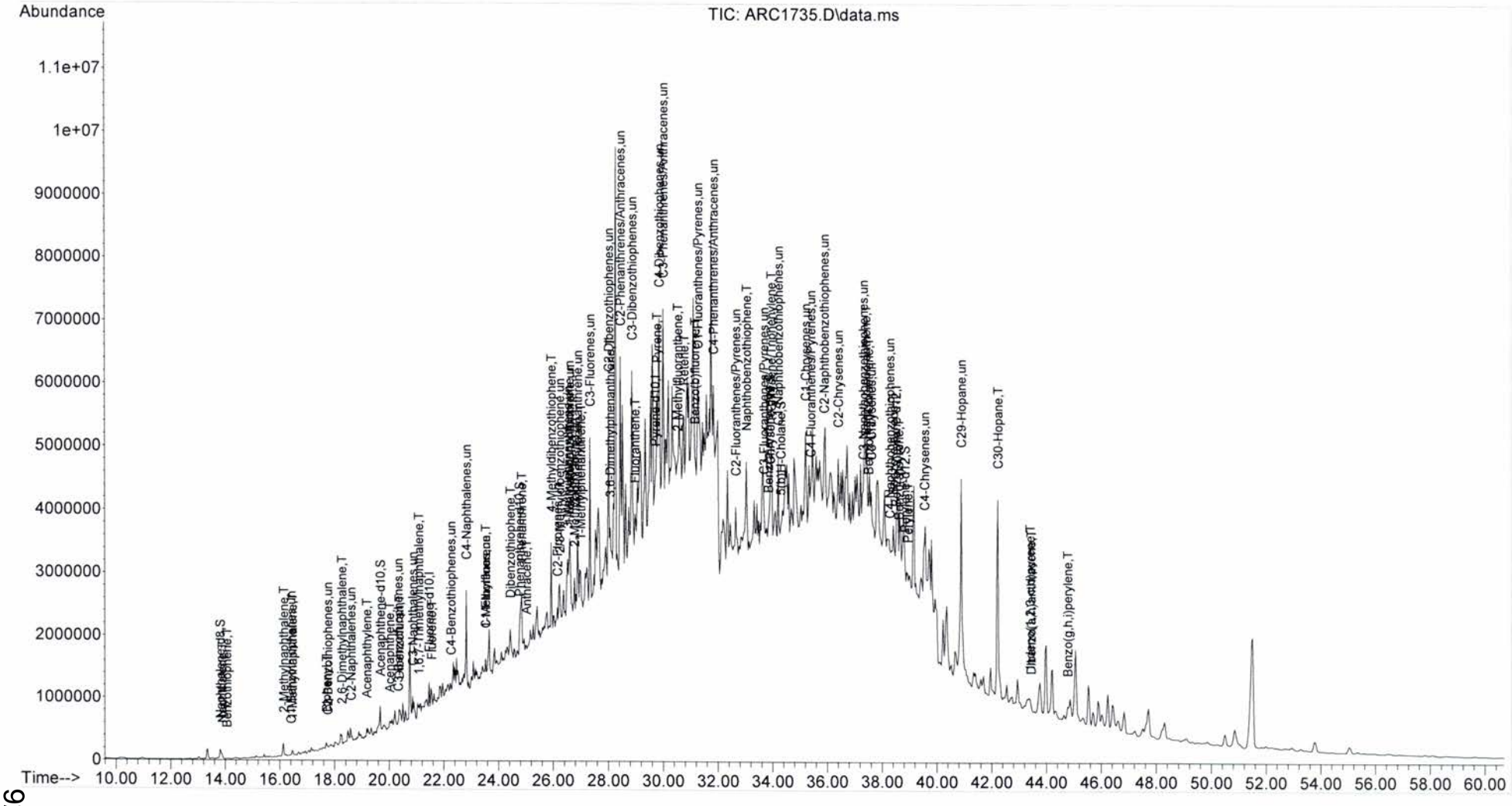
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1735.D
Acq On : 21 Sep 2013 2:06 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0-0.5)
Misc :
ALS Vial : 17 Sample Multiplier: 0.06601

Quant Time: Sep 22 20:24:21 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ARC1738.D	**Surrogate/Internal Multiplier Factor:**	1.00		
Data File Path	P:\2013\J13034\PAH\ENV3091\MS50168\	**AR-WKSU-2500-001:**	**(ng/mL)**		
Operator	ECM(YMIAO)	Naphthalene-d8	250.125		
Date Acquired	9/21/2013 15:12	Acenaphthene-d10	250.163	***Copy data below***	
Acq. Method File	PAH-2012.M	Phenanthrene-d10	250.194	***to Spread Sheet***	
Sample Name	SO-DA-019 (0.5-1.0)	Chrysene-d12	250.038		
Misc Info	0	Perylene-d12	250.031	ARC1738.D	
Instrument Name	GCMS5	5(b)H-Cholane	250.000	SO-DA-019 (0.5-1.0)	
Vial Number	18			9/21/2013	
Sample Multiplier	0.06592			PAH-2012.M	
Sample Amount	0			15.16990291	

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.88	115756	2.8062	3.3841
9)+10)	C1-Naphthalenes	16.29	319056	7.7348	9.3275
13)	C2-Naphthalenes	18.49	1131600	27.4329	33.0819
14)	C3-Naphthalenes	20.86	2381890	57.7433	69.6340
15)	C4-Naphthalenes	22.42	7211060	174.8152	210.8137
16)	Benzothiophene	14.06	8183	0.2444	0.2947
17)	C1-Benzothiophenes	16.41	130006	3.8821	4.6815
18)	C2-Benzothiophenes	18.37	302789	9.0416	10.9035
19)	C3-Benzothiophenes	20.32	585663	17.4886	21.0899
20)	C4-Benzothiophenes	22.26	1918080	57.2761	69.0706
22)	Biphenyl	17.70	68072	1.9853	2.3941
23)	Acenaphthylene	19.18	46357	1.1375	1.3718
24)	Acenaphthene	20.01	32057	1.2998	1.5675
25)	Dibenzofuran	20.36	102832	2.7502	3.3165
26)	Fluorene	21.55	97158	3.1575	3.8077
28)	C1-Fluorenes	23.52	775499	25.2028	30.3926
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	0.00	0	0.0000	0.0000
42)	Anthracene	25.02	33378	0.7089	0.8549
41)	Phenanthrene	24.85	897877	17.5451	21.1581
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.75	3913657	76.4756	92.2236
50)	C2-Phenanthrenes/Anthracenes	28.44	16715400	326.6296	393.8901
51)	C3-Phenanthrenes/Anthracenes	29.99	31417200	613.9136	740.3324
52)	C4-Phenanthrenes/Anthracenes	31.83	23018600	449.7992	542.4231
34)	Dibenzothiophene	24.43	736084	14.8743	17.9373
35)+36)+37)	C1-Dibenzothiophenes	26.24	3325524	67.2001	81.0381
38)	C2-Dibenzothiophenes	28.01	13925400	281.3947	339.3402
39)	C3-Dibenzothiophenes	28.86	31265600	631.7951	761.8961
40)	C4-Dibenzothiophenes	29.85	24160000	488.2095	588.7429
58)	Fluoranthene	28.98	595108	9.9198	11.9626
59)	Pyrene	29.77	1938690	30.2448	36.4728
62)	C1-Fluoranthenes/Pyrenes	31.26	5919450	98.6710	118.9896
63)	C2-Fluoranthenes/Pyrenes	32.64	7931700	132.2131	159.4388
64)	C3-Fluoranthenes/Pyrenes	34.49	7819890	130.3495	157.1915
65)	C4-Fluoranthenes/Pyrenes	35.43	9117190	151.9739	183.2688
53)	Naphthobenzothiophene	33.03	4860250	82.0249	98.9157
54)	C1-Naphthobenzothiophenes	34.78	12669800	213.8227	257.8537
55)	C2-Naphthobenzothiophenes	35.92	19793200	334.0430	402.8301
56)	C3-Naphthobenzothiophenes	37.28	15461200	260.9331	314.6652
57)	C4-Naphthobenzothiophenes	38.28	8313640	140.3061	169.1983
67)	Benz(a)anthracene	33.84	336630	5.4843	6.6137
68)	Chrysene/Triphenylene	33.97	2083450	35.2704	42.5333
69)	C1-Chrysenes	35.33	6086490	103.0376	124.2554
70)	C2-Chrysenes	36.66	8087060	136.9046	165.0964
71)	C3-Chrysenes	38.09	5094550	86.2451	104.0049
72)	C4-Chrysenes	39.58	3130060	52.9883	63.8998
77)	Benzo(b)fluoranthene	37.41	772116	18.3080	22.0780
78)	Benzo(k,j)fluoranthene	37.47	287581	6.8165	8.2201
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.41	974049	22.2065	26.7794
81)	Benzo(a)pyrene	38.58	331758	8.3884	10.1157
89)	Perylene	38.90	151905	3.5175	4.2418
82)	Indeno(1,2,3-c,d)pyrene	43.37	195782	4.4430	5.3580
83)	Dibenzo(a,h)anthracene	43.40	113176	3.2788	3.9540
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	44.74	550995	14.3466	17.3009

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.14	202455	7.6001	9.1652
10)	1-Methylnaphthalene	16.45	116601	4.5617	5.5010
11)	2,6-Dimethylnaphthalene	18.26	280228	11.3586	13.6976
12)	1,6,7-Trimethylnaphthalene	21.08	160296	6.5621	7.9134
27)	1-Methylfluorene	23.52	144377	7.3830	8.9034
35)	4-Methyldibenzothiophene	25.92	1337990	36.7292	44.2925
36)	2/3-Methyldibenzothiophene	26.24	1054740	28.9535	34.9157
37)	1-Methyldibenzothiophene	26.57	932794	25.6061	30.8790
43)	3-Methylphenanthrene	26.52	758668	19.2414	23.2036
44)	2-Methylphenanthrene	26.60	950909	24.1170	29.0833
45)	2-Methylanthracene	26.77	221004	5.6051	6.7593
46)	4/9-Methylphenanthrene	26.88	1174490	29.7875	35.9215
47)	1-Methylphenanthrene	26.97	808586	20.5074	24.7304
48)	3,6-Dimethylphenanthrene	28.07	809515	20.0223	24.1453
49)	Retene	30.76	705108	36.1852	43.6366
60)	2-Methylfluoranthene	30.53	347784	8.1932	9.8804
61)	Benzo(b)fluorene	31.15	136758	3.2926	3.9706
74)	C29-Hopane	40.85	5933760	364.2027	439.2004
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.19	7259170	445.5533	537.3028
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.81	465949	11.96	72.52
21)	Acenaphthene-d10	19.67	301395	12.70	76.99
32)	Phenanthrene-d10	24.77	622876	13.68	82.92
66)	Chrysene-d12	33.87	805186	13.62	82.62
88)	Perylene-d12	38.80	126146	3.21	19.46
90)	5(b)H-Cholane	34.30	130924	15.48	93.94
	Internal Standards				
1)	Fluorene-d10	21.46	400007	16.55	
31)	Pyrene-d10	29.71	858073	16.52	
73)	Benzo(a)pyrene-d12	38.51	553529	16.50	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1738.D
Acq On : 21 Sep 2013 3:12 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0.5-1.0)
Misc :
ALS Vial : 18 Sample Multiplier: 0.06592

Quant Time: Sep 22 21:30:49 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.459	176	400007m	251.05		0.02
31) Pyrene-d10	29.710	212	858073m	250.63		0.06
73) Benzo(a)pyrene-d12	38.511	264	553529m	250.32		0.06
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	465949m	11.96		0.00
21) Acenaphthene-d10	19.670	164	301395m	12.70		0.00
32) Phenanthrene-d10	24.766	188	622876m	13.68		0.00
66) Chrysene-d12	33.875	240	805186m	13.62		0.03
88) Perylene-d12	38.803	264	126146m	3.21		0.06
90) 5(b)H-Cholane	34.296	217	130924m	15.48		0.06
Target Compounds						Qvalue
3) cis/trans Decalin	0.000		0	N.D.	d	
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	115756m	2.81		
9) 2-Methylnaphthalene	16.138	142	202455m	7.60		
10) 1-Methylnaphthalene	16.451	142	116601m	4.56		
11) 2,6-Dimethylnaphthalene	18.262	156	280228m	11.36		
12) 1,6,7-Trimethylnaphtha...	21.079	170	160296m	6.56		
13) C2-Naphthalenes	18.485	156	1131595m	27.43		
14) C3-Naphthalenes	20.855	170	2381888m	57.74		
15) C4-Naphthalenes	22.420	184	7211064m	174.82		
16) Benzothiophene	14.059	134	8183m	0.24		
17) C1-Benzothiophenes	16.406	148	130006m	3.88		
18) C2-Benzothiophenes	18.373	162	302789m	9.04		
19) C3-Benzothiophenes	20.318	176	585663m	17.49		
20) C4-Benzothiophenes	22.263	190	1918082m	57.28		
22) Biphenyl	17.703	154	68072m	1.99		
23) Acenaphthylene	19.178	152	46357m	1.14		
24) Acenaphthene	20.005	154	32057m	1.30		
25) Dibenzofuran	20.363	168	102832m	2.75		
26) Fluorene	21.548	166	97158m	3.16		
27) 1-Methylfluorene	23.523	180	144377m	7.38		
28) C1-Fluorenes	23.523	180	775499m	25.20		
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	0.000		0	N.D.	d	
34) Dibenzothiophene	24.427	184	736084m	14.87		
35) 4-Methyldibenzothiophene	25.924	198	1337994m	36.73		
36) 2/3-Methyldibenzothiop...	26.235	198	1054736m	28.95		
37) 1-Methyldibenzothiophene	26.574	198	932794m	25.61		
38) C2-Dibenzothiophenes	28.015	212	13925356m	281.39		
39) C3-Dibenzothiophenes	28.863	226	31265626m	631.80		
40) C4-Dibenzothiophenes	29.851	240	24160006m	488.21		
41) Phenanthrene	24.851	178	897877m	17.55		
42) Anthracene	25.020	178	33378m	0.71		
43) 3-Methylphenanthrene	26.518	192	758668m	19.24		

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1738.D
Acq On : 21 Sep 2013 3:12 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0.5-1.0)
Misc :
ALS Vial : 18 Sample Multiplier: 0.06592

Quant Time: Sep 22 21:30:49 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.602	192	950909m	24.12		
45) 2-Methylanthracene	26.772	192	221004m	5.61		
46) 4/9-Methylphenanthrene	26.885	192	1174489m	29.79		
47) 1-Methylphenanthrene	26.970	192	808586m	20.51		
48) 3,6-Dimethylphenanthrene	28.071	206	809515m	20.02		
49) Retene	30.755	234	705108m	36.19		
50) C2-Phenanthrenes/Anthr...	28.439	206	16715372m	326.63		
51) C3-Phenanthrenes/Anthr...	29.993	220	31417213m	613.91		
52) C4-Phenanthrenes/Anthr...	31.829	234	23018617m	449.80		
53) Naphthobenzothiophene	33.032	234	4860251m	82.02		
54) C1-Naphthobenzothiophenes	34.782	248	12669751m	213.82		
55) C2-Naphthobenzothiophenes	35.917	262	19793219m	334.04		
56) C3-Naphthobenzothiophenes	37.279	276	15461177m	260.93		
57) C4-Naphthobenzothiophenes	38.284	290	8313637m	140.31		
58) Fluoranthene	28.976	202	595108m	9.92		
59) Pyrene	29.767	202	1938690m	30.24		
60) 2-Methylfluoranthene	30.529	216	347784m	8.19		
61) Benzo(b)fluorene	31.151	216	136758m	3.29		
62) C1-Fluoranthenes/Pyrenes	31.264	216	5919453m	98.67		
63) C2-Fluoranthenes/Pyrenes	32.643	230	7931696m	132.21		
64) C3-Fluoranthenes/Pyrenes	34.491	244	7819893m	130.35		
65) C4-Fluoranthenes/Pyrenes	35.431	258	9117188m	151.97		
67) Benz(a)anthracene	33.842	228	336630m	5.48		
68) Chrysene/Triphenylene	33.972	228	2083448m	35.27		
69) C1-Chrysenes	35.334	242	6086492m	103.04		
70) C2-Chrysenes	36.663	256	8087057m	136.90		
71) C3-Chrysenes	38.089	270	5094547m	86.24		
72) C4-Chrysenes	39.581	284	3130058m	52.99		
74) C29-Hopane	40.852	191	5933763m	364.20		
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.193	191	7259165m	445.55		
77) Benzo(b)fluoranthene	37.408	252	772116m	18.31		
78) Benzo(k,j)fluoranthene	37.473	252	287581m	6.82		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.414	252	974049m	22.21		
81) Benzo(a)pyrene	38.576	252	331758m	8.39		
82) Indeno(1,2,3-c,d)pyrene	43.370	276	195782m	4.44		
83) Dibenzo(a,h)anthracene	43.402	278	113176m	3.28		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.743	276	550995m	14.35		
89) Perylene	38.900	252	151905m	3.52		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	0.000		0	N.D.	d	
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1738.D
Acq On : 21 Sep 2013 3:12 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0.5-1.0)
Misc :
ALS Vial : 18 Sample Multiplier: 0.06592

Quant Time: Sep 22 21:30:49 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

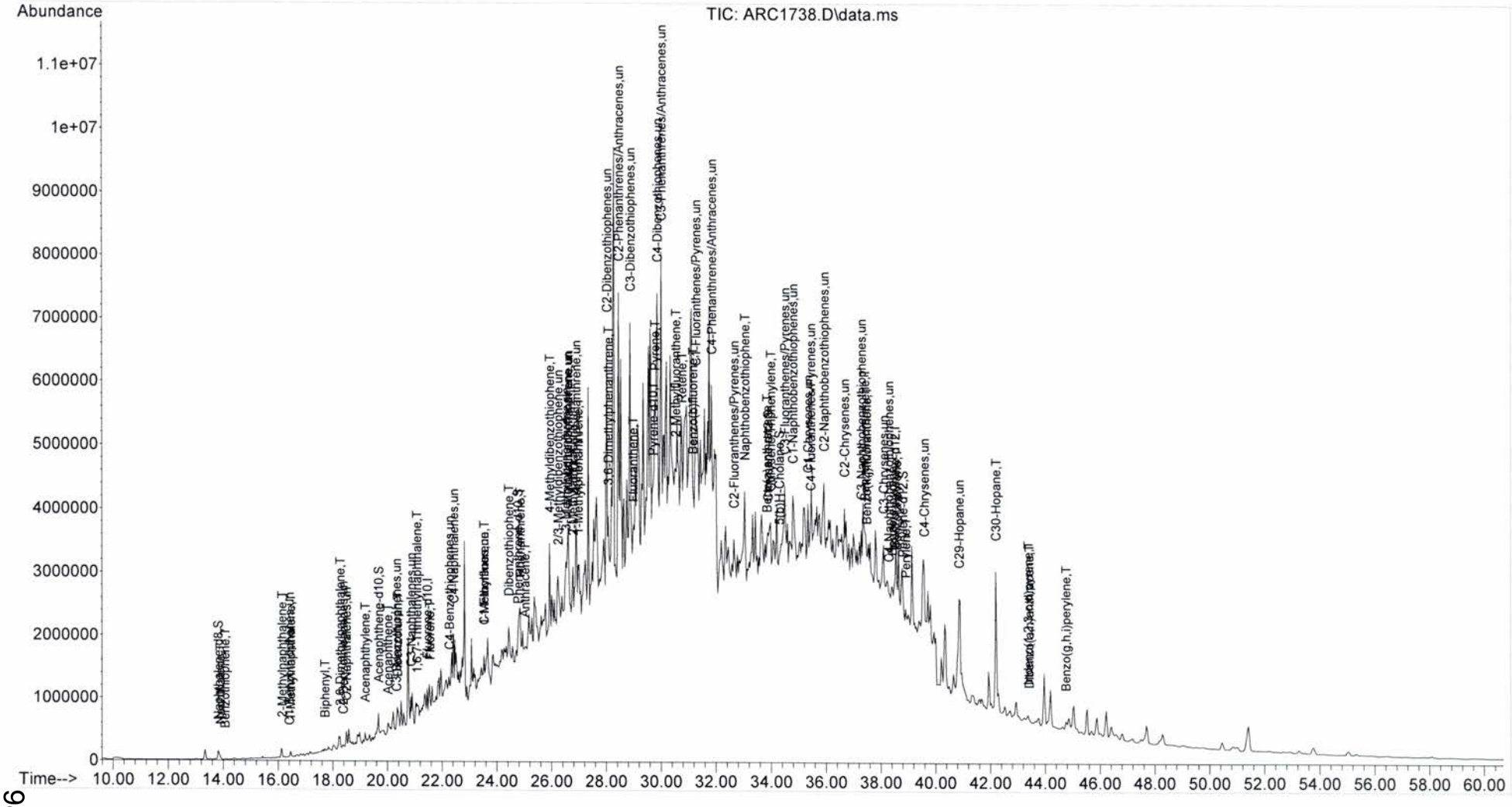
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1738.D
Acq On : 21 Sep 2013 3:12 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (0.5-1.0)
Misc :
ALS Vial : 18 Sample Multiplier: 0.06592

Quant Time: Sep 22 21:30:49 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ARC1739.D
Data File Path	C:\GCMS5\MS50168\
Operator	ECM(YMIAO)
Date Acquired	9/21/2013 16:18
Acq. Method File	PAH-2012.M
Sample Name	SO-DA-019 (1.0-1.5)
Misc Info	0
Instrument Name	GCMS5
Vial Number	19
Sample Multiplier	0.06623
Sample Amount	0

Surrogate/Internal Multiplier Factor: 1.00

AR-WKSU-2500-001:	**(ng/mL)**
Naphthalene-d8	250.125
Acenaphthene-d10	250.163
Phenanthrene-d10	250.194
Chrysene-d12	250.038
Perylene-d12	250.031
5(b)H-Cholane	250.000

Copy data below to Spread Sheet

ARC1739.D
SO-DA-019 (1.0-1.5)
9/21/2013
PAH-2012.M
15.09889778

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.88	16130	0.5018	0.6105
9)+10)	C1-Naphthalenes	16.29	13974	0.4347	0.5289
13)	C2-Naphthalenes	18.57	37956	1.1807	1.4366
14)	C3-Naphthalenes	19.80	42826	1.3322	1.6209
15)	C4-Naphthalenes	22.82	98662	3.0691	3.7343
16)	Benzothiophene	14.08	3795	0.1454	0.1769
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	17.70	6749	0.2526	0.3073
23)	Acenaphthylene	19.18	1162	0.0366	0.0445
24)	Acenaphthene	19.80	2503	0.1302	0.1585
25)	Dibenzofuran	20.36	9431	0.3237	0.3938
26)	Fluorene	21.55	9718	0.4053	0.4931
28)	C1-Fluorenes	23.52	21595	0.9005	1.0957
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	0.00	0	0.0000	0.0000
42)	Anthracene	0.00	0	0.0000	0.0000
41)	Phenanthrene	24.85	73746	1.8776	2.2845
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.74	414646	10.5570	12.8450
50)	C2-Phenanthrenes/Anthracenes	28.41	1017000	25.8931	31.5050
51)	C3-Phenanthrenes/Anthracenes	29.96	1467500	37.3631	45.4608
52)	C4-Phenanthrenes/Anthracenes	31.80	1112010	28.3121	34.4483
34)	Dibenzothiophene	24.40	35634	0.9382	1.1415
35)+36)+37)	C1-Dibenzothiophenes	26.23	250834	6.6042	8.0355
38)	C2-Dibenzothiophenes	27.99	805576	21.2100	25.8068
39)	C3-Dibenzothiophenes	28.83	1367470	36.0041	43.8073
40)	C4-Dibenzothiophenes	29.82	1144130	30.1237	36.6525
58)	Fluoranthene	28.95	33154	0.7201	0.8761
59)	Pyrene	29.74	62223	1.2648	1.5389
62)	C1-Fluoranthenes/Pyrenes	31.55	248310	5.3930	6.5618
63)	C2-Fluoranthenes/Pyrenes	32.61	473771	10.2897	12.5198
64)	C3-Fluoranthenes/Pyrenes	34.46	436720	9.4850	11.5407
65)	C4-Fluoranthenes/Pyrenes	35.40	606054	13.1627	16.0154
53)	Naphthobenzothiophene	33.00	245775	5.4044	6.5757
54)	C1-Naphthobenzothiophenes	34.75	721901	15.8741	19.3145
55)	C2-Naphthobenzothiophenes	35.88	960293	21.1161	25.6926
56)	C3-Naphthobenzothiophenes	37.25	916229	20.1472	24.5137
57)	C4-Naphthobenzothiophenes	38.06	471601	10.3702	12.6177
67)	Benz(a)anthracene	33.81	18122	0.3847	0.4681
68)	Chrysene/Triphenylene	33.91	124055	2.7363	3.3294
69)	C1-Chrysenes	35.30	327558	7.2250	8.7909
70)	C2-Chrysenes	36.63	470162	10.3705	12.6181
71)	C3-Chrysenes	38.06	291654	6.4331	7.8273
72)	C4-Chrysenes	39.52	154242	3.4022	4.1395
77)	Benzo(b)fluoranthene	37.38	47516	1.1248	1.3686
78)	Benzo(k,j)fluoranthene	37.44	13333	0.3155	0.3839
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.35	61925	1.4094	1.7149
81)	Benzo(a)pyrene	38.54	15833	0.3997	0.4863
89)	Perylene	38.87	10970	0.2536	0.3086
82)	Indeno(1,2,3-c,d)pyrene	43.30	11790	0.2671	0.3250
83)	Dibenzo(a,h)anthracene	43.34	7786	0.2252	0.2740
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	44.68	27318	0.7101	0.8640

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.14	9487	0.4570	0.5560
10)	1-Methylnaphthalene	16.45	4487	0.2252	0.2741
11)	2,6-Dimethylnaphthalene	18.26	7979	0.4150	0.5049
12)	1,6,7-Trimethylnaphthalene	21.08	2104	0.1105	0.1345
27)	1-Methylfluorene	23.52	9814	0.6440	0.7835
35)	4-Methyldibenzothiophene	25.92	100425	3.5919	4.3704
36)	2/3-Methyldibenzothiophene	26.21	73375	2.6244	3.1932
37)	1-Methyldibenzothiophene	26.55	77034	2.7553	3.3524
43)	3-Methylphenanthrene	26.49	57289	1.8931	2.3034
44)	2-Methylphenanthrene	26.60	72105	2.3827	2.8991
45)	2-Methylanthracene	26.74	123094	4.0677	4.9493
46)	4/9-Methylphenanthrene	26.88	93184	3.0793	3.7467
47)	1-Methylphenanthrene	26.97	68974	2.2793	2.7733
48)	3,6-Dimethylphenanthrene	28.04	40263	1.2975	1.5788
49)	Retene	30.73	35124	2.3486	2.8576
60)	2-Methylfluoranthene	30.50	20167	0.6190	0.7532
61)	Benzo(b)fluorene	31.09	11289	0.3541	0.4309
74)	C29-Hopane	40.82	394233	24.1569	29.3924
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.13	528699	32.3963	39.4176
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.81	349149	11.50	69.40
21)	Acenaphthene-d10	19.67	177550	9.60	57.92
32)	Phenanthrene-d10	24.77	476036	13.62	82.19
66)	Chrysene-d12	33.84	566435	12.48	75.38
88)	Perylene-d12	38.74	3046	0.08	0.47
90)	5(b)H-Cholane	34.26	156774	18.51	111.77
	Internal Standards				
1)	Fluorene-d10	21.44	313199	16.63	
31)	Pyrene-d10	29.68	661664	16.60	
73)	Benzo(a)pyrene-d12	38.45	557062	16.58	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1739.D
Acq On : 21 Sep 2013 4:18 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (1.0-1.5)
Misc :
ALS Vial : 19 Sample Multiplier: 0.06623

Quant Time: Sep 22 22:11:27 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	313199m	251.05		0.00
31) Pyrene-d10	29.682	212	661664m	250.63		0.03
73) Benzo(a)pyrene-d12	38.446	264	557062m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.812	136	349149m	11.50		0.00
21) Acenaphthene-d10	19.670	164	177550m	9.60		0.00
32) Phenanthrene-d10	24.766	188	476036m	13.62		0.00
66) Chrysene-d12	33.842	240	566435m	12.48		0.00
88) Perylene-d12	38.738	264	3046m	0.08		0.00
90) 5(b)H-Cholane	34.264	217	156774m	18.51		0.03
Target Compounds						Qvalue
3) cis/trans Decalin	0.000		0	N.D.	d	
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	16130m	0.50		
9) 2-Methylnaphthalene	16.138	142	9487m	0.46		
10) 1-Methylnaphthalene	16.451	142	4487m	0.23		
11) 2,6-Dimethylnaphthalene	18.261	156	7979m	0.41		
12) 1,6,7-Trimethylnaphtha...	21.078	170	2104m	0.11		
13) C2-Naphthalenes	18.574	156	37956m	1.18		
14) C3-Naphthalenes	19.804	170	42826m	1.33		
15) C4-Naphthalenes	22.822	184	98662m	3.07		
16) Benzothiophene	14.081	134	3795m	0.15		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.703	154	6749m	0.25		
23) Acenaphthylene	19.178	152	1162m	0.04		
24) Acenaphthene	19.804	154	2503m	0.13		
25) Dibenzofuran	20.363	168	9431m	0.32		
26) Fluorene	21.548	166	9718m	0.41		
27) 1-Methylfluorene	23.523	180	9814m	0.64		
28) C1-Fluorenes	23.523	180	21595m	0.90		
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	0.000		0	N.D.	d	
34) Dibenzothiophene	24.398	184	35634m	0.94		
35) 4-Methyldibenzothiophene	25.924	198	100425m	3.59		
36) 2/3-Methyldibenzothiop...	26.207	198	73375m	2.62		
37) 1-Methyldibenzothiophene	26.546	198	77034m	2.76		
38) C2-Dibenzothiophenes	27.986	212	805576m	21.21		
39) C3-Dibenzothiophenes	28.834	226	1367471m	36.00		
40) C4-Dibenzothiophenes	29.823	240	1144130m	30.12		
41) Phenanthrene	24.850	178	73746m	1.88		
42) Anthracene	0.000		0	N.D.	d	
43) 3-Methylphenanthrene	26.489	192	57289m	1.89		

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1739.D
Acq On : 21 Sep 2013 4:18 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (1.0-1.5)
Misc :
ALS Vial : 19 Sample Multiplier: 0.06623

Quant Time: Sep 22 22:11:27 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.602	192	72105m	2.38		
45) 2-Methylanthracene	26.743	192	123094m	4.07		
46) 4/9-Methylphenanthrene	26.885	192	93184m	3.08		
47) 1-Methylphenanthrene	26.969	192	68974m	2.28		
48) 3,6-Dimethylphenanthrene	28.043	206	40263m	1.30		
49) Retene	30.727	234	35124m	2.35		
50) C2-Phenanthrenes/Anthr...	28.410	206	1016999m	25.89		
51) C3-Phenanthrenes/Anthr...	29.964	220	1467501m	37.36		
52) C4-Phenanthrenes/Anthr...	31.801	234	1112010m	28.31		
53) Naphthobenzothiophene	32.999	234	245775m	5.40		
54) C1-Naphthobenzothiophenes	34.750	248	721901m	15.87		
55) C2-Naphthobenzothiophenes	35.885	262	960293m	21.12		
56) C3-Naphthobenzothiophenes	37.246	276	916229m	20.15		
57) C4-Naphthobenzothiophenes	38.057	290	471601m	10.37		
58) Fluoranthene	28.947	202	33154m	0.72		
59) Pyrene	29.738	202	62223m	1.26		
60) 2-Methylfluoranthene	30.501	216	20167m	0.62		
61) Benzo(b)fluorene	31.094	216	11289m	0.35		
62) C1-Fluoranthenes/Pyrenes	31.546	216	248310m	5.39		
63) C2-Fluoranthenes/Pyrenes	32.610	230	473771m	10.29		
64) C3-Fluoranthenes/Pyrenes	34.458	244	436720m	9.48		
65) C4-Fluoranthenes/Pyrenes	35.398	258	606054m	13.16		
67) Benz(a)anthracene	33.810	228	18122m	0.38		
68) Chrysene/Triphenylene	33.907	228	124055m	2.74		
69) C1-Chrysenes	35.301	242	327558m	7.23		
70) C2-Chrysenes	36.630	256	470162m	10.37		
71) C3-Chrysenes	38.057	270	291654m	6.43		
72) C4-Chrysenes	39.516	284	154242m	3.40		
74) C29-Hopane	40.819	191	394233m	24.16		
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.127	191	528699m	32.40		
77) Benzo(b)fluoranthene	37.376	252	47516m	1.12		
78) Benzo(k,j)fluoranthene	37.441	252	13333m	0.32		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.348	252	61925m	1.41		
81) Benzo(a)pyrene	38.543	252	15833m	0.40		
82) Indeno(1,2,3-c,d)pyrene	43.304	276	11790m	0.27		
83) Dibenzo(a,h)anthracene	43.337	278	7786m	0.23		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.677	276	27318m	0.71		
89) Perylene	38.867	252	10970m	0.25		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	0.000		0	N.D.	d	
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1739.D
Acq On : 21 Sep 2013 4:18 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (1.0-1.5)
Misc :
ALS Vial : 19 Sample Multiplier: 0.06623

Quant Time: Sep 22 22:11:27 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : P:\2013\J13034\PAH\ENV3091\MS50168\
Data File : ARC1739.D
Acq On : 21 Sep 2013 4:18 pm
Operator : ECM(YMIAO)
Sample : SO-DA-019 (1.0-1.5)
Misc :
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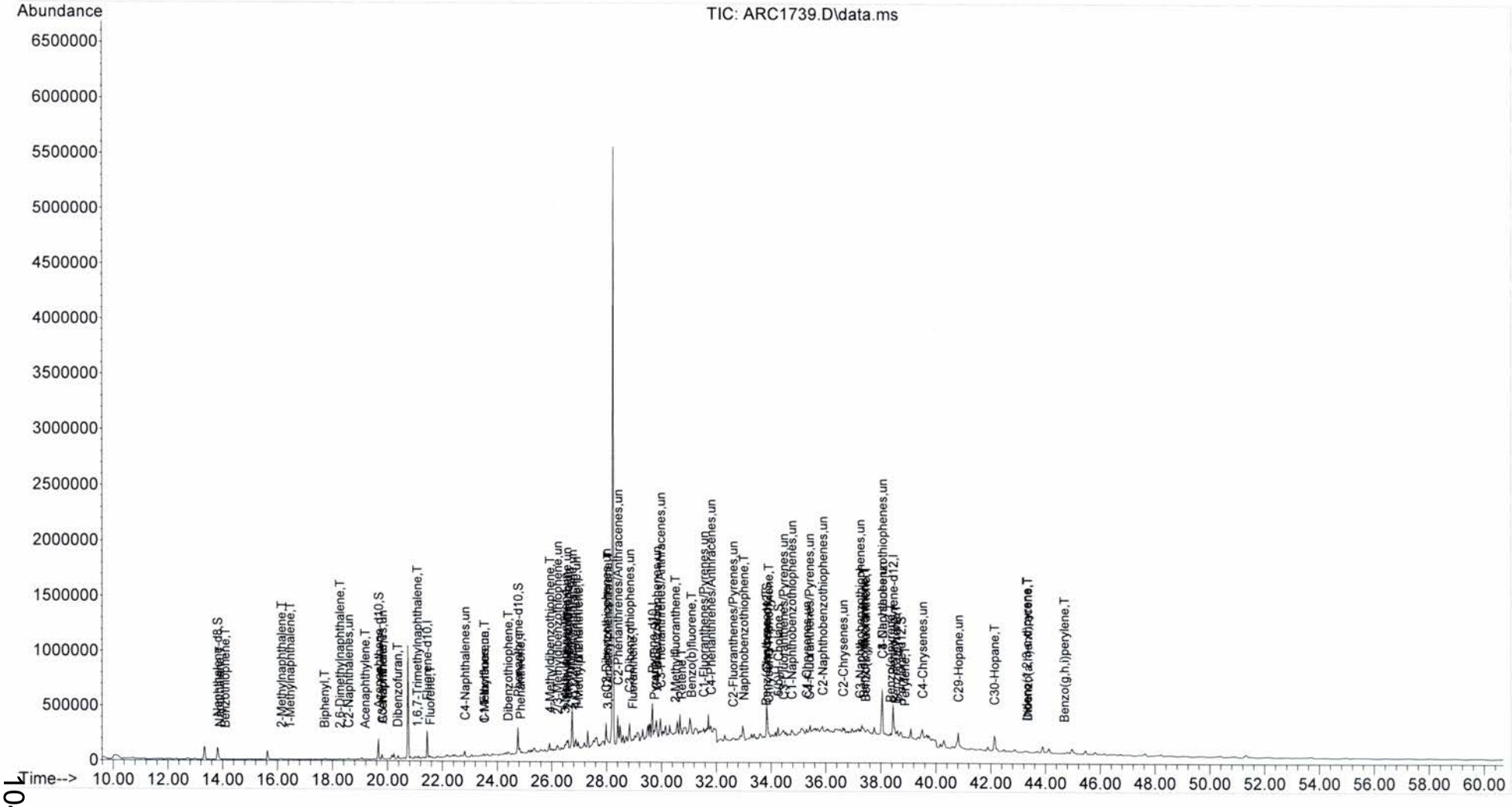
Quant Time: Sep 22 22:11:27 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



Polycyclic Aromatic Hydrocarbon
Initial Calibration Data
and
Initial Calibration Verification Data

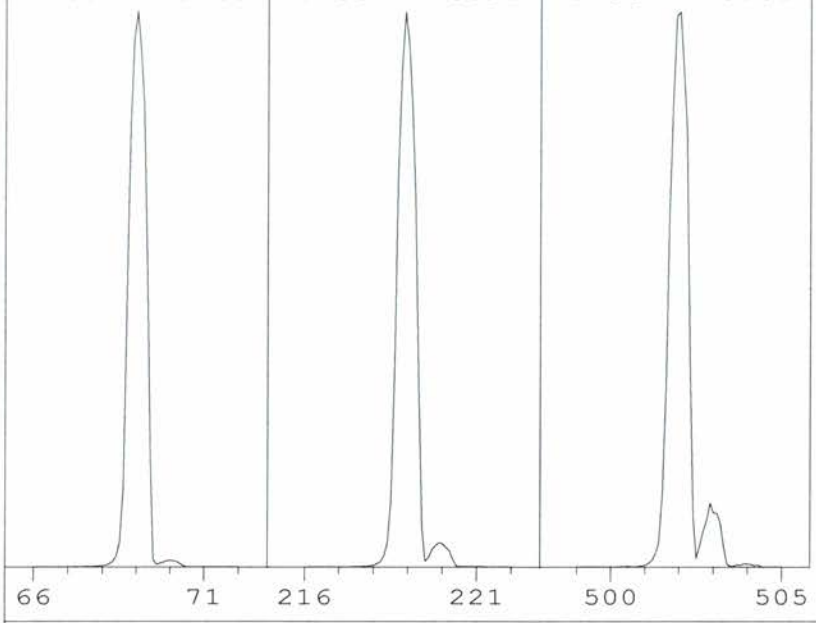
PAH ICAL
AR 50168.M

GC/MS 5
(PAH-2012)

Autotune

Fri Sep 20 16:03:41 2013 Instrument: GCMS5
C:\MSDCHEM\1\5975\atune.u US83141113

Mass	69.00	Mass	218.90	Mass	502.00
Ab	535646	Ab	462237	Ab	25840
Pw50	0.60	Pw50	0.61	Pw50	0.61

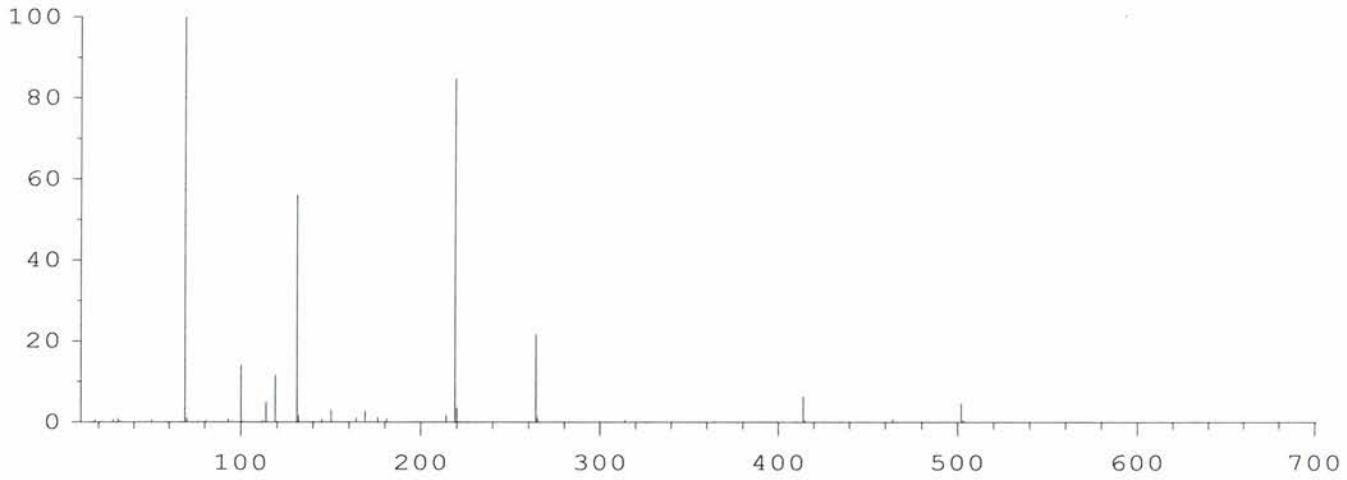


Ion Pol	Pos	MassGain	-610
		MassOffs	-39
Emission	34.6	AmuGain	1992
EIEnrgy	69.9	AmuOffs	122.25
Filament	1	Wid219	-0.004
		DC Pol	Neg
Repeller	25.60		
IonFcus	90.2	HEDEnab	On
EntLens	28.5	EMVolts	1612
EntOffs	17.57		
		Samples	8
PFTBA	Open	Averages	3
		Stepsize	0.10

Temperatures and Pressures:

MS Source	290	Turbo Speed	100
MS Quad	180	HiVac	1.41e-05

Scan: 10.00 - 701.00 Samples: 8 Thresh: 100 Step: 0.10
118 peaks Base: 69.00 Abundance: 514432



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	514432	100.00	70.00	5840	1.14
219.00	436224	84.80	220.00	18656	4.28
502.00	24472	4.76	503.00	2774	11.34

Air/Water Check: H2O~0.58% N2~0.81% O2~0.30% CO2~0.11% N2/H2O~138.42%

Column(1) Flow: 1.23 Column(2): 0 ml/min. Interface Temp: 290

Ramp Criteria:

Ion Focus Maximum	90	volts using ion	502;	EM Gain	74327
Repeller Maximum	35	volts using ion	219;	Gain Factor	0.74

MassGain Values(Samples): -600(3) -593(2) -589(1) -563(0) -476(FS)

TARGET MASS:	50	69	131	219	414	502	1050
Amu Offset:	122.3	122.3	122.3	122.3	122.3	122.3	122.3
Entrance Lens Offset:	17.6	17.6	17.6	17.6	17.6	17.6	17.6

MS 5D/6F

YM

Method Path : C:\GCMS5\MS50168\
Method File : AR50168.M
Title : PAH Calibration Table-2013A
Last Update : Sun Sep 22 13:11:40 2013
Response Via : Initial Calibration

Calibration Files
1 =MS50168B.D 2 =MS50168C.D 3 =MS50168D.D 4 =MS50168E.D
5 =MS50168F.D 6 =MS50168G.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorene-d10	----------ISTD----------							
2)	S	Naphthalene-d8	1.898	1.593	1.511	1.554	1.569	1.550	1.612	8.83
3)	T	cis/trans Decalin	0.311	0.330	0.288	0.291	0.296	0.287	0.300	5.63
4)	un	C1-Decalins	0.311	0.330	0.288	0.291	0.296	0.287	0.300	5.63
5)	un	C2-Decalins	0.311	0.330	0.288	0.291	0.296	0.287	0.300	5.63
6)	un	C3-Decalins	0.311	0.330	0.288	0.291	0.296	0.287	0.300	5.63
7)	un	C4-Decalins	0.311	0.330	0.288	0.291	0.296	0.287	0.300	5.63
8)	T	Naphthalene	2.034	1.697	1.592	1.631	1.653	1.632	1.707	9.62
9)	T	2-Methylnaphth...	1.266	1.094	1.025	1.059	1.083	1.085	1.102	7.64
10)	T	1-Methylnaphth...	1.259	1.048	0.984	1.015	1.025	1.014	1.058	9.53
11)	T	2,6-Dimethylna...	1.159	0.999	0.951	0.990	1.007	1.018	1.021	6.99
12)	T	1,6,7-Trimethy...	1.188	1.002	0.930	0.967	0.981	0.996	1.011	8.98
13)	un	C2-Naphthalenes	2.034	1.697	1.592	1.631	1.653	1.632	1.707	9.62
14)	un	C3-Naphthalenes	2.034	1.697	1.592	1.631	1.653	1.632	1.707	9.62
15)	un	C4-Naphthalenes	2.034	1.697	1.592	1.631	1.653	1.632	1.707	9.62
16)	T	Benzothiophene	1.625	1.374	1.296	1.340	1.348	1.331	1.385	8.65
17)	un	C1-Benzothioph...	1.625	1.374	1.296	1.340	1.348	1.331	1.385	8.65
18)	un	C2-Benzothioph...	1.625	1.374	1.296	1.340	1.348	1.331	1.385	8.65
19)	un	C3-Benzothioph...	1.625	1.374	1.296	1.340	1.348	1.331	1.385	8.65
20)	un	C4-Benzothioph...	1.625	1.374	1.296	1.340	1.348	1.331	1.385	8.65
21)	S	Acenaphthene-d10	1.174	0.973	0.908	0.936	0.948	0.954	0.982	9.81
22)	T	Biphenyl	1.638	1.400	1.313	1.376	1.389	1.395	1.419	7.91
23)	T	Acenaphthylene	2.009	1.651	1.543	1.594	1.646	1.674	1.686	9.78
24)	T	Acenaphthene	1.184	1.009	0.949	0.983	0.996	1.001	1.020	8.15
25)	T	Dibenzofuran	1.782	1.513	1.447	1.505	1.530	1.504	1.547	7.67
26)	T	Fluorene	1.507	1.253	1.180	1.220	1.223	1.255	1.273	9.28
27)	T	1-Methylfluorene	0.953	0.795	0.739	0.760	0.765	0.843	0.809	9.77
28)	un	C1-Fluorenes	1.507	1.253	1.180	1.220	1.223	1.255	1.273	9.28
29)	un	C2-Fluorenes	1.507	1.253	1.180	1.220	1.223	1.255	1.273	9.28
30)	un	C3-Fluorenes	1.507	1.253	1.180	1.220	1.223	1.255	1.273	9.28
31)	I	Pyrene-d10	----------ISTD----------							
32)	S	Phenanthrene-d10	1.003	0.869	0.803	0.837	0.850	0.899	0.877	7.96
33)	T	Carbazole	0.865	0.768	0.741	0.796	0.817	0.822	0.801	5.45
34)	T	Dibenzothiophene	1.059	0.915	0.893	0.955	0.972	0.922	0.953	6.22
35)	T	4-Methyldibenz...	0.783	0.685	0.642	0.682	0.689	0.727	0.701	6.91
36)	un	2/3-Methyldibe...	0.783	0.685	0.642	0.682	0.689	0.727	0.701	6.91
37)	un	1-Methyldibenz...	0.783	0.685	0.642	0.682	0.689	0.727	0.701	6.91
38)	un	C2-Dibenzothio...	1.059	0.915	0.893	0.955	0.972	0.922	0.953	6.22
39)	un	C3-Dibenzothio...	1.059	0.915	0.893	0.955	0.972	0.922	0.953	6.22
40)	un	C4-Dibenzothio...	1.059	0.915	0.893	0.955	0.972	0.922	0.953	6.22
41)	T	Phenanthrene	1.106	0.956	0.917	0.971	1.002	0.960	0.985	6.58
42)	T	Anthracene	1.007	0.876	0.820	0.878	0.901	0.957	0.907	7.29
43)	un	3-Methylphenan...	0.861	0.748	0.689	0.722	0.736	0.799	0.759	8.13
44)	un	2-Methylphenan...	0.861	0.748	0.689	0.722	0.736	0.799	0.759	8.13
45)	un	2-Methylanthra...	0.861	0.748	0.689	0.722	0.736	0.799	0.759	8.13
46)	un	4/9-Methylphen...	0.861	0.748	0.689	0.722	0.736	0.799	0.759	8.13
47)	T	1-Methylphenan...	0.861	0.748	0.689	0.722	0.736	0.799	0.759	8.13
48)	T	3,6-Dimethylph...	0.902	0.755	0.703	0.749	0.760	0.802	0.778	8.79
49)	T	Retene	0.432	0.365	0.339	0.353	0.362	0.399	0.375	9.19
50)	un	C2-Phenanthren...	1.106	0.956	0.917	0.971	1.002	0.960	0.985	6.58
51)	un	C3-Phenanthren...	1.106	0.956	0.917	0.971	1.002	0.960	0.985	6.58
52)	un	C4-Phenanthren...	1.106	0.956	0.917	0.971	1.002	0.960	0.985	6.58
53)	T	Naphthobenzoth...	1.380	1.177	1.083	1.125	1.136	0.944	1.141	12.44
54)	un	C1-Naphthobenz...	1.380	1.177	1.083	1.125	1.136	0.944	1.141	12.44
55)	un	C2-Naphthobenz...	1.380	1.177	1.083	1.125	1.136	0.944	1.141	12.44
56)	un	C3-Naphthobenz...	1.380	1.177	1.083	1.125	1.136	0.944	1.141	12.44

Method Path : C:\GCMS5\MS50168\
Method File : AR50168.M
Title : PAH Calibration Table-2013A

57)	un	C4-Naphthobenz...	1.380	1.177	1.083	1.125	1.136	0.944	1.141	12.44
58)	T	Fluoranthene	1.390	1.188	1.115	1.173	1.185	0.880	1.155	14.21
59)	T	Pyrene	1.500	1.241	1.144	1.193	1.208	1.120	1.234	11.13
60)	T	2-Methylfluora...	0.956	0.785	0.744	0.784	0.811	0.824	0.817	8.99
61)	T	Benzo(b)fluorene	0.909	0.767	0.722	0.788	0.815	0.797	0.800	7.81
62)	un	C1-Fluoranthen...	1.390	1.188	1.115	1.173	1.185	0.880	1.155	14.21
63)	un	C2-Fluoranthen...	1.390	1.188	1.115	1.173	1.185	0.880	1.155	14.21
64)	un	C3-Fluoranthen...	1.390	1.188	1.115	1.173	1.185	0.880	1.155	14.21
65)	un	C4-Fluoranthen...	1.390	1.188	1.115	1.173	1.185	0.880	1.155	14.21
66)	S	Chrysene-d12	1.281	1.095	1.071	1.170	1.170	1.043	1.138	7.65
67)	T	Benz(a)anthracene	1.418	1.207	1.114	1.180	1.205	0.967	1.182	12.44
68)	T	Chrysene/Triph...	1.345	1.167	1.099	1.129	1.167	0.917	1.137	12.11
69)	un	C1-Chrysenes	1.345	1.167	1.099	1.129	1.167	0.917	1.137	12.11
70)	un	C2-Chrysenes	1.345	1.167	1.099	1.129	1.167	0.917	1.137	12.11
71)	un	C3-Chrysenes	1.345	1.167	1.099	1.129	1.167	0.917	1.137	12.11
72)	un	C4-Chrysenes	1.345	1.167	1.099	1.129	1.167	0.917	1.137	12.11
73)	I	Benzo(a)pyrene-d12	----------ISTD----------							
74)	un	C29-Hopane	0.602	0.484	0.462	0.461	0.465	0.441	0.486	12.02
75)	un	18a-Oleanane	0.602	0.484	0.462	0.461	0.465	0.441	0.486	12.02
76)	T	C30-Hopane	0.602	0.484	0.462	0.461	0.465	0.441	0.486	12.02
77)	T	Benzo(b)fluora...	1.485	1.243	1.155	1.220	1.235	1.207	1.257	9.22
78)	T	Benzo(k,j)fluo...	1.456	1.241	1.163	1.212	1.266	1.209	1.258	8.19
79)	un	Benzo(a)fluora...	1.456	1.241	1.163	1.212	1.266	1.209	1.258	8.19
80)	T	Benzo(e)pyrene	1.631	1.339	1.253	1.279	1.291	1.052	1.308	14.32
81)	T	Benzo(a)pyrene	1.397	1.181	1.114	1.132	1.181	1.069	1.179	9.74
82)	T	Indeno(1,2,3-c...	1.540	1.267	1.181	1.244	1.287	1.362	1.314	9.57
83)	T	Dibenzo(a,h)an...	1.151	0.990	0.932	0.980	1.019	1.102	1.029	7.97
84)	un	C1-Dibenzo(a,h...	1.151	0.990	0.932	0.980	1.019	1.102	1.029	7.97
85)	un	C2-Dibenzo(a,h...	1.151	0.990	0.932	0.980	1.019	1.102	1.029	7.97
86)	un	C3-Dibenzo(a,h...	1.151	0.990	0.932	0.980	1.019	1.102	1.029	7.97
87)	T	Benzo(g,h,i)pe...	1.363	1.134	1.051	1.083	1.107	1.131	1.145	9.74
88)	S	Perylene-d12	1.355	1.170	1.081	1.116	1.142	1.170	1.172	8.15
89)	T	Perylene	1.538	1.265	1.176	1.248	1.264	1.233	1.287	9.86
90)	S	5(b)H-Cholane	0.317	0.256	0.234	0.237	0.236	0.232	0.252	13.07
91)	un	C20-TAS	2.086	1.819	1.639	1.666	1.673	1.351	1.706	14.12
92)	un	C21-TAS	2.086	1.819	1.639	1.666	1.673	1.351	1.706	14.12
93)	un	C26(20S)-TAS	2.086	1.819	1.639	1.666	1.673	1.351	1.706	14.12
94)	T	C26(20R)/C27(2...	2.086	1.819	1.639	1.666	1.673	1.351	1.706	14.12
95)	un	C28(20S)-TAS	2.086	1.819	1.639	1.666	1.673	1.351	1.706	14.12
96)	un	C27(20R)-TAS	2.086	1.819	1.639	1.666	1.673	1.351	1.706	14.12
97)	un	C28(20R)-TAS	2.086	1.819	1.639	1.666	1.673	1.351	1.706	14.12

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168B.D
Acq On : 20 Sep 2013 9:32 pm
Operator : ECM(YMIAO)
Sample : AR-WKC1-020-030
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Sep 22 13:11:29 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sat Sep 21 18:14:31 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	495357m	251.05		0.00
31) Pyrene-d10	29.654	212	1014569m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	1020802m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	74923m	23.83		0.00
21) Acenaphthene-d10	19.670	164	46356m	24.03		0.00
32) Phenanthrene-d10	24.766	188	81301m	22.82		0.00
66) Chrysene-d12	33.842	240	103748m	22.24		0.00
88) Perylene-d12	38.738	264	110503m	23.07		-0.03
90) 5(b)H-Cholane	34.231	217	25855m	25.06		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.197	138	12138m	30.34		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	80279m	23.95		
9) 2-Methylnaphthalene	16.138	142	50022m	23.05		
10) 1-Methylnaphthalene	16.451	142	49629m	23.98		
11) 2,6-Dimethylnaphthalene	18.217	156	45718m	22.69		
12) 1,6,7-Trimethylnaphtha...	21.079	170	46895m	23.56		
13) C2-Naphthalenes	0.000		0	N.D.	d	
14) C3-Naphthalenes	0.000		0	N.D.	d	
15) C4-Naphthalenes	0.000		0	N.D.	d	
16) Benzothiophene	0.000		0	N.D.	d	
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.703	154	64068m	22.74		
23) Acenaphthylene	19.178	152	78629m	23.55		
24) Acenaphthene	19.782	154	46831m	23.33		
25) Dibenzofuran	20.363	168	69980m	22.67		
26) Fluorene	21.548	166	59608m	23.69		
27) 1-Methylfluorene	23.523	180	37876m	23.58		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	69415m	21.08		
34) Dibenzothiophene	24.399	184	84540m	21.81		
35) 4-Methyldibenzothiophene	25.924	198	63953m	22.38		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.	d	
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	88700m	22.40		
42) Anthracene	25.020	178	81754m	22.62		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168B.D
Acq On : 20 Sep 2013 9:32 pm
Operator : ECM(YMIAO)
Sample : AR-WKC1-020-030
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Sep 22 13:11:29 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sat Sep 21 18:14:31 2013
Response via : Initial Calibration

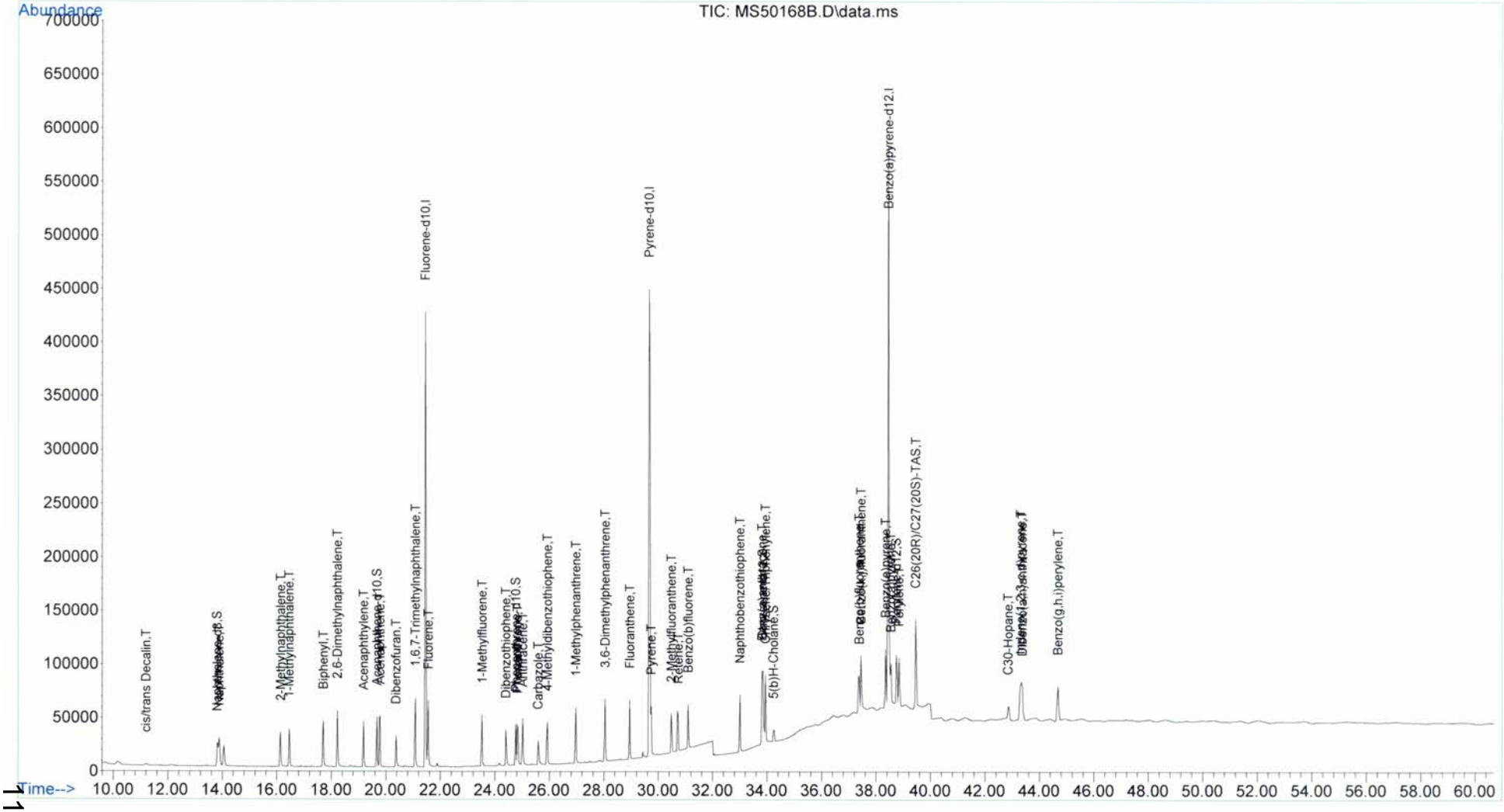
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.970	192	68947m	22.26		
48) 3,6-Dimethylphenanthrene	28.043	206	73148m	28.71		
49) Retene	30.727	234	31282m	20.61		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53) Naphthobenzothiophene	32.999	234	112421m	24.16		
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.947	202	112643m	23.97		
59) Pyrene	29.738	202	121436m	24.16		
60) 2-Methylfluoranthene	30.473	216	77961m	23.53		
61) Benzo(b)fluorene	31.094	216	74287m	22.75		
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	33.810	228	114603m	24.47		
68) Chrysene/Triphenylene	33.940	228	108211m	23.71		
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.847	191	49067m	23.89		
77) Benzo(b)fluoranthene	37.376	252	121369m	25.36		
78) Benzo(k,j)fluoranthene	37.441	252	118262m	24.74		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.349	252	132524m	25.25		
81) Benzo(a)pyrene	38.543	252	113700m	23.82		
82) Indeno(1,2,3-c,d)pyrene	43.304	276	123490m	22.99		
83) Dibenzo(a,h)anthracene	43.370	278	93003m	21.88		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.678	276	110202m	23.40		
89) Perylene	38.835	252	125539m	24.00		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	39.451	231	170092m	23.96		
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168B.D
Acq On : 20 Sep 2013 9:32 pm
Operator : ECM(YMIAO)
Sample : AR-WKC1-020-030
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Sep 22 13:11:29 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sat Sep 21 18:14:31 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168C.D
Acq On : 20 Sep 2013 10:38 pm
Operator : ECM(YMIAO)
Sample : AR-WKC2-100-030
Misc :
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 22 12:31:07 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:20:20 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	478618m	251.05		0.00
31) Pyrene-d10	29.682	212	946285m	250.63		0.03
73) Benzo(a)pyrene-d12	38.446	264	959814m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	303781m	99.41		0.00
21) Acenaphthene-d10	19.670	164	185588m	99.29		0.00
32) Phenanthrene-d10	24.766	188	328406m	99.11		0.00
66) Chrysene-d12	33.842	240	413486m	95.49		0.00
88) Perylene-d12	38.738	264	448725m	99.81		0.00
90) 5(b)H-Cholane	34.264	217	98210m	101.33		0.03
Target Compounds						Qvalue
3) cis/trans Decalin	11.175	138	62206m	140.50		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	323497m	99.50		
9) 2-Methylnaphthalene	16.138	142	208717m	99.35		
10) 1-Methylnaphthalene	16.451	142	199572m	99.35		
11) 2,6-Dimethylnaphthalene	18.217	156	190421m	97.69		
12) 1,6,7-Trimethylnaphtha...	21.079	170	191022m	99.24		
13) C2-Naphthalenes	0.000		0	N.D.		
14) C3-Naphthalenes	0.000		0	N.D.	d	
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	14.059	134	260324m	98.30		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.703	154	264430m	97.21		
23) Acenaphthylene	19.178	152	312246m	96.54		
24) Acenaphthene	19.782	154	192836m	99.43		
25) Dibenzofuran	20.363	168	286980m	96.64		
26) Fluorene	21.548	166	239322m	98.21		
27) 1-Methylfluorene	23.523	180	152678m	98.82		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	287329m	93.81		
34) Dibenzothiophene	24.399	184	340675m	94.20		
35) 4-Methyldibenzothiophene	25.924	198	260623m	98.03		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.		
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	357782m	96.29		
42) Anthracene	25.020	178	331701m	97.50		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168C.D
Acq On : 20 Sep 2013 10:38 pm
Operator : ECM(YMIAO)
Sample : AR-WKC2-100-030
Misc :
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 22 12:31:07 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:20:20 2013
Response via : Initial Calibration

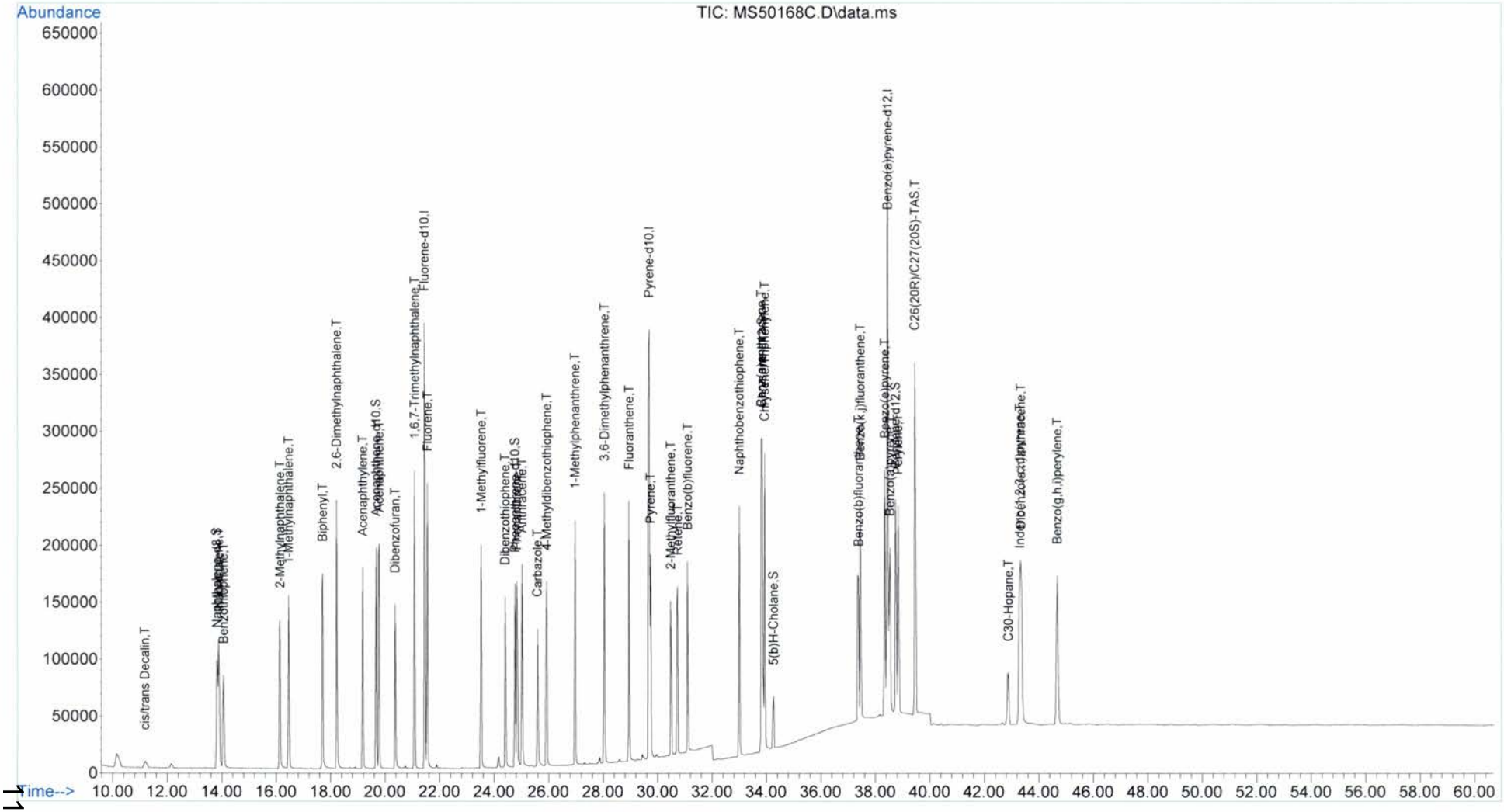
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.970	192	279271m	96.85		
48) 3,6-Dimethylphenanthrene	28.043	206	285424m	96.97		
49) Retene	30.727	234	123089m	86.80		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53) Naphthobenzothiophene	32.999	234	447120m	103.18		
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.947	202	449097m	102.55		
59) Pyrene	29.738	202	468470m	100.11		
60) 2-Methylfluoranthene	30.473	216	298252m	96.43		
61) Benzo(b)fluorene	31.094	216	292077m	96.10		
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	33.810	228	454926m	103.28		
68) Chrysene/Triphenylene	33.940	228	437965m	102.42		
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.879	191	185440m	97.74		
77) Benzo(b)fluoranthene	37.376	252	477389m	104.39		
78) Benzo(k,j)fluoranthene	37.441	252	474028m	103.98		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.349	252	511414m	102.69		
81) Benzo(a)pyrene	38.543	252	451876m	100.39		
82) Indeno(1,2,3-c,d)pyrene	43.304	276	477579m	93.96		
83) Dibenzo(a,h)anthracene	43.337	278	376009m	94.16		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.678	276	430793m	97.30		
89) Perylene	38.835	252	485639m	98.27		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	39.451	231	697520m	104.26		
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168C.D
Acq On : 20 Sep 2013 10:38 pm
Operator : ECM(YMIAO)
Sample : AR-WKC2-100-030
Misc :
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 22 12:31:07 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:20:20 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168D.D
Acq On : 20 Sep 2013 11:44 pm
Operator : ECM(YMIAO)
Sample : AR-WKC3-250-030
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Sep 22 12:41:03 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:31:13 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	491559m	251.05		0.00
31) Pyrene-d10	29.653	212	959088m	250.63		-0.03
73) Benzo(a)pyrene-d12	38.446	264	977265m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	739876m	235.44		0.00
21) Acenaphthene-d10	19.670	164	444710m	231.57		0.00
32) Phenanthrene-d10	24.766	188	768643m	229.08		0.00
66) Chrysene-d12	33.842	240	1025039m	233.87		0.00
88) Perylene-d12	38.738	264	1055398m	229.85		0.00
90) 5(b)H-Cholane	34.264	217	228483m	231.51		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.174	138	139607m	281.79		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	779425m	233.41		
9) 2-Methylnaphthalene	16.115	142	502435m	232.59		
10) 1-Methylnaphthalene	16.451	142	481183m	233.06		
11) 2,6-Dimethylnaphthalene	18.217	156	465468m	232.85		
12) 1,6,7-Trimethylnaphtha...	21.078	170	455031m	230.04		
13) C2-Naphthalenes	0.000		0	N.D.		
14) C3-Naphthalenes	0.000		0	N.D.		
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	14.058	134	630582m	232.07		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.680	154	637055m	228.40		
23) Acenaphthylene	19.178	152	749364m	225.74		
24) Acenaphthene	19.759	154	465235m	233.56		
25) Dibenzofuran	20.363	168	704816m	231.78		
26) Fluorene	21.548	166	578691m	231.66		
27) 1-Methylfluorene	23.523	180	364552m	230.00		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	702313m	227.43		
34) Dibenzothiophene	24.398	184	842356m	230.45		
35) 4-Methyldibenzothiophene	25.924	198	619273m	230.16		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.		
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	869493m	230.44		
42) Anthracene	25.020	178	786948m	227.34		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168D.D
Acq On : 20 Sep 2013 11:44 pm
Operator : ECM(YMIAO)
Sample : AR-WKC3-250-030
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Sep 22 12:41:03 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:31:13 2013
Response via : Initial Calibration

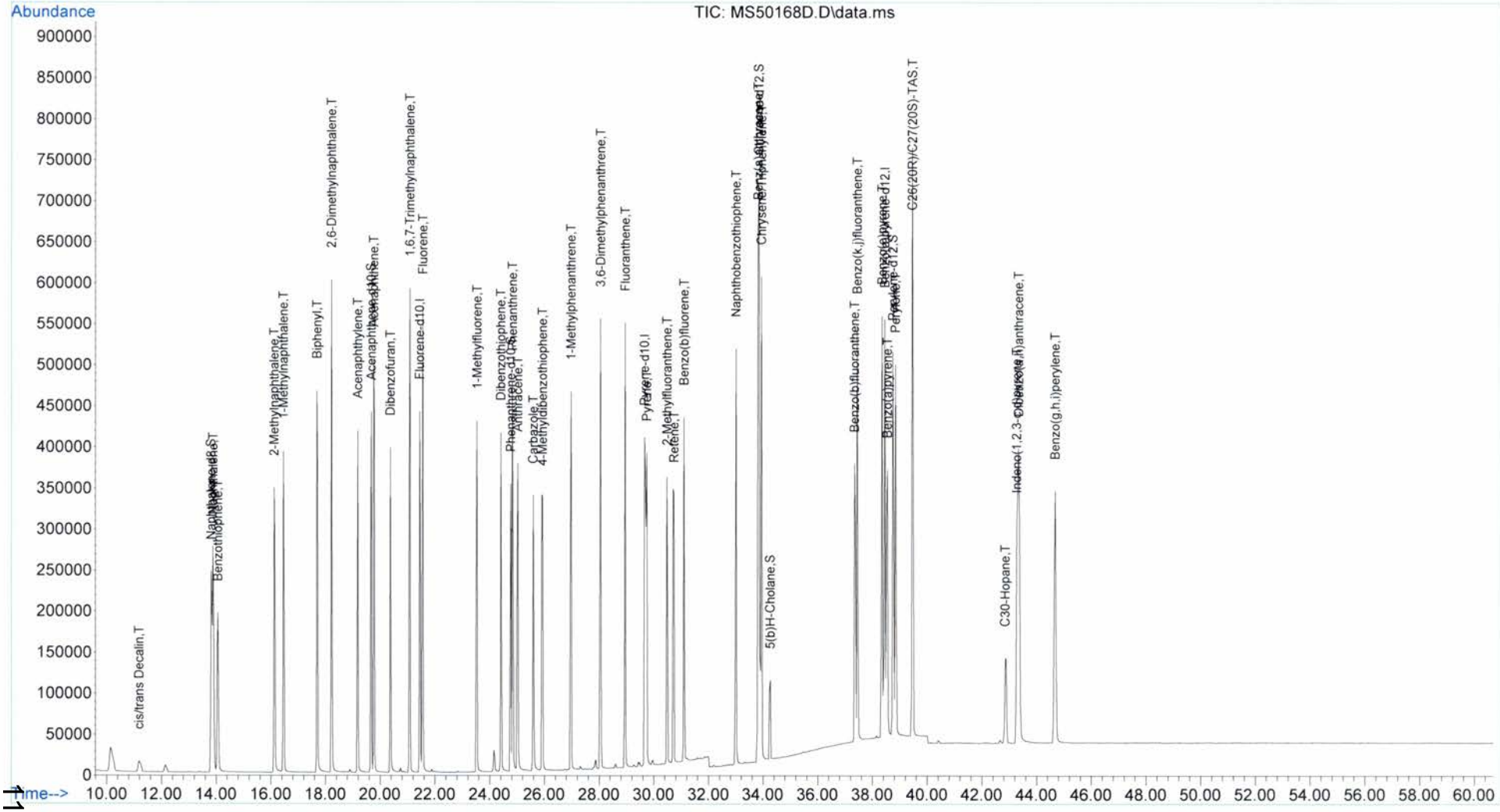
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46)	4/9-Methylphenanthrene	0.000		0	N.D.	d	
47)	1-Methylphenanthrene	26.969	192	651483m	223.03		
48)	3,6-Dimethylphenanthrene	28.043	206	672969m	225.57		
49)	Retene	30.727	234	289414m	201.31		
50)	C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51)	C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52)	C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53)	Naphthobenzothiophene	32.999	234	1042292m	237.55		
54)	C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55)	C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56)	C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57)	C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58)	Fluoranthene	28.947	202	1067553m	240.85		
59)	Pyrene	29.738	202	1094633m	231.04		
60)	2-Methylfluoranthene	30.473	216	716422m	228.58		
61)	Benzo(b)fluorene	31.094	216	696891m	226.52		
62)	C1-Fluoranthenes/Pyrenes	0.000		0	N.D.		
63)	C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64)	C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65)	C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67)	Benz(a)anthracene	33.810	228	1063385m	237.11		
68)	Chrysene/Triphenylene	33.939	228	1045556m	240.83		
69)	C1-Chrysenes	0.000		0	N.D.	d	
70)	C2-Chrysenes	0.000		0	N.D.	d	
71)	C3-Chrysenes	0.000		0	N.D.	d	
72)	C4-Chrysenes	0.000		0	N.D.	d	
74)	C29-Hopane	0.000		0	N.D.	d	
75)	18a-Oleanane	0.000		0	N.D.	d	
76)	C30-Hopane	42.846	191	450859m	235.73		
77)	Benzo(b)fluoranthene	37.344	252	1129113m	239.60		
78)	Benzo(k,j)fluoranthene	37.441	252	1130264m	240.55		
79)	Benzo(a)fluoranthene	0.000		0	N.D.	d	
80)	Benzo(e)pyrene	38.349	252	1217565m	239.31		
81)	Benzo(a)pyrene	38.543	252	1085364m	236.11		
82)	Indeno(1,2,3-c,d)pyrene	43.271	276	1133061m	219.21		
83)	Dibenzo(a,h)anthracene	43.337	278	901480m	222.09		
84)	C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85)	C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86)	C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87)	Benzo(g,h,i)perylene	44.677	276	1016732m	225.91		
89)	Perylene	38.835	252	1148851m	228.22		
91)	C20-TAS	0.000		0	N.D.	d	
92)	C21-TAS	0.000		0	N.D.	d	
93)	C26(20S)-TAS	0.000		0	N.D.	d	
94)	C26(20R)/C27(20S)-TAS	39.451	231	1599345m	235.02		
95)	C28(20S)-TAS	0.000		0	N.D.	d	
96)	C27(20R)-TAS	0.000		0	N.D.	d	
97)	C28(20R)-TAS	0.000		0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168D.D
Acq On : 20 Sep 2013 11:44 pm
Operator : ECM(YMIAO)
Sample : AR-WKC3-250-030
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Sep 22 12:41:03 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:31:13 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168E.D
Acq On : 21 Sep 2013 12:50 am
Operator : ECM(YMIAO)
Sample : AR-WKC4-500-030
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Sep 22 12:50:51 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:41:14 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	502394m	251.05		0.00
31) Pyrene-d10	29.653	212	963828m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	999152m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	1556073m	483.49		0.00
21) Acenaphthene-d10	19.670	164	937627m	477.53		0.00
32) Phenanthrene-d10	24.766	188	1611167m	477.81		0.00
66) Chrysene-d12	33.842	240	2250388m	511.20		0.00
88) Perylene-d12	38.738	264	2226904m	473.82		0.00
90) 5(b)H-Cholane	34.231	217	473370m	468.80		-0.03
Target Compounds						Qvalue
3) cis/trans Decalin	11.174	138	287587m	533.33		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	1632080m	477.98		
9) 2-Methylnaphthalene	16.115	142	1061017m	480.58		
10) 1-Methylnaphthalene	16.451	142	1014931m	480.37		
11) 2,6-Dimethylnaphthalene	18.217	156	990966m	485.28		
12) 1,6,7-Trimethylnaphtha...	21.078	170	967997m	478.68		
13) C2-Naphthalenes	0.000		0	N.D.		
14) C3-Naphthalenes	0.000		0	N.D.		
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	14.058	134	1332894m	479.80		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.680	154	1364547m	479.81		
23) Acenaphthylene	19.178	152	1581972m	466.91		
24) Acenaphthene	19.759	154	985301m	483.47		
25) Dibenzofuran	20.363	168	1498251m	482.81		
26) Fluorene	21.548	166	1222952m	478.86		
27) 1-Methylfluorene	23.523	180	766223m	473.16		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	1516667m	491.12		
34) Dibenzothiophene	24.398	184	1811347m	493.67		
35) 4-Methyldibenzothiophene	25.924	198	1321669m	489.18		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.		
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	1850505m	487.96		
42) Anthracene	25.020	178	1693755m	486.39		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168E.D
Acq On : 21 Sep 2013 12:50 am
Operator : ECM(YMIAO)
Sample : AR-WKC4-500-030
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Sep 22 12:50:51 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:41:14 2013
Response via : Initial Calibration

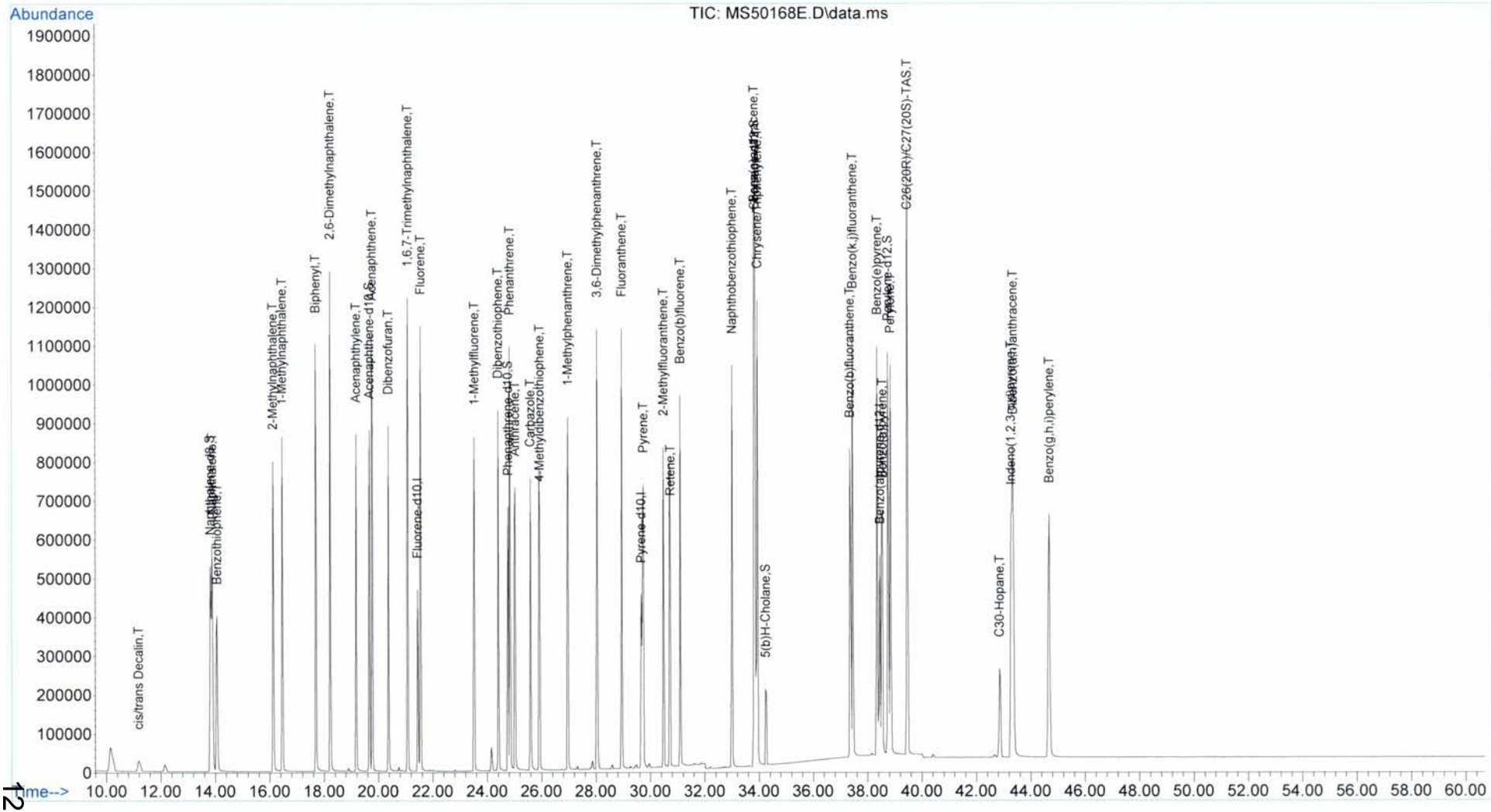
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.969	192	1372692m	468.71		
48) 3,6-Dimethylphenanthrene	28.043	206	1441088m	480.96		
49) Retene	30.727	234	607217m	420.47		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53) Naphthobenzothiophene	32.999	234	2176984m	494.61		
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.947	202	2257582m	507.36		
59) Pyrene	29.738	202	2293033m	481.93		
60) 2-Methylfluoranthene	30.473	216	1518685m	482.09		
61) Benzo(b)fluorene	31.094	216	1529797m	495.80		
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.		
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	33.810	228	2263802m	500.93		
68) Chrysene/Triphenylene	33.939	228	2157675m	492.38		
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.846	191	919083m	470.07		
77) Benzo(b)fluoranthene	37.343	252	2438717m	501.14		
78) Benzo(k,j)fluoranthene	37.441	252	2410013m	496.44		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.348	252	2543125m	487.75		
81) Benzo(a)pyrene	38.543	252	2254232m	478.52		
82) Indeno(1,2,3-c,d)pyrene	43.271	276	2440150m	462.53		
83) Dibenzo(a,h)anthracene	43.337	278	1938199m	467.95		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.677	276	2141142m	465.71		
89) Perylene	38.835	252	2492721m	484.55		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	39.451	231	3324757m	478.19		
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168E.D
Acq On : 21 Sep 2013 12:50 am
Operator : ECM(YMIAO)
Sample : AR-WKC4-500-030
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Sep 22 12:50:51 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:41:14 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168F.D
Acq On : 21 Sep 2013 1:57 am
Operator : ECM(YMIAO)
Sample : AR-WKC5-1000-030
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Sep 22 12:58:08 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sat Sep 21 18:13:09 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	482150m	251.05		0.00
31) Pyrene-d10	29.654	212	926105m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	966169m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	3013920m	992.92		0.00
21) Acenaphthene-d10	19.670	164	1821289m	962.72		0.00
32) Phenanthrene-d10	24.766	188	3141815m	986.27		0.00
66) Chrysene-d12	33.842	240	4322973m	1057.02		0.00
88) Perylene-d12	38.738	264	4408543m	984.98		0.00
90) 5(b)H-Cholane	34.231	217	912630m	692.97		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.175	138	562537m	1264.80		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	3174063m	985.41		
9) 2-Methylnaphthalene	16.115	142	2081402m	992.80		
10) 1-Methylnaphthalene	16.451	142	1966773m	977.41		
11) 2,6-Dimethylnaphthalene	18.217	156	1934479m	988.86		
12) 1,6,7-Trimethylnaphtha...	21.079	170	1883554m	964.43		
13) C2-Naphthalenes	0.000		0	N.D.		
14) C3-Naphthalenes	0.000		0	N.D.		
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	14.059	134	2572645m	982.49		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.680	154	2644137m	973.34		
23) Acenaphthylene	19.178	152	3135831m	970.35		
24) Acenaphthene	19.759	154	1916796m	977.97		
25) Dibenzofuran	20.363	168	2923949m	978.46		
26) Fluorene	21.548	166	2353160m	963.38		
27) 1-Methylfluorene	23.523	180	1479411m	951.49		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	2990132m	1043.51		
34) Dibenzothiophene	24.399	184	3541539m	1037.48		
35) 4-Methyldibenzothiophene	25.896	198	2568264m	1005.64		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.		
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	3667462m	1028.91		
42) Anthracene	24.992	178	3340711m	1043.32		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168F.D
Acq On : 21 Sep 2013 1:57 am
Operator : ECM(YMIAO)
Sample : AR-WKC5-1000-030
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Sep 22 12:58:08 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sat Sep 21 18:13:09 2013
Response via : Initial Calibration

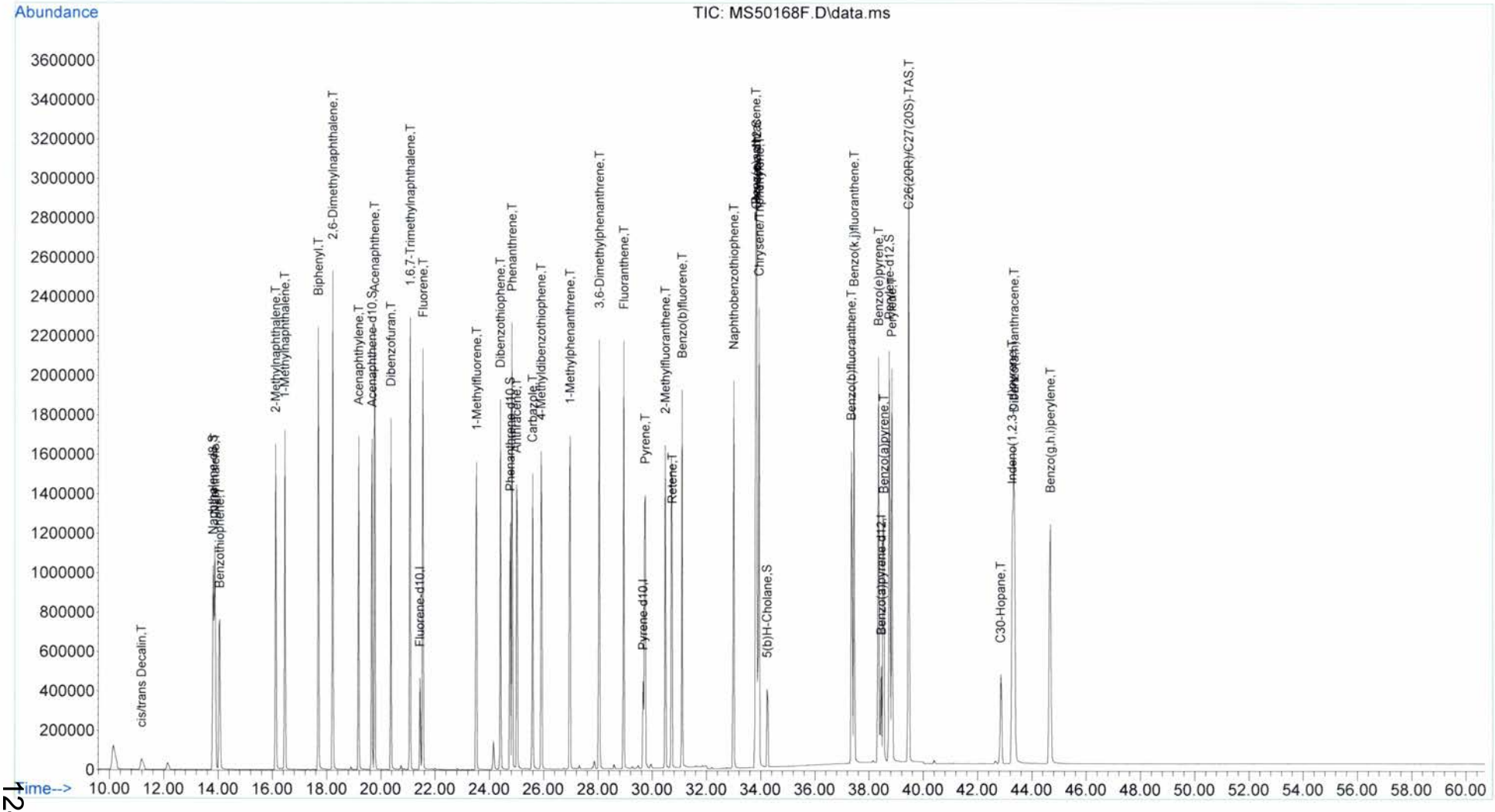
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46)	4/9-Methylphenanthrene	0.000		0	N.D.	d	
47)	1-Methylphenanthrene	26.970	192	2690477m	974.99		
48)	3,6-Dimethylphenanthrene	28.043	206	2812294m	1242.48		
49)	Retene	30.727	234	1196755m	878.99		
50)	C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51)	C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52)	C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53)	Naphthobenzothiophene	32.999	234	4223291m	1023.25		
54)	C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55)	C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56)	C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57)	C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58)	Fluoranthene	28.947	202	4381487m	1038.79		
59)	Pyrene	29.738	202	4464196m	983.14		
60)	2-Methylfluoranthene	30.473	216	3016243m	1008.01		
61)	Benzo(b)fluorene	31.094	216	3038581m	1066.60		
62)	C1-Fluoranthenes/Pyrenes	0.000		0	N.D.		
63)	C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64)	C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65)	C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67)	Benz(a)anthracene	33.810	228	4443719m	1093.88		
68)	Chrysene/Triphenylene	33.939	228	4287312m	1068.31		
69)	C1-Chrysenes	0.000		0	N.D.	d	
70)	C2-Chrysenes	0.000		0	N.D.	d	
71)	C3-Chrysenes	0.000		0	N.D.	d	
72)	C4-Chrysenes	0.000		0	N.D.	d	
74)	C29-Hopane	0.000		0	N.D.	d	
75)	18a-Oleanane	0.000		0	N.D.	d	
76)	C30-Hopane	42.846	191	1795208m	814.36		
77)	Benzo(b)fluoranthene	37.344	252	4776075m	968.77		
78)	Benzo(k,j)fluoranthene	37.441	252	4865009m	996.64		
79)	Benzo(a)fluoranthene	0.000		0	N.D.	d	
80)	Benzo(e)pyrene	38.349	252	4963774m	960.28		
81)	Benzo(a)pyrene	38.543	252	4549370m	986.97		
82)	Indeno(1,2,3-c,d)pyrene	43.272	276	4883523m	1161.24		
83)	Dibenzo(a,h)anthracene	43.337	278	3899252m	1161.29		
84)	C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85)	C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86)	C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87)	Benzo(g,h,i)perylene	44.678	276	4234468m	1171.74		
89)	Perylene	38.835	252	4885094m	1000.70		
91)	C20-TAS	0.000		0	N.D.	d	
92)	C21-TAS	0.000		0	N.D.	d	
93)	C26(20S)-TAS	0.000		0	N.D.	d	
94)	C26(20R)/C27(20S)-TAS	39.451	231	6455323m	830.97		
95)	C28(20S)-TAS	0.000		0	N.D.	d	
96)	C27(20R)-TAS	0.000		0	N.D.	d	
97)	C28(20R)-TAS	0.000		0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168F.D
Acq On : 21 Sep 2013 1:57 am
Operator : ECM(YMIAO)
Sample : AR-WKC5-1000-030
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Sep 22 12:58:08 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sat Sep 21 18:13:09 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168G.D
Acq On : 21 Sep 2013 3:03 am
Operator : ECM(YMIAO)
Sample : AR-WKC6-5000-030
Misc :
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Sep 22 13:09:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:58:15 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	535881m	251.05		0.00
31) Pyrene-d10	29.654	212	1029224m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	1112134m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	16547161m	4811.11		0.00
21) Acenaphthene-d10	19.670	164	10191441m	4863.13		0.00
32) Phenanthrene-d10	24.766	188	18477357m	5133.76		0.00
66) Chrysene-d12	33.842	240	21416317m	4577.93		0.00
88) Perylene-d12	38.770	264	25995217m	4980.27		0.03
90) 5(b)H-Cholane	34.231	217	5150092m	4590.50		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.175	138	3024953m	4688.83		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	17421257m	4783.58		
9) 2-Methylnaphthalene	16.115	142	11593457m	4929.10		
10) 1-Methylnaphthalene	16.451	142	10810545m	4791.22		
11) 2,6-Dimethylnaphthalene	18.217	156	10868170m	4991.14		
12) 1,6,7-Trimethylnaphtha...	21.079	170	10626305m	4925.94		
13) C2-Naphthalenes	0.000		0	N.D.		
14) C3-Naphthalenes	0.000		0	N.D.		
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	14.036	134	14118311m	4769.55		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.680	154	14754884m	4872.86		
23) Acenaphthylene	19.178	152	17719150m	4916.33		
24) Acenaphthene	19.760	154	10704110m	4917.73		
25) Dibenzofuran	20.363	168	15975926m	4839.19		
26) Fluorene	21.548	166	13426473m	4937.22		
27) 1-Methylfluorene	23.523	180	9063706m	5249.74		
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	16724387m	5081.50		
34) Dibenzothiophene	24.399	184	18674233m	4774.17		
35) 4-Methyldibenzothiophene	25.924	198	15059499m	5228.44		
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.		
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	19544335m	4829.91		
42) Anthracene	25.020	178	19709492m	5297.74		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168G.D
Acq On : 21 Sep 2013 3:03 am
Operator : ECM(YMIAO)
Sample : AR-WKC6-5000-030
Misc :
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Sep 22 13:09:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:58:15 2013
Response via : Initial Calibration

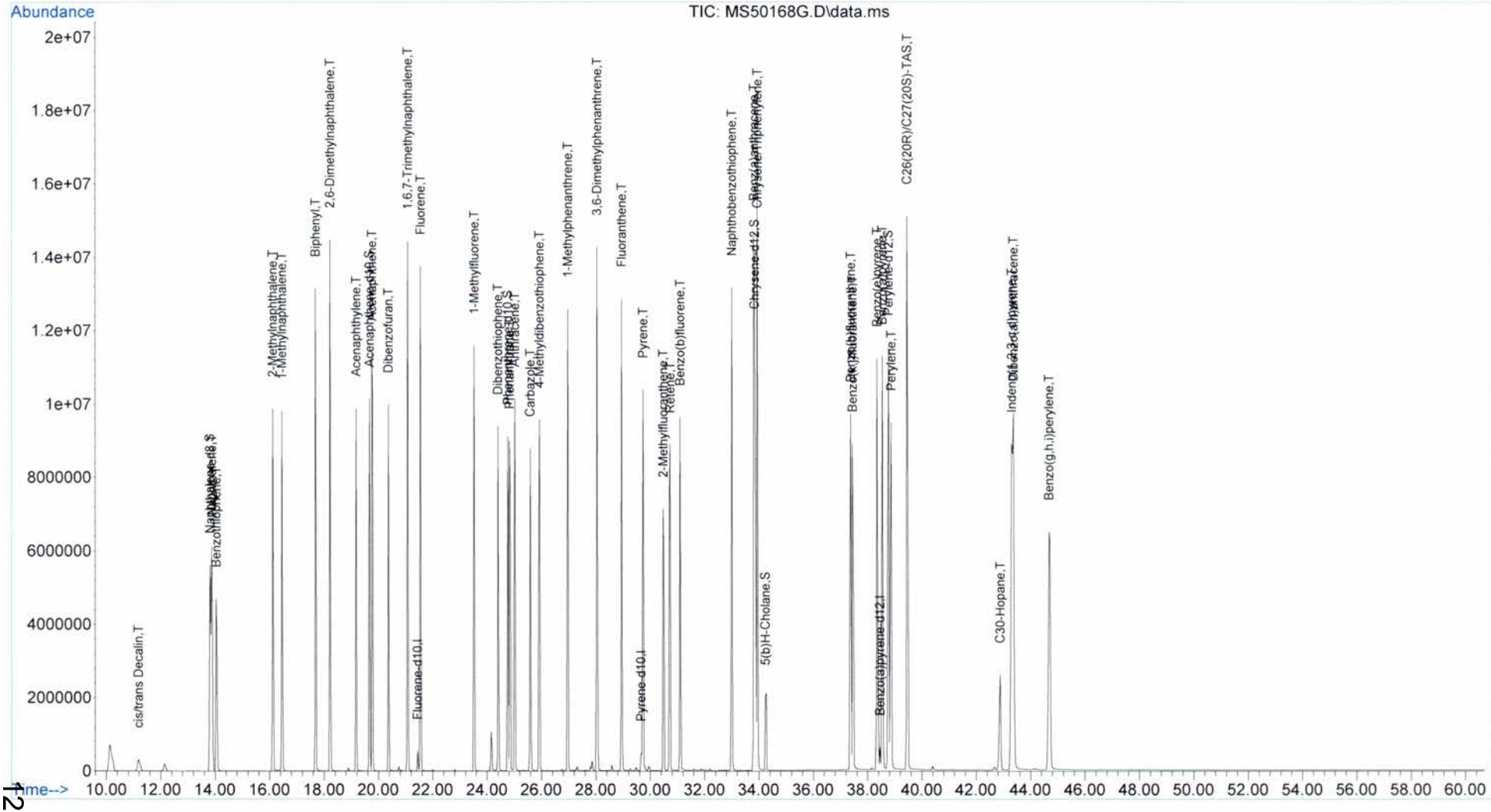
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46)	4/9-Methylphenanthrene	0.000		0	N.D.	d	
47)	1-Methylphenanthrene	26.970	192	16234412m	5203.40		
48)	3,6-Dimethylphenanthrene	28.043	206	16476523m	5155.72		
49)	Retene	30.727	234	7326209m	4756.15		
50)	C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51)	C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52)	C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53)	Naphthobenzothiophene	32.999	234	19512196m	4163.65		
54)	C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55)	C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56)	C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57)	C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58)	Fluoranthene	28.947	202	18088382m	3813.51		
59)	Pyrene	29.738	202	22988444m	4534.42		
60)	2-Methylfluoranthene	30.473	216	17037717m	5078.38		
61)	Benzo(b)fluorene	31.094	216	16509470m	5025.90		
62)	C1-Fluoranthenes/Pyrenes	0.000		0	N.D.		
63)	C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64)	C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65)	C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67)	Benz(a)anthracene	33.810	228	19812216m	4089.92		
68)	Chrysene/Triphenylene	33.940	228	18712620m	3982.79		
69)	C1-Chrysenes	0.000		0	N.D.	d	
70)	C2-Chrysenes	0.000		0	N.D.	d	
71)	C3-Chrysenes	0.000		0	N.D.	d	
72)	C4-Chrysenes	0.000		0	N.D.	d	
74)	C29-Hopane	0.000		0	N.D.	d	
75)	18a-Oleanane	0.000		0	N.D.	d	
76)	C30-Hopane	42.879	191	9803917m	4529.73		
77)	Benzo(b)fluoranthene	37.376	252	26859304m	4836.93		
78)	Benzo(k,j)fluoranthene	37.441	252	26738412m	4822.17		
79)	Benzo(a)fluoranthene	0.000		0	N.D.	d	
80)	Benzo(e)pyrene	38.349	252	23274726m	4004.93		
81)	Benzo(a)pyrene	38.543	252	23704575m	4523.17		
82)	Indeno(1,2,3-c,d)pyrene	43.304	276	29748797m	5085.05		
83)	Dibenzo(a,h)anthracene	43.370	278	24265380m	5293.83		
84)	C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85)	C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86)	C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87)	Benzo(g,h,i)perylene	44.678	276	24907990m	4885.68		
89)	Perylene	38.867	252	27426235m	4785.20		
91)	C20-TAS	0.000		0	N.D.	d	
92)	C21-TAS	0.000		0	N.D.	d	
93)	C26(20S)-TAS	0.000		0	N.D.	d	
94)	C26(20R)/C27(20S)-TAS	39.451	231	30017122m	3889.72		
95)	C28(20S)-TAS	0.000		0	N.D.	d	
96)	C27(20R)-TAS	0.000		0	N.D.	d	
97)	C28(20R)-TAS	0.000		0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168G.D
Acq On : 21 Sep 2013 3:03 am
Operator : ECM(YMIAO)
Sample : AR-WKC6-5000-030
Misc :
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Sep 22 13:09:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 12:58:15 2013
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50168\
Data File : MS50168I.D
Acq On : 21 Sep 2013 5:15 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-004
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 22 14:02:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	108	0.00
2	S	Naphthalene-d8	1.612	1.494	7.3	107	0.00
3	T	cis/trans Decalin	0.300	0.339	-13.0	127	-0.02
4	un	C1-Decalins	0.300	0.000	100.0#	0#	-12.36#
5	un	C2-Decalins	0.300	0.000	100.0#	0#	-13.34#
6	un	C3-Decalins	0.300	0.000	100.0#	0#	-16.27#
7	un	C4-Decalins	0.300	0.000	100.0#	0#	-18.75#
8	T	Naphthalene	1.707	1.903	-11.5	129	0.00
9	T	2-Methylnaphthalene	1.102	1.275	-15.7	134	-0.02
10	T	1-Methylnaphthalene	1.058	1.224	-15.7	134	0.00
11	T	2,6-Dimethylnaphthalene	1.021	1.152	-12.8	131	0.00
12	T	1,6,7-Trimethylnaphthalene	1.011	1.167	-15.4	135	0.00
13	un	C2-Naphthalenes	1.707	0.000	100.0#	0#	-18.57#
14	un	C3-Naphthalenes	1.707	0.000	100.0#	0#	-20.03#
15	un	C4-Naphthalenes	1.707	0.000	100.0#	0#	-22.13#
16	T	Benzothiophene	1.385	1.581	-14.2	132	0.02
17	un	C1-Benzothiophenes	1.385	0.000	100.0#	0#	-15.49#
18	un	C2-Benzothiophenes	1.385	0.000	100.0#	0#	-18.37#
19	un	C3-Benzothiophenes	1.385	0.000	100.0#	0#	-20.32#
20	un	C4-Benzothiophenes	1.385	0.000	100.0#	0#	-21.77#
21	S	Acenaphthene-d10	0.982	0.883	10.1	105	0.00
22	T	Biphenyl	1.419	1.604	-13.0	132	-0.02
23	T	Acenaphthylene	1.686	1.837	-9.0	128	0.00
24	T	Acenaphthene	1.020	1.156	-13.3	131	-0.02
25	T	Dibenzofuran	1.547	1.789	-15.6	133	0.00
26	T	Fluorene	1.273	1.413	-11.0	129	0.00
27	T	1-Methylfluorene	0.809	0.000	100.0#	0#	-23.52#
28	un	C1-Fluorenes	1.273	0.000	100.0#	0#	-23.52#
29	un	C2-Fluorenes	1.273	0.000	100.0#	0#	-25.92#
30	un	C3-Fluorenes	1.273	0.000	100.0#	0#	-27.31#
31	I	Pyrene-d10	1.000	1.000	0.0	109	0.00
32	S	Phenanthrene-d10	0.877	0.785	10.5	106	0.00
33	T	Carbazole	0.801	0.890	-11.1	130	0.00
34	T	Dibenzothiophene	0.953	1.106	-16.1	134	0.00
35	T	4-Methyldibenzothiophene	0.701	0.000	100.0#	0#	-25.92#
36	un	2/3-Methyldibenzothiophene	0.701	0.000	100.0#	0#	-26.21#
37	un	1-Methyldibenzothiophene	0.701	0.000	100.0#	0#	-26.55#
38	un	C2-Dibenzothiophenes	0.953	0.000	100.0#	0#	-27.87#
39	un	C3-Dibenzothiophenes	0.953	0.000	100.0#	0#	-28.83#
40	un	C4-Dibenzothiophenes	0.953	0.000	100.0#	0#	-30.50#
41	T	Phenanthrene	0.985	1.131	-14.8	134	0.00
42	T	Anthracene	0.907	1.002	-10.5	133	0.00
43	un	3-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
44	un	2-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
45	un	2-Methylanthracene	0.759	0.000	100.0#	0#	-26.74#
46	un	4/9-Methylphenanthrene	0.759	0.000	100.0#	0#	-26.97#
47	T	1-Methylphenanthrene	0.759	0.825	-8.7	130	0.00
48	T	3,6-Dimethylphenanthrene	0.778	0.000	100.0#	0#	-28.04#
49	T	Retene	0.375	0.000	100.0#	0#	-30.73#

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50168\
Data File : MS50168I.D
Acq On : 21 Sep 2013 5:15 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-004
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 22 14:02:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
50	un	C2-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-28.58#
51	un	C3-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-29.82#
52	un	C4-Phenanthrenes/Anthracene	0.985	0.000	100.0#	0#	-32.09#
53	T	Naphthobenzothiophene	1.141	0.000	100.0#	0#	-33.00#
54	un	C1-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-34.26#
55	un	C2-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-36.63#
56	un	C3-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-37.47#
57	un	C4-Naphthobenzothiophenes	1.141	0.000	100.0#	0#	-37.77#
58	T	Fluoranthene	1.155	1.334	-15.5	130	0.00
59	T	Pyrene	1.234	1.401	-13.5	133	-0.03
60	T	2-Methylfluoranthene	0.817	0.000	100.0#	0#	-30.47#
61	T	Benzo(b)fluorene	0.800	0.000	100.0#	0#	-31.09#
62	un	C1-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-31.55#
63	un	C2-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-32.19#
64	un	C3-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-33.97#
65	un	C4-Fluoranthenes/Pyrenes	1.155	0.000	100.0#	0#	-35.85#
66	S	Chrysene-d12	1.138	1.101	3.3	112	0.00
67	T	Benz(a)anthracene	1.182	1.369	-15.8	133	0.00
68	T	Chrysene/Triphenylene	1.137	1.297	-14.1	128	0.00
69	un	C1-Chrysenes	1.137	0.000	100.0#	0#	-36.08#
70	un	C2-Chrysenes	1.137	0.000	100.0#	0#	-36.08#
71	un	C3-Chrysenes	1.137	0.000	100.0#	0#	-38.15#
72	un	C4-Chrysenes	1.137	0.000	100.0#	0#	-39.48#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	107	0.00
74	un	C29-Hopane	0.486	0.000	100.0#	0#	-40.82#
75	un	18a-Oleanane	0.486	0.000	100.0#	0#	-42.13#
76	T	C30-Hopane	0.486	0.000	100.0#	0#	-42.85#
77	T	Benzo(b)fluoranthene	1.257	1.444	-14.9	134	-0.03
78	T	Benzo(k,j)fluoranthene	1.258	1.459	-16.0	134	0.00
79	un	Benzo(a)fluoranthene	1.258	0.000	100.0#	0#	-37.38#
80	T	Benzo(e)pyrene	1.308	1.526	-16.7	130	0.00
81	T	Benzo(a)pyrene	1.179	1.325	-12.4	127	-0.03
82	T	Indeno(1,2,3-c,d)pyrene	1.314	1.498	-14.0	136	-0.03
83	T	Dibenzo(a,h)anthracene	1.029	1.206	-17.2	138	-0.03
84	un	C1-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-49.35#
85	un	C2-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-50.73#
86	un	C3-Dibenzo(a,h)anthracenes	1.029	0.000	100.0#	0#	-50.04#
87	T	Benzo(g,h,i)perylene	1.145	1.299	-13.4	132	0.00
88	S	Perylene-d12	1.172	1.075	8.3	106	0.00
89	T	Perylene	1.287	1.456	-13.1	133	0.00
90	S	5(b)H-Cholane	0.252	0.234	7.1	107	0.00
91	un	C20-TAS	1.706	0.000	100.0#	0#	-33.87#
92	un	C21-TAS	1.706	0.000	100.0#	0#	-34.26#
93	un	C26(20S)-TAS	1.706	0.000	100.0#	0#	-38.74#
94	T	C26(20R)/C27(20S)-TAS	1.706	0.000	100.0#	0#	-39.45#
95	un	C28(20S)-TAS	1.706	0.000	100.0#	0#	-40.72#
96	un	C27(20R)-TAS	1.706	0.000	100.0#	0#	-40.72#
97	un	C28(20R)-TAS	1.706	0.000	100.0#	0#	-41.67#

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50168\
Data File : MS50168I.D
Acq On : 21 Sep 2013 5:15 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-004
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 22 14:02:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168I.D
Acq On : 21 Sep 2013 5:15 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-004
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 22 14:02:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.436	176	530098m	251.05		0.00
31) Pyrene-d10	29.654	212	1041495m	250.63		0.00
73) Benzo(a)pyrene-d12	38.446	264	1045982m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.813	136	788942m	231.75		0.00
21) Acenaphthene-d10	19.670	164	466548m	224.96		0.00
32) Phenanthrene-d10	24.766	188	815803m	223.88		0.00
66) Chrysene-d12	33.842	240	1143519m	241.73		0.00
88) Perylene-d12	38.738	264	1122777m	229.21		0.00
90) 5(b)H-Cholane	34.231	217	244322m	231.92		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.175	138	176779m	278.66		
4) C1-Decalins	0.000		0	N.D.	d	
5) C2-Decalins	0.000		0	N.D.	d	
6) C3-Decalins	0.000		0	N.D.	d	
7) C4-Decalins	0.000		0	N.D.	d	
8) Naphthalene	13.880	128	1004608m	278.79		
9) 2-Methylnaphthalene	16.115	142	673783m	289.54		
10) 1-Methylnaphthalene	16.451	142	645455m	289.06		
11) 2,6-Dimethylnaphthalene	18.217	156	608020m	282.11		
12) 1,6,7-Trimethylnaphtha...	21.079	170	616286m	288.80		
13) C2-Naphthalenes	0.000		0	N.D.		
14) C3-Naphthalenes	0.000		0	N.D.		
15) C4-Naphthalenes	0.000		0	N.D.		
16) Benzothiophene	14.059	134	829568m	283.56		
17) C1-Benzothiophenes	0.000		0	N.D.	d	
18) C2-Benzothiophenes	0.000		0	N.D.	d	
19) C3-Benzothiophenes	0.000		0	N.D.	d	
20) C4-Benzothiophenes	0.000		0	N.D.	d	
22) Biphenyl	17.680	154	838843m	280.04		
23) Acenaphthylene	19.178	152	962107m	270.25		
24) Acenaphthene	19.759	154	611316m	283.74		
25) Dibenzofuran	20.363	168	939521m	287.63		
26) Fluorene	21.548	166	747628m	278.13		
27) 1-Methylfluorene	0.000		0	N.D.	d	
28) C1-Fluorenes	0.000		0	N.D.	d	
29) C2-Fluorenes	0.000		0	N.D.	d	
30) C3-Fluorenes	0.000		0	N.D.	d	
33) Carbazole	25.585	167	916449m	275.20		
34) Dibenzothiophene	24.399	184	1132653m	286.06		
35) 4-Methyldibenzothiophene	0.000		0	N.D.	d	
36) 2/3-Methyldibenzothiop...	0.000		0	N.D.	d	
37) 1-Methyldibenzothiophene	0.000		0	N.D.	d	
38) C2-Dibenzothiophenes	0.000		0	N.D.	d	
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.822	178	1164257m	284.34		
42) Anthracene	25.020	178	1044594m	277.28		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	
44) 2-Methylphenanthrene	0.000		0	N.D.	d	
45) 2-Methylanthracene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168I.D
Acq On : 21 Sep 2013 5:15 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-004
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 22 14:02:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration

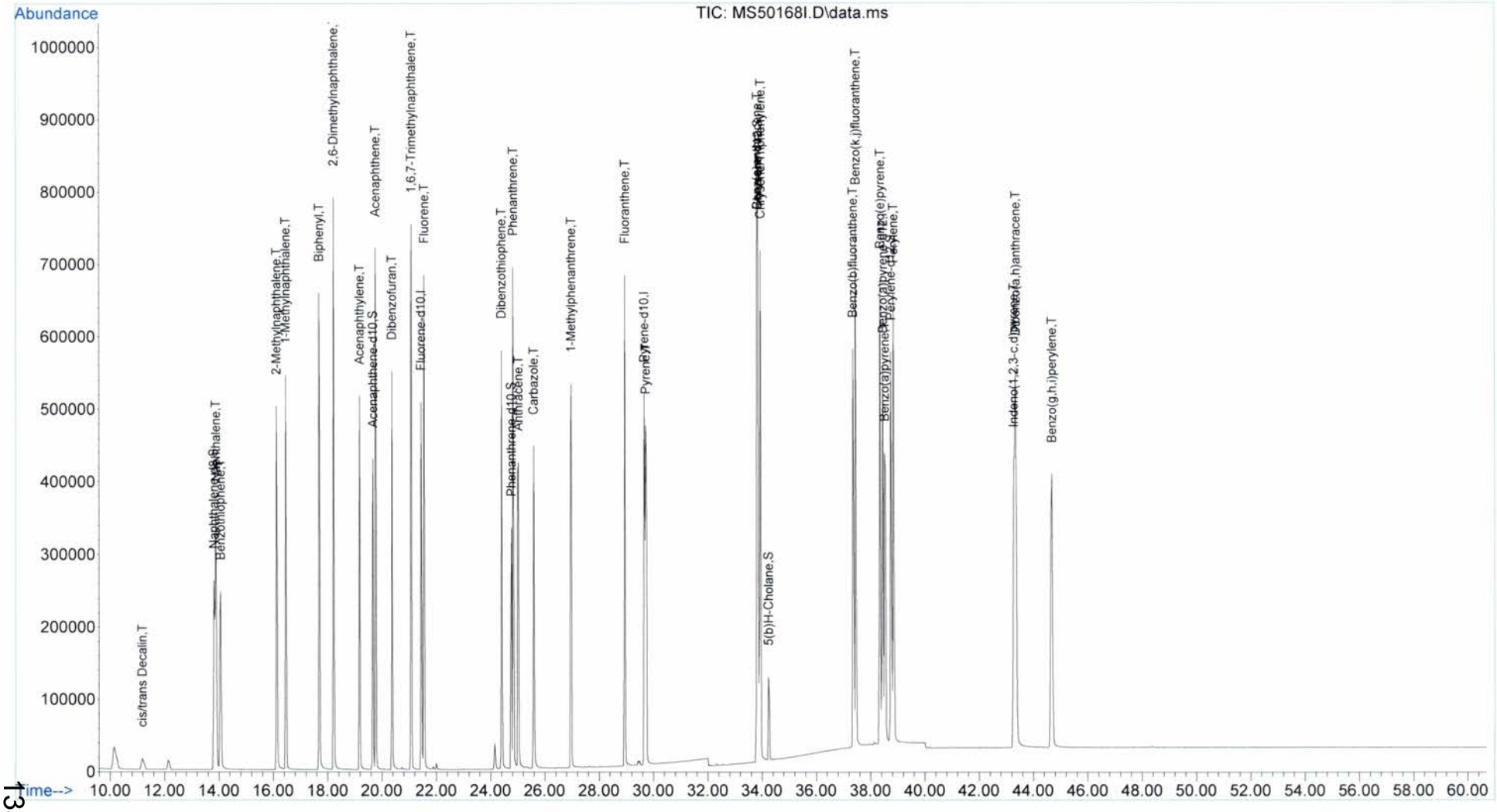
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.970	192	847764m	268.73		
48) 3,6-Dimethylphenanthrene	0.000		0	N.D.	d	
49) Retene	0.000		0	N.D.	d	
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53) Naphthobenzothiophene	0.000		0	N.D.	d	
54) C1-Naphthobenzothiophenes	0.000		0	N.D.	d	
55) C2-Naphthobenzothiophenes	0.000		0	N.D.	d	
56) C3-Naphthobenzothiophenes	0.000		0	N.D.	d	
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.947	202	1386795m	288.92		
59) Pyrene	29.710	202	1455719m	283.84		
60) 2-Methylfluoranthene	0.000		0	N.D.	d	
61) Benzo(b)fluorene	0.000		0	N.D.	d	
62) C1-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
63) C2-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
64) C3-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
65) C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67) Benz(a)anthracene	33.810	228	1419144m	288.97		
68) Chrysene/Triphenylene	33.940	228	1338890m	283.28		
69) C1-Chrysenes	0.000		0	N.D.	d	
70) C2-Chrysenes	0.000		0	N.D.	d	
71) C3-Chrysenes	0.000		0	N.D.	d	
72) C4-Chrysenes	0.000		0	N.D.	d	
74) C29-Hopane	0.000		0	N.D.	d	
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	0.000		0	N.D.	d	
77) Benzo(b)fluoranthene	37.344	252	1511586m	287.73		
78) Benzo(k,j)fluoranthene	37.441	252	1517967m	288.84		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.349	252	1587431m	290.53		
81) Benzo(a)pyrene	38.511	252	1380859m	280.29		
82) Indeno(1,2,3-c,d)pyrene	43.272	276	1538433m	280.28		
83) Dibenzo(a,h)anthracene	43.337	278	1248057m	290.27		
84) C1-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
85) C2-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
86) C3-Dibenzo(a,h)anthrac...	0.000		0	N.D.	d	
87) Benzo(g,h,i)perylene	44.678	276	1345118m	281.17		
89) Perylene	38.835	252	1522440m	283.01		
91) C20-TAS	0.000		0	N.D.	d	
92) C21-TAS	0.000		0	N.D.	d	
93) C26(20S)-TAS	0.000		0	N.D.	d	
94) C26(20R)/C27(20S)-TAS	0.000		0	N.D.	d	
95) C28(20S)-TAS	0.000		0	N.D.	d	
96) C27(20R)-TAS	0.000		0	N.D.	d	
97) C28(20R)-TAS	0.000		0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50168\
Data File : MS50168I.D
Acq On : 21 Sep 2013 5:15 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-004
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 22 14:02:06 2013
Quant Method : C:\GCMS5\MS50168\AR50168.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Sun Sep 22 13:11:40 2013
Response via : Initial Calibration



PAH Mass Discrimination Ratio

B&B Laboratories
Project J13034
Report 13-3129

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Mass Discrimination Sheet

Client Project #B0086003.1302

File Name	Sample Name	Benzo(g,h,i)perylene Concentration (ng/mL)	Phenanthrene Concentration (ng/mL)	Benzo(g,h,i)perylene/ Phenanthrene ratio	Q
MS50168B.D	AR-WKC1-020-030	23.4	22.4	1.04	
MS50168C.D	AR-WKC2-100-030	97.3	96.3	1.01	
MS50168D.D	AR-WKC3-250-030	226	230	0.98	
MS50168E.D	AR-WKC4-500-030	466	488	0.95	
MS50168F.D	AR-WKC5-1000-030	1172	1029	1.14	
MS50168G.D	AR-WKC6-5000-030	4886	4830	1.01	
MS50168I.D	AR-WKICV-250-004	281	284	0.99	
MS50168K.D	AR-SRM2779-WK-4.0-002	228	236	0.96	
MS50168L.D	AR-WKCC-250-038	171	226	0.76	

Qualifiers (Q): Ratio of Benzo(g,h,i)perylene to Phenanthrene needs to be ≥ 0.70

PAH Internal Standard Area Data

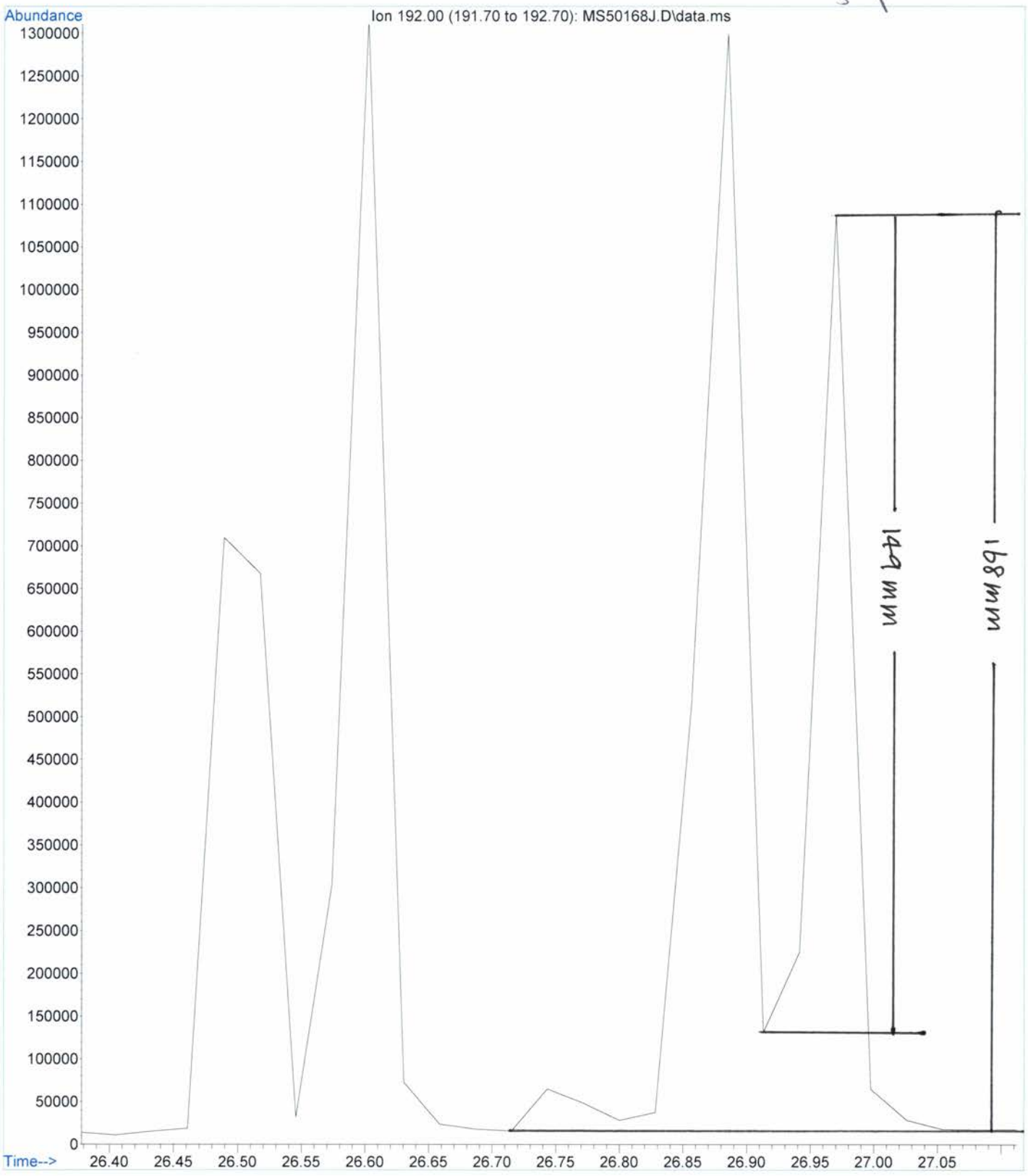
Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
The Area of the Internal Standards in the Associated Calibration Standard

File Name	Sample Name	Internal Standard 1 Fluorene-d10			Internal Standard 2 Pyrene-d10			Internal Standard 3 Benzo(a)pyrene-d12		
		Response (Area)	50% (Area)	200% (Area)	Response (Area)	50% (Area)	200% (Area)	Response (Area)	50% (Area)	200% (Area)
MS50168D.D	AR-WKC3-250-030	491559	245780	983118	959088	479544	1918176	977265	488633	1954530
MS50168I.D	AR-WKICV-250-004	530098			1041500			1045980		
MS50168K.D	**AR-SRM2779-WK-4.0-002**	**409528**	**204764**	**819056**	**802949**	**401475**	**1605898**	**816071**	**408036**	**1632142**
ENV3091B.D	SRM 1941b	377909			742429			811986		
ENV3091C.D	SO-DA-019 (0-0.5) MS	410503			884819			820226		
ENV3091D.D	SO-DA-019 (0-0.5) MSD	419291			857961			811076		
ENV3091E.D	Dupl. (SO-DA-019 (0.5-1.0))	423581			936528			675533		
ARC1735.D	SO-DA-019 (0-0.5)	415825			855663			629670		
ARC1738.D	SO-DA-019 (0.5-1.0)	400007			858073			553529		
ARC1739.D	SO-DA-019 (1.0-1.5)	313199			661664			557062		
MS50168L.D	**AR-WKCC-250-038**	**377809**	**188905**	**755618**	**754713**	**377357**	**1509426**	**571620**	**285810**	**1143240**

SRM-2779 Reference Oil
PAH
Resolution Check

File :C:\GCMS5\MS50168\MS50168J.D
Operator : ECM(YMIAO)
Acquired : 21 Sep 2013 6:22 am using AcqMethod PAH-2012.M
Instrument : GCMS5
Sample Name: AR-WKCC-250-038
Misc Info :
Vial Number: 10

89% separation



Supporting Documents

Shipping, Sample Receiving, and Project Initiation Documents

B&B LABORATORIES RECEIVING/INTEGRITY REPORT

Job: J13034 Date Received: 8/09/13 SDG#: 13080901

Sender: Arcadis- Mayflower, AR

1. Number of Shipping Containers: 2 Arcadis: Daniel Mays

Comments: 1 of 2, large blue cooler

2. Airbill Present? (Yes) No Shipping Company: Fed EX

Airbill Number: 8022 2781 5917 Comments: PON

3. Custody Seals on Container?
No (Yes) (Intact) Not Intact Comments: on top of duct tape

4. Chain of Custody Records?
No (Yes) Comments: COC for all coolers in cooler 1

5. General Sample Conditions:
Frozen (Cool) Unrefrigerated
Dry Ice Blue Ice (Ice)
Temperature/Comments: 0.3°C / temp blank 1.1°C (T6

6. List of Broken Containers:

None

7. Number of Samples Expected: 2 coolers Number of Samples Received: _____

8. Problems/Discrepancies:

None

Cooler 1:
13 seds
3 waters

9. Resolutions:

N/A

10. Checked in by: amanda Brewster Date: 8/09/13

large blue cooler

Ice type: wet Ice
Cooler Temp: 0.3
Thermometer: 6
Temp blank: 1.1
Custody Seal:

Sdg 13080901
Cooler 1 of 2

eurofins | Lancaster Laboratories

486727
CUSTODY SEAL

DATE: 8-8-13
SIGNATURE:

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2300

FedEx Express NEW Package US Airbill

FedEx Tracking Number 8022 2781 5917

0200

1 From
Date
Sender's Name Phone
Company
Address Dept./Floor/Suite/Room
City State ZIP

2 Your Internal Billing Reference

3 To
Recipient's Name Phone
Company
Address Dept./Floor/Suite/Room
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City State ZIP

HOLD Weekday
FedEx location address REQUIRED. NOT available for FedEx First Overnight.
HOLD Saturday
FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

4 Express Package Service * To most locations.
NOTE: Service order has changed. Please select carefully.
Packages up to 150 lbs.
For packages over 150 lbs., use the new FedEx Express Freight US Airbill.

Next Business Day
- FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days
- FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
- FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.
FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options
SATURDAY Delivery NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
No Signature Required — Package may be left without obtaining a signature for delivery.
Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.
Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. Fee applies for residential delivery only.

Does this shipment contain dangerous goods?
No Yes — As per attached Shipper's Declaration. Yes — Shipper's Declaration not required. Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
Cargo Aircraft Only

7 Payment Bill to:
Enter FedEx Acct. No. or Credit Card No. below.
Sender — Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages Total Weight Credit Card Auth.
lbs.

644

8022 2781 5917

B&B LABORATORIES RECEIVING/INTEGRITY REPORT

Job: J13034 Date Received: 8/09/13 SDG#: 13080901

Sender: Arcadis- Mayflower, AR

1. Number of Shipping Containers: 2 Arcadis: Daniel Mays

Comments: 2 of 2, large blue cooler

2. Airbill Present? (Yes)/No Shipping Company: Fed Ex

Airbill Number: 7958 0860 4666 Comments: PON

3. Custody Seals on Container?
No (Yes) (Intact) Not Intact Comments: on top of duct tape

4. Chain of Custody Records?
(No) Yes Comments: in Cooler 1

5. General Sample Conditions:
Frozen (Cool) Unrefrigerated
Dry Ice Blue Ice (Ice)
Temperature/Comments: 2.2oc/temp blank 4.0°C (TB

6. List of Broken Containers:

None

7. Number of Samples Expected: 2 coolers Number of Samples Received: _____

8. Problems/Discrepancies:

None

Cooler 2: 27 seds

9. Resolutions:

N/A

10. Checked in by: Amanda Brewster Date: 8/09/13

large blue cooler

Ice type: wet Ice
Cooler temp: 2.2
Temp blank: 4.0
Custody seal:
Thermometer: 6

Sdg 13080901
Cooler 2 of 2

eurofins | Lancaster Laboratories

486684
CUSTODY SEAL
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 6[illegible]-2300

DATE: 8-8-13
SIGNATURE:

ORIGIN ID:MPJA (979) 693-34[illegible]
B & B LABORATORIES
14391 S DOWLING RD STE B
COLLEGE STATION, TX 778453473
UNITED STATES US

SHIP DATE: 08AUG13
ACTWGT: 57.0 LB
CAD: /POS1400
DIMS: 24x13x13 IN
BILL SENDER

TO
B AND B LABS
14391 S DOWLING RD
B
COLLEGE STATION TX 77845
(979) 693-3446 REF:
INV:
PO: DEPT:

FedEx Express

2 of 2
MPS# 0681 7958 0860 4666
Mstr# 8022 2781 5917 0200

FRI - 09 AUG 10:30A
PRIORITY OVERNIGHT

XH CLLA

77845
TX-US IAH

Pg 1/5

CHAIN OF CUSTODY RECORD

B&B Laboratories, Inc.
Home Office 14391B South Dowling Road College Station TX 77845 phone (979) 693-3446 fax (979) 693-6389 http://www.tdi-bi.com

TDI Brooks

Client: ARCADIS

Project ID: Mayflower Pipeline Incident - B0086003.1301

B&B Contact: Juan Ramirez

Sampler Signature: Daniel Mays

Analyses

Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	PAHs + 8270 Sim				Cool (2)	#	Comments
So-DA-020 (0-0.5)	8/7/13	730	Soil	none	4oz	1	X				1		4/4 PAHs List
So-DA-020 (0.5-1)		735									1		
So-DA-020 (1.0-1.5)		740									1		
So-DA-022 (0-0.5)		815									1		
So-DA-022 (0.5-1.0)		820									1		
So-DA-022 (1.0-1.5)		825									1		
So-DA-025 (0-0.5)		840									1		
So-DA-025 (0.5-1.0)		845									1		
So-DA-025 (1.0-1.5)		850									1		
So-DA-Dup-04-080713											1		

Other Instructions: Sdg 13080901 Cooler 1 of 1 (1)

Total # of Containers: 10

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name: Jonathan Hamerfelt	ARCADIS	8/8/13	1600	Printed Name: Amanda Brewster	B&B Labs	8/09/13	11:00
Signature:				Signature: Amanda Brewster			
Printed Name:				Printed Name:			
Signature:				Signature:			

Matrix:
T=Tissue G=Gas
S=Soil/Sediment Ws=Waste
R=Rinseate HW=Hazardous Waste
P=Product W=Water

Sample Container: Vol/material
G=Glass C=Core
P=Plastic B=Bag

Pg 2/5

CHAIN OF CUSTODY RECORD

B&B Laboratories, Inc.

Home Office 14391B South Dowling Road College Station TX 77845 phone (979) 693-3446 fax (979) 693-6389 http://www.tdi-bi.com

TDI Brooks

Client: ARCADIS

Project ID: Mayflower Pipeline Incident - B0086003.1301

B&B Contact: Jesus Ramirez

Sampler Signature: Daniel Mays

Analyses

Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	PAHs + 8270 SIM				Cooler #		Other Instructions / Comments
SO-DA-032 (0-0.5)	8/7/13	1000	Soil	none	4oz	1	X				1		44 PAHs List
SO-DA-032 (0.5-1.0)	↓	1005	↓	↓	↓	1	X				1		↓
SO-DA-032 (1.0-1.5)	↓	1010	↓	↓	↓	1	X				1		↓
SO-DA-EB-08072013	↓	1110	Water	none	1 AG	1	X				1		↓
SO-DA-019 (0.0-0.5)	8/8/13	745	Soil	none	4oz	1	X				2		↓
SO-DA-019 (0.0-0.5) MS		745				1	X				2		
SO-DA-019 (0.0-0.5) MSD		745				1	X				2		
SO-DA-019 (0.5-1.0)		750				1	X				2		
SO-DA-019 (1.0-1.5)		755				1	X				2		
SO-DA-019 (1.5-2.0)	↓	800	↓	↓	↓	1	X				2		Extract + Hold
					Total # of Containers	11							

Other Instructions: Sdg 13080901 Cooler 1 of 1 (2)

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name: Jonathan Flemestelt	ARCADIS	8/8/13	1600	Printed Name: Amanda Brewster	B&B Labs	8/09/13	11:00
Signature:	↓	↓	↓	Signature: Amanda Brewster			
Printed Name:				Printed Name:			
Signature:				Signature:			

Matrix:

T=Tissue S=Soil/Sediment R=Rinseate P=Product G=Gas Ws=Waste HW=Hazardous Waste W=Water

Sample Container: Vol/material

G=Glass P=Plastic C=Core B=Bag

B&B Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Home Office 14391B South Dowling Road College Station TX 77845 phone (979) 693-3446 fax (979) 693-6389 http://www.tdi-bi.com

TDI Brooks

Client: ARCADIS

Project ID: Mayflower Pipeline Incident

B&B Contact: Juan Ramirez

Sampler Signature: Daniel Mays Daniel Mays

Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	Analyses: PAHs + SIM 8270C				Cooler #		Other Instructions / Comments
SO-DA-019 (2.0-3.0)	8/8/13	805	Soil	None	4oz	1	X				2		Extract + Hold
SO-DA-019 (3.0-4.0)		810									2		Extract + Hold
SO-DA-021 (0-0.5)		910									2		44 PAHs List
SO-DA-021 (0.5-1.0)		915									2		
SO-DA-021 (1.0-1.5)		920									2		
SO-DA-021 (1.5-2.0)		925									2		Extract + Hold
SO-DA-021 (2.0-3.0)		930									2		Extract + Hold
SO-DA-021 (3.0-4.0)		935									2		Extract + Hold
SO-DA-023 (0-0.5)		1000									2		44 PAHs List
SO-DA-023 (0.5-1.0)		1005									2		44 PAHs List

Other Instructions: Sdg 13080901 Cooler 1 of 1 (4) (3) 98 8/09/13 10:30

Total # of Containers: 10

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name: Jonathan Fleming Jeff	ARCADIS	8/8/13	1600	Printed Name: Amanda Brewster	B: B Labs	8/09/13	11:00
Signature:	↓	↓		Signature: Amanda Brewster			
Printed Name:				Printed Name:			
Signature:				Signature:			

Matrix:

T=Tissue G=Gas
S=Soil/Sediment Ws=Waste
R=Rinseate HW=Hazardous Waste
P=Product W=Water

Sample Container: Vol/material

G=Glass C=Core
P=Plastic B=Bag

B&B Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Home Office 14391B South Dowling Road College Station TX 77845 phone (979) 693-3446 fax (979) 693-6389 http://www.tdi-bi.com

TDI Brooks

Client: ARCADIS

Project ID: Mayflower Pipeline Incident B0086003.1301

B&B Contact: Juan Ramirez

Sampler Signature: Daniel Mays Daniel Mays

Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	Analyses: PAHs + 8270 SIM	Analyses: Cooler #	Other Instructions / Comments
SO-DA-023 (1.0-1.5)	8/8/13	1010	Soil	none	4/02	1	X	2	Sdg 13080901 Cooler 1 of 1 (3) (4) 8/09/13 10:30 — 44 PAHs List
SO-DA-023 (1.5-2.0)		1015						2	Extract + Hold
SO-DA-023 (2.0-3.0)		1020						2	Extract + Hold
SO-DA-023 (3.0-4.0)		1025						2	Extract + Hold
SO-DA-024 (0-0.5)		1050						2	44 PAHs List
SO-DA-024 (0.5-1.0)		1055						2	
SO-DA-024 (1.0-1.5)		1100						2	
SO-DA-027 (0-0.5)		1130						2	
SO-DA-027 (0.5-1.0)		1135						2	
SO-DA-027 (1.0-1.5)		1140						2	
					Total # of Containers	10			

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name: Jonathan Flowerfelt	ARCADIS	8/8/13	1600	Printed Name: Amanda Brewster	BCB Labs	8/09/13	11:00
Signature:				Signature: amanda Brewster			
Printed Name:				Printed Name:			
Signature:				Signature:			

Matrix:

T=Tissue G=Gas
S=Soil/Sediment Ws=Waste
R=Rinseate HW=Hazardous Waste
P=Product W=Water

Sample Container: Vol/material

G=Glass C=Core
P=Plastic B=Bag

B&B Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Home Office 14391B South Dowling Road College Station TX 77845 phone (979) 693-3446 fax (979) 693-6389 http://www.tdi-bi.com

TDI Brooks

Client: ARCADIS

Project ID: Mayflower Pipeline Incident - B008003.1301

B&B Contact: Juan Ramirez

Sampler Signature: Daniel Mays

Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	Analyses: PAHs + 8270 SIM	Analyses: Cooler #	Other Instructions / Comments
SO-OA-Dup-05-080513	8/8/13		Soil	none	4oz	1		2	sdg 13080901 Cooler 1 of 1 (5)
SO-OA-EB-03-080813	↓	1400	Water	none	LAG	2		1,1	44 PAH List ↓
				Total # of Containers					

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name: Jonathan Flanefelt	ARCADIS	8/8/13	1600	Printed Name: Amanda Brewster	B&B Labs	8/09/13	11:00
Signature:	↓	↓	↓	Signature: Amanda Brewster			
Printed Name:				Printed Name:			
Signature:				Signature:			

Matrix:

T=Tissue S=Soil/Sediment R=Rinsate P=Product G=Gas Ws=Waste HW=Hazardous Waste W=Water

Sample Container: Vol/material

G=Glass P=Plastic C=Core B=Bag

Log #	Job #	CLIENT NAME	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG	Cooler #	Sent by:	Container	Project #
64407	J13034	Arcadis - Mayflower AR	ARC1722	SO-DA-020 (0-0.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64408	J13034	Arcadis - Mayflower AR	ARC1723	SO-DA-020 (0.5-1.0)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64409	J13034	Arcadis - Mayflower AR	ARC1724	SO-DA-020 (1.0-1.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64410	J13034	Arcadis - Mayflower AR	ARC1725	SO-DA-022 (0-0.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64411	J13034	Arcadis - Mayflower AR	ARC1726	SO-DA-022 (0.5-1.0)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64412	J13034	Arcadis - Mayflower AR	ARC1727	SO-DA-022 (1.0-1.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64413	J13034	Arcadis - Mayflower AR	ARC1728	SO-DA-025 (0-0.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64414	J13034	Arcadis - Mayflower AR	ARC1729	SO-DA-025 (0.5-1.0)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64415	J13034	Arcadis - Mayflower AR	ARC1730	SO-DA-025 (1.0-1.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64416	J13034	Arcadis - Mayflower AR	ARC1731	SO-DA-DUP-04-080713	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64417	J13034	Arcadis - Mayflower AR	ARC1732	SO-DA-032 (0-0.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64418	J13034	Arcadis - Mayflower AR	ARC1733	SO-DA-032 (0.5-1.0)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64419	J13034	Arcadis - Mayflower AR	ARC1734	SO-DA-032 (1.0-1.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64420	J13034	Arcadis - Mayflower AR	ARC1735	SO-DA-019 (0-0.5)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64421	J13034	Arcadis - Mayflower AR	ARC1736	SO-DA-019 (0-0.5) MS	08/08/13	08/09/13	extract & HOLD	SOIL	MS	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64422	J13034	Arcadis - Mayflower AR	ARC1737	SO-DA-019 (0-0.5) MSD	08/08/13	08/09/13	extract & HOLD	SOIL	MSD	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64423	J13034	Arcadis - Mayflower AR	ARC1738	SO-DA-019 (0.5-1.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64424	J13034	Arcadis - Mayflower AR	ARC1739	SO-DA-019 (1.0-1.5)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64425	J13034	Arcadis - Mayflower AR	ARC1740	SO-DA-019 (1.5-2.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64426	J13034	Arcadis - Mayflower AR	ARC1741	SO-DA-019 (2.0-3.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64427	J13034	Arcadis - Mayflower AR	ARC1742	SO-DA-019 (3.0-4.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64428	J13034	Arcadis - Mayflower AR	ARC1743	SO-DA-021 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64429	J13034	Arcadis - Mayflower AR	ARC1744	SO-DA-021 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64430	J13034	Arcadis - Mayflower AR	ARC1745	SO-DA-021 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64431	J13034	Arcadis - Mayflower AR	ARC1746	SO-DA-021 (1.5-2.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64432	J13034	Arcadis - Mayflower AR	ARC1747	SO-DA-021 (2.0-3.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64433	J13034	Arcadis - Mayflower AR	ARC1748	SO-DA-021 (3.0-4.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64434	J13034	Arcadis - Mayflower AR	ARC1749	SO-DA-023 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64435	J13034	Arcadis - Mayflower AR	ARC1750	SO-DA-023 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64436	J13034	Arcadis - Mayflower AR	ARC1751	SO-DA-023 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64437	J13034	Arcadis - Mayflower AR	ARC1752	SO-DA-023 (1.5-2.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64438	J13034	Arcadis - Mayflower AR	ARC1753	SO-DA-023 (2.0-3.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64439	J13034	Arcadis - Mayflower AR	ARC1754	SO-DA-023 (3.0-4.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64440	J13034	Arcadis - Mayflower AR	ARC1755	SO-DA-024 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64441	J13034	Arcadis - Mayflower AR	ARC1756	SO-DA-024 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64442	J13034	Arcadis - Mayflower AR	ARC1757	SO-DA-024 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64443	J13034	Arcadis - Mayflower AR	ARC1758	SO-DA-027 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64444	J13034	Arcadis - Mayflower AR	ARC1759	SO-DA-027 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64445	J13034	Arcadis - Mayflower AR	ARC1760	SO-DA-027 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64446	J13034	Arcadis - Mayflower AR	ARC1761	SO-DA-DUP-05-080813	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar	B0086003.1302
64447	J13034	Arcadis - Mayflower AR	ARC1762	SO-DA-EB-02-080713	08/07/13	08/09/13	PAH	WATER	44 analytes, 1 of 1	13080901	Cooler 1	Arcadis: Daniel Mays	1L amber glass BR bottle	B0086003.1302
64448	J13034	Arcadis - Mayflower AR	ARC1763	SO-DA-EB-03-080813	08/08/13	08/09/13	PAH	WATER	44 analytes, 1 of 2	13080901	Cooler 1	Arcadis: Daniel Mays	1L amber glass BR bottle	B0086003.1302
64449	J13034	Arcadis - Mayflower AR	ARC1764	SO-DA-EB-03-080813	08/08/13	08/09/13	PAH	WATER	44 analytes, 2 of 2	13080901	Cooler 1	Arcadis: Daniel Mays	1L amber glass BR bottle	B0086003.1302

B&B LABORATORIES SAMPLE INITIATION FORM-ENV

Job #: J13034
SDG: 13080901
Client: Arcadis-Mayflower AR
Initiation Date: 8/09/13

Number of Samples: 2
Matrix: Waters
Due Date: 45 days: 9/22/13
Comments: collected 8/07-8/08
extract by 8/13-8/14
received 8/09/13

Analyses

☑	PAHs	☐	OCs/PCBs	☑	Aliphatics/TPH	☑	EOM
☐	Dry Wt.	☐	%Lipid	☐	TOC/TIC	☐	____
☐	Short Columns	☐	Long Columns	☐	____	☐	____

Requested QA/QC (per batch of ____ Client Samples)

☑ Blank	☐ SRM/LCS ____	☑ Blank Spike	
☐ Blank Spike Duplicate		☐ Matrix Spike ____	
☐ Matrix Spike Duplicate ____		☐ Duplicate ____	

SEE BACK FOR SPECIFIC STANDARDS TO USE

Surrogate(s): PAH, ALI Volume(s): 100, 1

Spike Standard(s): PAH, ALI Volume(s): 100, 1

Internal Standard(s): PAH, ALI Volume(s): 100, 1

Final Extract Volume (ml): 1.0 Final Solvent: DCM

Comments:

Sample Custodian Signature: Amanda Brewster Date: 8/09/13

Laboratory Manager Signature: _____ Date: 8/9/13

Log #	Job #	CLIENT NAME	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG	Cooler #	Sent by:	Container	Project #
64447	J13034	Arcadis - Mayflower AR	ARC1762	SO-DA-EB-02-080713	08/07/13	08/09/13	PAH	WATER	44 analytes, 1 of 1	13080901	Cooler 1	Arcadis: Daniel Mays	1L amber glass BR bottle	B0086003.1302
64448	J13034	Arcadis - Mayflower AR	ARC1763	SO-DA-EB-03-080813	08/08/13	08/09/13	PAH	WATER	44 analytes, 1 of 2	13080901	Cooler 1	Arcadis: Daniel Mays	1L amber glass BR bottle	B0086003.1302

B&B LABORATORIES SAMPLE INITIATION FORM-ENV

Job #: J13034
SDG: 13080901
Client: Arcadis- Mayflower AR
Initiation Date: 8/09/13

Number of Samples: 14
Matrix: Soil
Due Date: 45 days: 9/22/13
Comments: extract & hold

Analyses

☑	PAHs	☐	OCs/PCBs	☑	Aliphatics/TPH	☐	EOM
☑	Dry Wt.	☐	%Lipid	☐	TOC/TIC	☐	
☑	Short Columns	☐	Long Columns	☐		☐	

Requested QA/QC (per batch of _____ Client Samples)

☑	Blank	☑ SRM/LCS 1941b	☐ Blank Spike
☐	Blank Spike Duplicate	☑	Matrix Spike _____
☑	Matrix Spike Duplicate _____	☐	Duplicate _____

SEE BACK FOR SPECIFIC STANDARDS TO USE

Surrogate(s): PAH, ALI — Volume(s): 100ml
Spike Standard(s): PAH, ALI — Volume(s): 100ml
Internal Standard(s): PAH, ALI — Volume(s): 100ml
Final Extract Volume (ml): 1.0 — Final Solvent: DCM

Comments:

Sample Custodian Signature: Amanda Brewster — Date: 8/09/13
Laboratory Manager Signature: _____ — Date: 8/9/13

Log #	Job #	CLIENT NAME	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG	Cooler #	Sent by:	Container	a	Project #
64420	J13034	Arcadis - Mayflower AR	ARC1735	SO-DA-019 (0-0.5)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64421	J13034	Arcadis - Mayflower AR	ARC1736	SO-DA-019 (0-0.5) MS	08/08/13	08/09/13	extract & HOLD	SOIL	MS	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64422	J13034	Arcadis - Mayflower AR	ARC1737	SO-DA-019 (0-0.5) MSD	08/08/13	08/09/13	extract & HOLD	SOIL	MSD	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64423	J13034	Arcadis - Mayflower AR	ARC1738	SO-DA-019 (0.5-1.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64424	J13034	Arcadis - Mayflower AR	ARC1739	SO-DA-019 (1.0-1.5)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64425	J13034	Arcadis - Mayflower AR	ARC1740	SO-DA-019 (1.5-2.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64426	J13034	Arcadis - Mayflower AR	ARC1741	SO-DA-019 (2.0-3.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64427	J13034	Arcadis - Mayflower AR	ARC1742	SO-DA-019 (3.0-4.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64431	J13034	Arcadis - Mayflower AR	ARC1746	SO-DA-021 (1.5-2.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64432	J13034	Arcadis - Mayflower AR	ARC1747	SO-DA-021 (2.0-3.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64433	J13034	Arcadis - Mayflower AR	ARC1748	SO-DA-021 (3.0-4.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64437	J13034	Arcadis - Mayflower AR	ARC1752	SO-DA-023 (1.5-2.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64438	J13034	Arcadis - Mayflower AR	ARC1753	SO-DA-023 (2.0-3.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
64439	J13034	Arcadis - Mayflower AR	ARC1754	SO-DA-023 (3.0-4.0)	08/08/13	08/09/13	extract & HOLD	SOIL		13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302

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B&B LABORATORIES SAMPLE INITIATION FORM-ENV

Job #: J13034
SDG: 13080901
Client: Arcadis - Mayflower AR
Initiation Date: 8/09/13

Number of Samples: 26
Matrix: soil
Due Date: 45 days: 9/22/13
Comments: PAH: 44 analytes received 8/09/13

Analyses

☑	PAHs	☐	OCs/PCBs	☑	Aliphatics/TPH	☐	EOM
☑	Dry Wt.	☐	%Lipid	☐	TOC/TIC	☐	____
☐	Short Columns	☐	Long Columns	☐	____	☐	____

Requested QA/QC (per batch of ____ Client Samples)

☑	Blank	☑ SRM/LCS 1941b	☐ Blank Spike
☐	Blank Spike Duplicate	☑	Matrix Spike ____
☑	Matrix Spike Duplicate ____	☐	Duplicate ____

SEE BACK FOR SPECIFIC STANDARDS TO USE

Surrogate(s): PAH, ACI — Volume(s): 100ml
Spike Standard(s): PAH, ACI — Volume(s): 100ml
Internal Standard(s): PAH, ACI — Volume(s): 100ml
Final Extract Volume (ml): 1.0 — Final Solvent: DCM

Comments:

Sample Custodian Signature: Amanda Brewster Date: 8/09/13
Laboratory Manager Signature: ____ Date: 8/9/13

Job #	CLIENT NAME	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG	Cooler #	Sent by:	Container	a	Project #
J13034	Arcadis - Mayflower AR	ARC1722	SO-DA-020 (0-0.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1723	SO-DA-020 (0.5-1.0)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1724	SO-DA-020 (1.0-1.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1725	SO-DA-022 (0-0.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1726	SO-DA-022 (0.5-1.0)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1727	SO-DA-022 (1.0-1.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1728	SO-DA-025 (0-0.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1729	SO-DA-025 (0.5-1.0)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1730	SO-DA-025 (1.0-1.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1731	SO-DA-DUP-04-080713	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1732	SO-DA-032 (0-0.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1733	SO-DA-032 (0.5-1.0)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1734	SO-DA-032 (1.0-1.5)	08/07/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 1	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1743	SO-DA-021 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1744	SO-DA-021 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1745	SO-DA-021 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1749	SO-DA-023 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1750	SO-DA-023 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1751	SO-DA-023 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1755	SO-DA-024 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1756	SO-DA-024 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1757	SO-DA-024 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1758	SO-DA-027 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1759	SO-DA-027 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1760	SO-DA-027 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302
J13034	Arcadis - Mayflower AR	ARC1761	SO-DA-DUP-05-080813	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901	Cooler 2	Arcadis: Daniel Mays	4oz clear glass jar		B0086003.1302

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amanda brewster

From: amanda brewster <amandabrewster@tdi-bi.com>
Sent: Friday, August 09, 2013 11:20 AM
To: 'Mays, Daniel'; Parmelee, Rhiannon (Rhiannon.Parmelee@arcadis-us.com); 'Jennifer.Chandler@arcadis-us.com'; 'Dennis.Capria@arcadis-us.com'; Mott, Lyndi (Lyndi.Mott@arcadis-us.com)
Cc: Juan Ramirez (juanramirez@tdi-bi.com); Donell Frank; 'tommcdonald@tdi-bi.com' (tommcdonald@tdi-bi.com)
Subject: Samples Received 8/09/13
Attachments: COC 8-09-13.pdf

Hi Daniel,

We received your samples this morning in good condition.
The internal temperature of Cooler 1 was 0.3ºC and the temperature blank was 1.1ºC
The internal temperature of Cooler 2 was 2.2ºC and the temperature blank was 4.0ºC

A PDF of the COC is attached for your records.

Regards,
Amanda

From: Mays, Daniel [mailto:Daniel.Mays@arcadis-us.com]
Sent: Thursday, August 08, 2013 5:44 PM
To: amanda brewster
Subject: Tracking number for coolers shipped 8-8-2013

Good Evening Amanda,

We shipped two coolers to B+B Labs today tracking # 8022 2781 5891.

Regards,

Danny Mays | Environmental Specialist, E.I. | daniel.mays@arcadis-us.com
ARCADIS U.S., Inc. | 801 Corporate Center Drive, Suite 300 | Raleigh, North Carolina 27607
T: 919-415-2281 | M: 919-812-1417 | F: 919-854-5448
Professional Affiliate/ARCADIS G&M of North Carolina, Inc.
Please consider the environment before printing this email.

X-Whitelist: 1024
X-Envelope-From: Rhiannon.Parmelee@arcadis-us.com
X-Envelope-To: tommcdonald@tdi-bi.com
From: "Parmelee, Rhiannon" <Rhiannon.Parmelee@arcadis-us.com>
To: "juanramirez@tdi-bi.com" <juanramirez@tdi-bi.com>, "Mott, Lyndi"
<Lyndi.Mott@arcadis-us.com>, "donellfrank@tdi-bi.com"
<donellfrank@tdi-bi.com>, "tommcdonald@tdi-bi.com" <tommcdonald@tdi-bi.com>
CC: "Capria, Dennis" <Dennis.Capria@arcadis-us.com>, "Denkenberger, Erika"
<Erika.Denkenberger@arcadis-us.com>, "Patel, Dakshesh"
<Dak.Patel@arcadis-us.com>, "Kull, Valerie" <Valerie.Kull@arcadis-us.com>,
"Zumbuhl, Albert" <Albert.Zumbuhl@arcadis-us.com>
Subject: RE: PAH SAMPLE ON EXTRACT & HOLD NEED ANALYSIS
Thread-Topic: PAH SAMPLE ON EXTRACT & HOLD NEED ANALYSIS
Thread-Index: Ac61fipuMC8hUBHUT5eMejCYBPpWsAAPGcSAAAxnMdA=
Date: Thu, 19 Sep 2013 22:40:07 +0000
Deferred-Delivery: Thu, 19 Sep 2013 22:40:00 +0000
Accept-Language: en-US
X-MS-Has-Attach: yes
X-MS-TNEF-Correlator:
x-originating-ip: [10.48.60.30]
X-SmarterMail-TotalSpamWeight: 0 (Authenticated)

Yes – all three of those sample intervals should be analyzed (0-0.5, 0.5-1.0, and 1-1.5). Thanks for following up on that.

From: juanramirez@tdi-bi.com [mailto:juanramirez@tdi-bi.com]
Sent: Thursday, September 19, 2013 4:34 PM
To: Mott, Lyndi; donellfrank@tdi-bi.com; tommcdonald@tdi-bi.com
Cc: Capria, Dennis; Parmelee, Rhiannon; Denkenberger, Erika; Patel, Dakshesh; Kull, Valerie; Zumbuhl, Albert
Subject: RE: PAH SAMPLE ON EXTRACT & HOLD NEED ANALYSIS

Lyndi,

I reviewed the COC and you are correct. But it looks like also slated in addition to ARC1735 are

Batch	Log #	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG
ENV3091	1	ARC1735	SO-DA-019 (0-0.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901
ENV3091	QA	ARC1736	SO-DA-019 (0-0.5) MS	08/08/13	08/09/13	PAH	SOIL	MS 44 analytes	13080901
ENV3091	QA	ARC1737	SO-DA-019 (0-0.5) MSD	08/08/13	08/09/13	PAH	SOIL	MSD 44 analytes	13080901
ENV3091	2	ARC1738	SO-DA-019 (0.5-1.0)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901
ENV3091	3	ARC1739	SO-DA-019 (1.0-1.5)	08/08/13	08/09/13	PAH	SOIL	44 analytes	13080901

The original status of "Extract & Hold" was assigned since the original status report on 8/14/2013. Would you be able to review the attached updated status file and verify any other discrepancies? In the meantime we will get this set into the stream.

Regards,
Juan

Juan Ramirez
Environmental Lab Manager
TDI-BI/B&B Labs
14391B South Dowling Rd.
College Station, TX 77845
Office - (979) 693-3446
Fax - (979) 693-6389
Cell – (979) 777-0793

Web Site: http://tdi-bi.com/

From: Mott, Lyndi [mailto:Lyndi.Mott@arcadis-us.com]
Sent: Thursday, September 19, 2013 4:22 PM
To: Juan Ramirez; donellfrank@tdi-bi.com; tommcdonald@tdi-bi.com
Cc: Capria, Dennis; Parmelee, Rhiannon; Denkenberger, Erika; Patel, Dakshesh; Kull, Valerie; Zumbuhl, Albert
Subject: PAH SAMPLE ON EXTRACT & HOLD NEED ANALYSIS
Importance: High

Juan,

We are missing the PAH results for SO-DA-019(0-0.5). We found it listed on your priority worksheet as ARC1735 and its listed as extract and hold. Based on the attached coc, it should have been analyzed. Please extract this sample and its MS/MSD as soon as possible. Please respond with an estimated date that we can expect results.

Thank you,

Lyndi Mott | Project Chemistry/Data Quality Specialist | lyndi.mott@arcadis-us.com
ARCADIS U.S., Inc. | 2929 Briarpark Drive | Suite 300 | Houston, TX 77042
T. 713.953.4829 I T. 832.534.8140 I M. 315.569.9448
www.arcadis-us.com
ARCADIS, Imagine the result
Please consider the environment before printing this email.

From: juanramirez@tdi-bi.com [mailto:juanramirez@tdi-bi.com]
Sent: Monday, September 16, 2013 5:58 PM
To: Mott, Lyndi; 'Donell Frank'; Parmelee, Rhiannon
Cc: Patel, Dakshesh; Zumbuhl, Albert; Barrick, Stephen; Tomlinson, Lisa; Chandler, Jennifer; tommcdonald@tdi-bi.com; Capria, Dennis; Sauer, Ted
Subject: RE: PAH data for sediments Report 13-3119

We'll get it in the queue. Attached is the latest status.

Juan

Juan Ramirez
Environmental Lab Manager
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14391B South Dowling Rd.
College Station, TX 77845
Office - (979) 693-3446
Fax - (979) 693-6389
Cell – (979) 777-0793

Web Site: http://tdi-bi.com/

From: Mott, Lyndi [mailto:Lyndi.Mott@arcadis-us.com]
Sent: Monday, September 16, 2013 5:48 PM

To: juanramirez@tdi-bi.com; 'Donell Frank'; Parmelee, Rhiannon
Cc: Patel, Dakshesh; Zumbuhl, Albert; Barrick, Stephen; Tomlinson, Lisa; Chandler, Jennifer; tommcdonald@tdi-bi.com; Capria, Dennis; Sauer, Ted
Subject: RE: PAH data for sediments Report 13-3119

Juan,

Yes, surrogate recoveries of less than 10% across the board does warrant re-extraction/reanalysis. We realize this will delay the results for sample SED-DA-023(2.0-3.0). We request the re-extraction/reanalysis be expedited. Please let us know when we may expect results.

Thank you,

Lyndi Mott | Project Chemistry/Data Quality Specialist | lyndi.mott@arcadis-us.com
ARCADIS U.S., Inc. | 2929 Briarpark Drive | Suite 300 | Houston, TX 77042
T. 713.953.4829 I T. 832.534.8140 I M. 315.569.9448
www.arcadis-us.com
ARCADIS, Imagine the result
Please consider the environment before printing this email.

From: juanramirez@tdi-bi.com [mailto:juanramirez@tdi-bi.com]
Sent: Monday, September 16, 2013 5:38 PM
To: 'Donell Frank'; Parmelee, Rhiannon; Mott, Lyndi
Cc: Patel, Dakshesh; Zumbuhl, Albert; Barrick, Stephen; Tomlinson, Lisa; Chandler, Jennifer; tommcdonald@tdi-bi.com
Subject: RE: PAH data for sediments Report 13-3119

Lyndi,

We do have one issue with sample ARC1933.D (SED-DA-023 (2.0-3.0)) surrogate recoveries for all surrogates are under 10% and normally warrant a re-extraction. Due to the time crunch we have reported the results with this report but need an ok from you if we should continue with re-extraction/analysis for this one sample.

Juan

Juan Ramirez
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Web Site: http://tdi-bi.com/

From: Donell Frank [mailto:donellfrank@tdi-bi.com]
Sent: Monday, September 16, 2013 5:19 PM
To: Parmelee, Rhiannon; Mott, Lyndi
Cc: Patel, Dakshesh; Zumbuhl, Albert; Barrick, Stephen; juanramirez@tdi-bi.com; Tomlinson, Lisa; Chandler, Jennifer; tommcdonald@tdi-bi.com
Subject: PAH data for sediments Report 13-3119

All,

Attached is another data file for PAH sediments. Only 1 sediment and 1 water set left. Please let me know if you have any concerns

or questions.

Please let me know when you receive this report.

Thank you,

Donell

Donell S. Frank
Project Manager

Please note new address:

TDI-Brooks International, Inc. / B&B Laboratories, Inc.
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College Station, TX 77845
USA

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Fax : (979) 693-6389

email: DonellFrank@tdi-bi.com

Web Site: http://www.tdi-bi.com/

Laboratory Bench Sheet Logs

B&B LABORATORIES ENVIRONMENTAL EXTRACTION LOG

MATRIX: ☐ OTHER ☐ WATER ☒ SEDIMENT ☐ TISSUE

Job #: J13034 SDG #: 1308090l, 1308130

Client: Arcadis - Mayflower AR

Analysis: ☒ PAH ☐ PESTS ☐ PCB ~~☒ ALL~~ CK 9/20

Other: ~~TPH~~ CK 9/20 44 analytes

Extraction Solvent: DCM

Final Solvent: DCM Final Volume: 1.0 mL

Lipids Y (N) | Dry Wt. (Y) N | Copper (Y) N | EOM (Y) N | Columns (Y) N | Long (Short)

Surrogate: 100 µL PAH: AR-WKSU-2500-003 Pest/PCB: — Aliphatic: AL-WKSU-200-001 Other: —

Spike: 100 µL PAH: AR-WKSU-1000-026 Pest/PCB: — Aliphatic: AL-WKSU-1000-020 Other: —

GC Int Std: 100 µL PAH: AR-WKIS-2500-003 Pest/PCB: — Aliphatic: AL-WKIS-500-002 Other: —

Turbo Vap II: Bath T (C): Pressure (>20psi): Check Water Level: Turbo Vap Date:

General Comments:

Report 13-3129 ASE 3

	Added	Witness
Surrogate:	8/21/13 GS	8/21/13 CK
Spike:	8/21/13 GS	8/21/13 CK
Internal:	9/20/13 CK	9-20-13

	Sample Name	Client ID	Wet Wt. (g or L)	Dry Wt. %	Dry Wt. (g)	Extraction Comments	Internal Chain of Custody: Extraction Prep	Extraction	Concentration	Short Columns
1	ENV3091A	Procedural Blank	—	—	—					
2	ENV3091B	SRM 1941b	4.15	97.61	4.05		8/21/13 CK	8/21/13 CK	9-20-13	9-20-13
3	ENV3091C	Matrix Spike (ARC1736)	17.13	87.60	15.01					
4	ENV3091D	Matrix Spike Dup (ARC1737)	20.33	74.86	15.22					
5	ENV3091E	Duplicate (ARC1738)	20.55	73.20	~~15.04~~	15.04g original for MS/MSD		8/22/13 CK		
6	ARC1735	SO-DA-019 (0-0.5)	17.99	84.21	15.15					
7	ARC1738	SO-DA-019 (0.5-1.0)	20.72	73.20	15.17					
8	ARC1739	SO-DA-019 (1.0-1.5)	17.66	85.52	15.10					
9	ARC1740	SO-DA-019 (1.5-2.0)	17.55	86.90	15.25					
10	ARC1741	SO-DA-019 (2.0-3.0)	19.47	78.13	15.21					
11	ARC1742	SO-DA-019 (3.0-4.0)	17.84	84.43	15.06					
12	ARC1746	SO-DA-021 (1.5-2.0)	19.75	~~77.26~~ 77.27 CK	15.26					

ENV 3091

B&B LABORATORIES ENVIRONMENTAL EXTRACTION LOG

	Sample Name	Client ID	Wet Wt. (g or L)	Dry Wt. %	Dry Wt. (g)	Extraction Comments
13	ARC1747	SO-DA-021 (2.0-3.0)	18.36	81.76	15.01	
14	ARC1748	SO-DA-021 (3.0-4.0)	19.67	77.56	15.26	
15	ARC1752	SO-DA-023 (1.5-2.0)	19.77	76.68	15.16	
16	ARC1753	SO-DA-023 (2.0-3.0)	17.58	86.11	15.14	
17	ARC1754	SO-DA-023 (3.0-4.0)	17.48	86.25	15.08	
18	ARC1787	SED-DA-021 (1.5-2.0)	19.62	77.54	15.21	
19	ARC1788	SED-DA-021 (2.0-3.0)	18.80	80.86	15.20	
20	ARC1789	SED-DA-021 (3.0-3.3)	18.66	80.65	15.05	
21	ARC1831	SED-DA-019 (1.5-2.0)	19.84	76.57	15.19	
22						
23						
24						

Internal Chain of Custody

Concentration Short Columns — Date: 9-20-13 / Date: 9-20-13 — Initials: EM / Initials: EM

Columns SA1 — Date: / Date: — Initials: / Initials:

Concentration SA1 — Date: / Date: — Initials: / Initials:

Columns SA2 — Date: / Date: — Initials: / Initials:

Concentration SA2 — Date: / Date: — Initials: / Initials:

Transfer for HPLC — Date: / Date: — Initials: / Initials:

HPLC — Date: / Date: — Initials: / Initials:

Post-HPLC Concentration — Date: / Date: — Initials: / Initials:

Final Extract Transfer — Date: 9-20-13 — Initials: EM

Dry Weight Page

DRY 1361, 1363, 1365

Lipid/EOM Page

EOM 1047

Clean-up/Separation/Other Columns

—

Lot Numbers

DCM: 52314
Hexane: —
Hydromatrix: —
Water: DI984-13
Silica: BCBJ9493V
Alumina: VA26EZEMS
Sodium Sulfate: VI11H
Pentane: —
Copper: 212201-AW
Hydrochloric Acid: —
SPE Columns: —
Other: —

Sample Storage Box #

J13034-5

HPLC Storage Box #

—

QC Review

Date	Initials
9/20/13	JK

Copied to Folders

9/20/13 CK

MATRIX
☐ OTHER
☒ SEDIMENT
☐ TISSUE
Type: Soil

Job #: J13034 SDG #: 13080901
Client: Arcadis - Mayflower AR

General comments:

Lab Mananger		Date/Init: ☒ Bal. Cal.	Beaker + Dry Smpl (g)		Date/Init:
Date: 8/13/13	Init:	8/13/13 CSS	Date/Init: 8/14/13 CSS ☒ Bal. Cal.	Date/Init: 8/14/13 CSS ☒ Bal. Cal.	8/15/13 CK

	Sample Name	Client ID	Beaker Wt (g)	Beaker + Wet Smpl (g)	1	2	(%) Dry Weight	Comments
1	ARC1735	SO-DA-019 (0-0.5)	1.31	2.45	2.26	2.27	84.21	
2	ARC1736	SO-DA-019 (0-0.5) MS	1.30	2.51	2.36	2.34	87.60	
3	ARC1737	SO-DA-019 (0-0.5) MSD	1.31	3.06	2.63	2.62	74.86	
4	ARC1738	SO-DA-019 (0.5-1.0)	1.30	2.83	2.43	2.42	73.20	
5	ARC1739	SO-DA-019 (1.0-1.5)	1.31	2.76	2.55	2.55	85.52	
6	ARC1740	SO-DA-019 (1.5-2.0)	1.27	2.72	2.52	2.53	86.90	
7	ARC1741	SO-DA-019 (2.0-3.0)	1.30	3.54	3.04	3.05	78.13	
8	ARC1742	SO-DA-019 (3.0-4.0)	1.29	2.51	2.32	2.32	84.43	
9	ARC1746	SO-DA-021 (1.5-2.0)	1.30	2.62	2.33	2.32	77.27	
10	ARC1747	SO-DA-021 (2.0-3.0)	1.30	3.00	2.69	2.69	81.76	
11	ARC1748	SO-DA-021 (3.0-4.0)	1.31	3.36	2.90	2.90	77.56	
12	ARC1752	SO-DA-023 (1.5-2.0)	1.31	3.54	3.05	3.02	76.68	
13	ARC1753	SO-DA-023 (2.0-3.0)	1.31	3.11	2.87	2.86	86.11	
14	ARC1754	SO-DA-023 (3.0-4.0)	1.32	2.92	2.69	2.70	86.25	
15	ARC1757	SO-DA-024 (1.0-1.5)	1.30	2.61	2.37	2.39	83.21	
16	ARC1758	SO-DA-027 (0-0.5)	1.32	2.40	2.23	2.25	84.26	

DRY 1361

B&B LABORATORIES % DRY WEIGHT LOGBOOK

					Beaker + Dry Smpl (g) Date/Init: 8/14/13 CSS ☒ Bal. Cal.	Beaker + Dry Smpl (g) Date/Init: 8/15/13 CSS ☒ Bal. Cal.		
	Sample Name	Client ID	Beaker Wt (g)	Beaker + Wet Smpl (g)	1	2	(%) Dry Weight	Comments
17	ARC1759	SO-DA-027 (0.5-1.0)	1.33	2.57	2.44	2.62	78.66	
18	ARC1760	SO-DA-027 (1.0-1.5)	1.32	3.20	2.76	2.77	77.13	
19	ARC1761	SO-DA-DUP-05-080813	1.31	2.38	~~2.17~~ CSS	2.13	76.64	2.13g
20	ARC1735 Dup	Duplicate	1.30	2.36	2.21	2.22	86.79	
21								
22								
23								
24								

$$\%\ \text{Dry Weight} = \frac{[\text{Beaker + Dry SMPL (g)}] - [\text{Beaker Weight (g)}]}{[\text{Beaker + Wet SMPL (g)}] - [\text{Beaker Weight (g)}]} \times 100$$

$$\text{RPD} = \frac{[\text{Original \% Dry Weight Value} - \text{Duplicate \% Dry Weight Value}]}{[\text{Original \% Dry Weight Value} + \text{Duplicate \% Dry Weight Value}] \times 0.5} \times 100$$

The Relative Percent Difference (RPD) between duplicates must be ≤ 25%.

Date / Init.	RPD
8/15/13 CK	3.02 %
Sample # ARC1735	
Duplicate # ARC1735 Dup	

DRY 1361

B&B LABORATORIES % DRY WEIGHT LOGBOOK

MATRIX
- ☐ OTHER
- ☒ SEDIMENT
- ☐ TISSUE Type

Job #: 513034 SDG #: 13081301

Client: Arcadis - Mayflower AR

General comments:

Lab Mananger		Date/Init: ☒ Bal. Cal.	Beaker + Dry Smpl (g)		Date/Init:
Date: 8/21/13	Init:	8/14/13 CSD	Date/Init: 8/14/13 CSD ☒ Bal. Cal.	Date/Init: 8/16/13 HA ☑ Bal. Cal.	8/19/13 CK

	Sample Name	Client ID	Beaker Wt (g)	Beaker + Wet Smpl (g)	1	2	(%) Dry Weight	Comments
1	ARC 1784	SED-DA-021 (0-0.5)	1.31	2.36	1.64	1.63	30.48	
2	ARC 1787	SED-DA-021 (1.5-2.0)	1.31	3.67	3.14	3.14	77.54	
3	ARC 1788	SED-DA-021 (2.0-3.0)	1.30	3.39	2.99	2.99	80.86	
4	ARC 1789	SED-DA-021 (3.0-3.3)	1.31	2.86	2.56	2.56	80.65	
5	ARC 1790	SED-DA-042 (0-0.5)	1.31	2.49	1.92	1.92	51.69	
6	ARC 1791	SED-DA-042 (0-0.5) MS	1.31	2.43	1.72	1.72	36.61	
7	ARC 1792	SED-DA-042 (0-0.5) MSD	1.33	2.60	1.90	1.90	44.88	
8	ARC 1795	SED-DA-046 (0-0.5)	1.32	2.87	2.22	2.27	61.29	
9	ARC 1798	SED-DA-049 (0-0.5)	1.32	2.95	1.95	1.95	38.65	
10	ARC 1801	SED-DA-043 (0-0.5)	1.31	2.79	2.20	2.20	60.14	
11	ARC 1804	SED-DA-044 (0-0.5)	1.31	2.96	2.17	2.16	51.52	
12	ARC 1806	SED-DA-044 (1.0-1.5)	1.31	3.14	2.74	2.74	77.30	
13	ARC 1807	SED-DA-047 (0-0.5)	1.30	2.97	2.31	2.31	60.48	
14	ARC 1808	SED-DA-047 (0.5-1.0)	1.31	2.92	2.42	2.42	68.94	
15	ARC 1809	SED-DA-047 (1.0-1.5)	1.31	2.88	2.49	2.49	75.16	
16	ARC 1810	SED-DA-048 (0-0.5)	1.29	3.35	2.25	2.24	46.12	

DRY 1363

B&B LABORATORIES % DRY WEIGHT LOGBOOK

					Beaker + Dry Smpl (g) Date/Init: 8/14/13 CSS ☑ Bal. Cal.	Beaker + Dry Smpl (g) Date/Init: 8/16/13 HA ☑ Bal. Cal.		
	Sample Name	Client ID	Beaker Wt (g)	Beaker + Wet Smpl (g)	1	2	(%) Dry Weight	Comments
17	ARC 1811	SED-DA-048(0-0.5)MS	1.31	2.86	2.05	2.03	46.45	
18	ARC 1812	SED-DA-048(0-0.5)MSD	1.32	3.14	2.24	2.24	50.55	
19	ARC 1813	SED-DA-048(0.5-1.0)	1.31	2.68	2.25	2.25	68.61	
20	ARC 1814	SED-DA-048(1.0-1.5)	1.30	3.33	2.82	2.82	74.88	
21	ARC 1815	SED-DA-DUP-07-081213	1.33	~~2.33~~	2.00	2.00	63.81	2.38g
22	ARC 1787 DUP	Duplicate	1.30	3.08	2.68	2.68	77.53	
23								
24								

$$\%\ \text{Dry Weight} = \frac{[\text{Beaker + Dry SMPL (g)}] - [\text{Beaker Weight (g)}]}{[\text{Beaker + Wet SMPL (g)}] - [\text{Beaker Weight (g)}]} \times 100$$

$$\text{RPD} = \frac{[\text{Original \% Dry Weight Value} - \text{Duplicate \% Dry Weight Value}]}{[\text{Original \% Dry Weight Value} + \text{Duplicate \% Dry Weight Value}] \times 0.5} \times 100$$

The Relative Percent Difference (RPD) between duplicates must be ≤ 25%.

Date / Init.	RPD
8/19/13 CK	0.018%
Sample # ARC1787	
Duplicate # ARC1787 Dup	

DRY 1363

B&B LABORATORIES % DRY WEIGHT LOGBOOK

MATRIX
- ☐ OTHER
- ☒ SEDIMENT
- ☐ TISSUE Type

Job #: J13034 SDG #: 1308130l

Client: Arcadis - Mayflower AR

General comments:

Lab Mananger		Date/Init: ☒ Bal. Cal.	Beaker + Dry Smpl (g)		Date/Init:
Date: 8/21/13	Init:	8/15/13 ds	Date/Init: 8/16/13 HA ☒ Bal. Cal.	Date/Init: 8/19/13 HA ☑ Bal. Cal.	8/21/13 CK

	Sample Name	Client ID	Beaker Wt (g)	Beaker + Wet Smpl (g)	1	2	(%) Dry Weight	Comments
1	ARC1816	SED-DA-045 (0-0.5)	1.31	2.80	2.06	2.06	50.34	
2	ARC1817	SED-DA-045 (0.5-1.0)	1.30	3.11	2.37	2.37	59.12	
3	ARC1818	SED-DA-052 (0-0.5)	1.31	2.55	1.80	1.80	39.52	
4	ARC1819	SED-DA-052 (0.5-1.0)	1.30	3.49	2.77	2.77	67.12	
5	ARC1820	SED-DA-052 (1.0-1.5)	1.29	2.91	2.48	2.48	73.46	
6	ARC1821	SED-DA-DUP-06-081013	1.31	2.99	1.77	1.76	26.79	
7	ARC1822	SED-DA-018 (0-0.5)	1.32	2.70	1.68	1.67	25.36	
8	ARC1823	SED-DA-018 (0.5-1.0)	1.30	2.57	1.76	1.76	36.22	
9	ARC1824	SED-DA-018 (1.0-1.5)	1.31	3.40	2.74	2.74	68.42	
10	ARC1825	SED-DA-018 (1.5-2.0)	1.31	3.34	2.86	2.86	76.35	
11	ARC1826	SED-DA-019 (0-0.5)	1.31	2.47	1.49	1.48	14.66	
12	ARC1827	SED-DA-019 (0-0.5) MS	1.31	2.33	1.46	1.46	14.71	
13	ARC1828	SED-DA-019 (0-0.5) MSD	1.31	2.48	1.47	1.47	13.68	
14	ARC1829	SED-DA-019 (0.5-1.0)	1.29	3.25	1.97	1.97	34.69	
15	ARC1830	SED-DA-019 (1.0-1.5)	1.31	3.29	2.74	2.73	71.72	
16	ARC1831	SED-DA-019 (1.5-2.0)	1.32	3.07	2.66	2.66	76.57	

DRY 1365

B&B LABORATORIES % DRY WEIGHT LOGBOOK

					Beaker + Dry Smpl (g) Date/Init: 8/16/13 HA ☒ Bal. Cal.	Beaker + Dry Smpl (g) Date/Init: 8/19/13 HA ☑ Bal. Cal.		
	Sample Name	Client ID	Beaker Wt (g)	Beaker + Wet Smpl (g)	1	2	(%) Dry Weight	Comments
17	ARC1831 Dup	Duplicate	1.30	3.88	3.28	3.28	76.74	
18								
19								
20								
21								
22								
23								
24								

$$\%\ \text{Dry Weight} = \frac{[\text{Beaker + Dry SMPL (g)}] - [\text{Beaker Weight (g)}]}{[\text{Beaker + Wet SMPL (g)}] - [\text{Beaker Weight (g)}]} \times 100$$

$$\text{RPD} = \frac{[\text{Original \% Dry Weight Value} - \text{Duplicate \% Dry Weight Value}]}{[\text{Original \% Dry Weight Value} + \text{Duplicate \% Dry Weight Value}] \times 0.5} \times 100$$

The Relative Percent Difference (RPD) between duplicates must be ≤ 25%.

Date / Init.	RPD
8/21/13 CK	0.225 %
Sample # ARC1831	
Duplicate # ARC1831 Dup	

DRY 1365

MATRIX: OTHER, (SEDIMENT), WATER

Job #: J13034 SDG #: 13080901, 13081301

Client: Arcadis - Mayflower AR

General comments:

Lab Manager Date/Int: 9/20/13

Transferred by Date/Int: 9/20/13 CK
From ENV Pg: ENV3091
From DRY Pg: DRY1361, 1363, 1365

Date/Int: 9.20-13 EW

Bal. Cal. ✓

Date/Int: 9/20/13 CK

	Sample Name	Client ID	Smpl Wt./Vol (g/L) Wet Wt. (Dry Wt)	Dry Wt. (%)	Final Extract Vol (mL)	Initial Filter Wt (mg)	Filter & Sample Wt (mg)	Wt. of 100 µl EOM Wt. (mg)	EOM µg/g (Wet Wt. Basis)	EOM µg/g (Dry Wt. Basis)	Comments
1	ENV3091A	Procedural Blank	—	—	3	30.232	30.232	0.000	—	—	
2	ENV3091B	SRM 1941b	4.05	97.61	3	29.718	29.884	0.166	1200	1230	
3	ENV3091C	Matrix Spike (ARC1736)	15.01	87.60	3	30.320	31.182	0.862	1509	1723	
4	ENV3091D	Matrix Spike Dup (ARC1737) ok 9/20	15.22	74.86	3	30.195	31.093	0.898	1325	1770	
5	ENV3091E	Duplicate (ARC1738) ok 9/20	15.04	73.20	3	29.830	30.580	0.750	1095	1496	
6	ARC1735	SO-DA-019 (0-0.5)	15.15	84.21	3	30.250	31.133	0.883	1472	1749	
7	ARC1738	SO-DA-019 (0.5-1.0)	15.17	73.20	3	29.916	30.632	0.716	1037	1416	
8	ARC1739	SO-DA-019 (1.0-1.5)	15.10	85.52	3	30.194	30.229	0.035	59	70	
9	ARC1740	SO-DA-019 (1.5-2.0)	15.25	86.90	3	30.355	30.395	0.040	68	79	
10	ARC1741	SO-DA-019 (2.0-3.0)	15.21	78.13	3	30.109	30.121	0.012	18	24	
11	ARC1742	SO-DA-019 (3.0-4.0)	15.06	84.43	3	30.237	30.256	0.019	32	38	
12	ARC1746	SO-DA-019 (1.5-2.0)	15.26	77.27	3	29.945	29.963	0.018	27	35	

EOM 1047

B&B LABORATORIES EOM LOGBOOK

	Sample Name	Client ID	Smpl Wt./Vol (g/L) Wet Wt. (Dry Wt.)	Dry Wt. (%)	Final Extract Vol (mL)	Initial Filter Wt (mg)	Filter & Sample Wt (mg)	Wt. of 100 µl EOM Wt. (mg)	EOM µg/g (Wet Wt. Basis)	EOM µg/g (Dry Wt. Basis)	Comments
13	ARC1747	SO-DA-021 (2.0-3.0)	15.01	81.76	3	30.230	30.247	0.017	28	34	
14	ARC1748	SO-DA-021 (3.0-4.0)	15.26	77.56	3	29.762	29.783	0.021	32	41	
15	ARC1752	SO-DA-023 (1.5-2.0)	15.16	76.68	3	29.853	29.890	0.037	56	73	
16	ARC1753	SO-DA-023 (2.0-3.0)	15.14	86.11	3	29.780	29.812	0.032	55	63	
17	ARC1754	SO-DA-023 (3.0-4.0)	15.08	86.25	3	29.992	30.063	0.071	122	141	
18	ARC1787	SED-DA-021 (1.5-2.0)	15.21	77.54	3	30.613	30.648	0.035	54	69	
19	ARC1788	SED-DA-021 (2.0-3.0)	15.20	80.86	3	30.220	30.227	0.007	11	14	
20	ARC1789	SED-DA-021 (3.0-3.3)	15.05	80.65	3	30.126	30.137	0.011	18	22	
21	ARC1831	SED-DA-019 (1.5-2.0)	15.19	76.57	3	30.663	30.679	0.016	24	32	
22											
23											
24											

$$EOM = \frac{(EOM\ Wt.\ (mg))\ (Final\ Extract\ Vol.\ (ml))}{(Smpl\ Wt/Vol.\ (g/L))\ (0.10\ ml)} \times 1000$$

$$\%RPD = \frac{(EOM_1 - EOM_2)}{(EOM_1 + EOM_2) \times 0.5} \times 100\%$$

	Initial Filter Wt (mg)	Filter & Sample Wt (mg)	Wt. of 100 µl Lipid Wt. (mg)
Solvent Blank	30.610	30.610	0.000
EOM Standard	30.049	40.000	9.951

EOM-WKLC-10-004

The Relative Percent Difference (RPD) between duplicates must be ≤ 25%.

Date/Int:	RPD
9/20/13 CK	5.49857
Sample: ARC1738	
Duplicate: ENV3091E	

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