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

Arcadis
Mayflower AR Project
(Contract # B0086003.1302)
September 20, 2013 Collection Date

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

(QC Batch ENV 3122)

October 9, 2013

Technical Report 13-3131

Arcadis
Mayflower AR Project
(Contract # B0086003.1302)
September 20, 2013 Collection Date
Table of Contents
B&B Laboratories
October 9, 2013

Heading Page Number

Narrative

Technical Report 13-3131
Arcadis
Mayflower AR Project
(Contract # B0086003.1302)
Water Samples
September 20, 2013 Collection Dates

October 9, 2013

Introduction

B&B Laboratories received a shipment of one (1) ice chest that was sent by Ryan Lewis of Arcadis using FedEx on September 23, 2013 and arrived on September 24, 2013 in College Station, Texas. The ice chest arrived sealed and in good condition.

Cooler Number	Temperature	Samples Received
1	3.5°C 2.7°C (Temp Blank)	Ten (10) 1L water samples in B/R amber bottles.

The water samples were collected on September 20, 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 water 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, and biological markers are included in this report.

Analytical Methods

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

Table 1. Standard Operating Procedures for each analytical test.

Matrix	Extraction	PAH
Water	B&B 1011	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 an "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
Water	ng/L

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	Water MDLs 1.0L, 1mL final extract ng/L
cis/trans Decalin	1.14
C1-Decalins	2.28
C2-Decalins	2.28
C3-Decalins	2.28
C4-Decalins	2.28
Naphthalene	2.91
C1-Naphthalenes	1.36
C2-Naphthalenes	5.82
C3-Naphthalenes	5.82
C4-Naphthalenes	5.82
Benzothiophene	1.29
C1-Benzothiophenes	2.57
C2-Benzothiophenes	2.57
C3-Benzothiophenes	2.57
C4-Benzothiophenes	2.57
Biphenyl	5.09
Acenaphthylene	1.17
Acenaphthene	1.44
Dibenzofuran	1.19
Fluorene	0.81
C1-Fluorenes	1.63
C2-Fluorenes	1.63
C3-Fluorenes	1.63
Carbazole	0.83
Anthracene	0.77
Phenanthrene	2.26
C1-Phenanthrenes/Anthracenes	0.70
C2-Phenanthrenes/Anthracenes	3.03
C3-Phenanthrenes/Anthracenes	3.03
C4-Phenanthrenes/Anthracenes	3.03
Dibenzothiophene	0.82
C1-Dibenzothiophenes	0.67
C2-Dibenzothiophenes	1.34
C3-Dibenzothiophenes	1.34
C4-Dibenzothiophenes	1.34
Fluoranthene	1.09
Pyrene	1.37
C1-Fluoranthenes/Pyrenes	2.47
C2-Fluoranthenes/Pyrenes	2.47
C3-Fluoranthenes/Pyrenes	2.47
C4-Fluoranthenes/Pyrenes	2.47
Naphthobenzothiophene	1.03
C1-Naphthobenzothiophenes	2.07
C2-Naphthobenzothiophenes	2.07
C3-Naphthobenzothiophenes	2.07
C4-Naphthobenzothiophenes	2.07
Benz(a)anthracene	0.74
Chrysene/Triphenylene	0.80
C1-Chrysenes	1.60

PAH (continued) Sample size Unit of measure	**Water MDLs** 1.0L, 1mL final extract ng/L
C2-Chrysenes	1.60
C3-Chrysenes	1.60
C4-Chrysenes	1.60
Benzo(b)fluoranthene	2.38
Benzo(k,j)fluoranthene	2.51
Benzo(a)fluoranthene	2.51
Benzo(e)pyrene	2.69
Benzo(a)pyrene	1.91
Perylene	0.63
Indeno(1,2,3-c,d)pyrene	1.39
Dibenzo(a,h)anthracene	1.14
Benzo(g,h,i)perylene	2.51
Individual Alkyl Isomers,TAS, and Hopanes	
2-Methylnaphthalene	1.10
1-Methylnaphthalene	1.42
2,6-Dimethylnaphthalene	0.70
1,6,7-Trimethylnaphthalene	0.67
1-Methylfluorene	1.47
4-Methyldibenzothiophene	0.97
2/3-Methyldibenzothiophene	0.97
1-Methyldibenzothiophene	0.97
3-Methylphenanthrene	0.94
2-Methylphenanthrene	0.94
2-Methylanthracene	0.94
4/9-Methylphenanthrene	0.94
1-Methylphenanthrene	0.94
3,6-Dimethylphenanthrene	1.67
Retene	1.59
2-Methylfluoranthene	1.15
Benzo(b)fluorene	1.37
C29-Hopane	8.19
18a-Oleanane	8.19
C30-Hopane	8.19
C20-TAS	2.60
C21-TAS	2.60
C26(20S)-TAS	2.60
C26(20R)/C27(20S)-TAS	2.60
C28(20S)-TAS	2.60
C27(20R)-TAS	2.60
C28(20R)-TAS	2.60

Quality Assurance/Quality Control - Waters

Polycyclic Aromatic Hydrocarbons (PAH)

The quality assurance/quality control procedure for this program included the analyses of a procedural blank, a blank spike/blank spike duplicate, and a matrix spike/matrix spike duplicate of no more than 20 samples. 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 blank spike/blank 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 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 - Waters

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

- No variances were observed.

Procedural Blank

Observation

- No variances were observed.

Blank Spike/Blank Spike Duplicate

Observation

- No variances were observed.

Matrix Spike/Matrix Spike Duplicate

Observation

- Phenanthrene, Fluoranthene, Pyrene, Chrysene/Triphenylene, Benzo(b)fluoranthene, Benzo(k,j)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, and Benzo(g,h,i)perylene were detected outside of the laboratory QC recovery limits of 40 to 120% in ENV3122D MS (BG2-WS-BKG-004 MS/MSD)) and ENV3122E MSD (BG2-WS-BKG-004 MS/MSD)).

Comment

- Phenanthrene, Fluoranthene, Pyrene, Chrysene/Triphenylene, Benzo(b)fluoranthene, Benzo(k,j)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, and Benzo(g,h,i)perylene are invalid spikes due to high native concentrations of PAHs in the samples and the original sample and the MS and MSD samples. These peaks are qualified with a "Y".

Laboratory Control Standard (Solution 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.

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 13-3131

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	ARC1972	BG1-WS-BKG-003	09/20/13	09/24/13	PAH	Water	1 of 2	13092402	B0086003.1302
2	ARC1976	BG2-WS-BKG-004 MS/MSD	09/20/13	09/24/13	PAH	Water	1 of 4, MS	13092402	B0086003.1302
3	ARC1977	BG2-WS-BKG-004 MS/MSD	09/20/13	09/24/13	PAH	Water	2 of 4, MSD	13092402	B0086003.1302
4	ARC1974	BG2-WS-BKG-004	09/20/13	09/24/13	PAH	Water	1 of 2	13092402	B0086003.1302
5	ARC1980	BG4-WS-BKG-006	09/20/13	09/24/13	PAH	Water	1 of 2	13092402	B0086003.1302

Water Samples

Polycyclic Aromatic Hydrocarbon Concentration

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1972.D	ARC1974.D	ARC1980.D
Client Name	BG1-WS-BKG-003	BG2-WS-BKG-004	BG4-WS-BKG-006
Matrix	Water	Water	Water
Collection Date	09/20/13	09/20/13	09/20/13
Received Date	09/24/13	09/24/13	09/24/13
Extraction Date	09/26/13	09/26/13	09/26/13
Extraction Batch	ENV 3122	ENV 3122	ENV 3122
Date Acquired	10/2/13 14:16	10/2/13 15:22	10/2/13 16:28
Method	PAH-2012.M	PAH-2012.M	PAH-2012.M
Sample Volume (L)	1.0	1.1	0.9
% Dry	NA	NA	NA
% Moisture	NA	NA	NA
Dilution	1X	1X	1X

Target Compounds	Su. Corrected Conc. (ng/L)	Q	Su. Corrected Conc. (ng/L)	Q	Su. Corrected Conc. (ng/L)	Q
cis/trans Decalin	<1.1	U	84.7		<1.3	U
C1-Decalins	<2.3	U	26.3		<2.6	U
C2-Decalins	<2.3	U	<2.3	U	<2.6	U
C3-Decalins	<2.3	U	<2.3	U	<2.6	U
C4-Decalins	<2.3	U	<2.3	U	<2.6	U
Naphthalene	106		44.9		116	
C1-Naphthalenes	3.89		5.12		2.44	
C2-Naphthalenes	<5.8	U	7.90		<6.6	U
C3-Naphthalenes	<5.8	U	<5.8	U	<6.6	U
C4-Naphthalenes	<5.8	U	<5.8	U	<6.6	U
Benzothiophene	<1.3	U	1.92		<1.5	U
C1-Benzothiophenes	<2.6	U	<2.6	U	<2.9	U
C2-Benzothiophenes	<2.6	U	<2.6	U	<2.9	U
C3-Benzothiophenes	<2.6	U	<2.6	U	<2.9	U
C4-Benzothiophenes	<2.6	U	<2.6	U	<2.9	U
Biphenyl	3.08	J	3.37	J	1.89	J
Acenaphthylene	1.70		11.5		0.700	J
Acenaphthene	4.12		11.1		0.851	J
Dibenzofuran	3.14		23.2		1.59	
Fluorene	6.08		22.3		1.73	
C1-Fluorenes	<1.6	U	<1.6	U	<1.8	U
C2-Fluorenes	<1.6	U	<1.6	U	<1.8	U
C3-Fluorenes	<1.6	U	<1.6	U	<1.8	U
Carbazole	5.46		153		1.43	
Anthracene	2.50		20.2		<0.9	U
Phenanthrene	24.1		360		5.65	
C1-Phenanthrenes/Anthracenes	5.71		77.3		3.40	
C2-Phenanthrenes/Anthracenes	<3	U	<3	U	<3.4	U
C3-Phenanthrenes/Anthracenes	<3	U	<3	U	<3.4	U
C4-Phenanthrenes/Anthracenes	<3	U	<3	U	<3.4	U
Dibenzothiophene	1.67		25.4		<0.9	U
C1-Dibenzothiophenes	2.83		11.4		<0.8	U
C2-Dibenzothiophenes	3.60		<1.3	U	2.41	
C3-Dibenzothiophenes	2.81		<1.3	U	<1.5	U
C4-Dibenzothiophenes	<1.3	U	<1.3	U	<1.5	U
Fluoranthene	24.6		1206		4.59	
Pyrene	11.2		658		4.55	
C1-Fluoranthenes/Pyrenes	6.72		225		3.36	
C2-Fluoranthenes/Pyrenes	<2.5	U	259		<2.8	U
C3-Fluoranthenes/Pyrenes	<2.5	U	90.7		<2.8	U
C4-Fluoranthenes/Pyrenes	<2.5	U	<2.5	U	<2.8	U
Naphthobenzothiophene	3.43		207		<1.2	U
C1-Naphthobenzothiophenes	5.99		78.6		<2.3	U
C2-Naphthobenzothiophenes	12.0		<2.1	U	<2.3	U
C3-Naphthobenzothiophenes	17.9		<2.1	U	<2.3	U
C4-Naphthobenzothiophenes	<2.1	U	<2.1	U	<2.3	U
Benz(a)anthracene	2.28		107		1.31	
Chrysene/Triphenylene	5.92		841		2.35	
C1-Chrysenes	3.29		147		3.01	
C2-Chrysenes	<1.6	U	70.2		<1.8	U
C3-Chrysenes	<1.6	U	<1.6	U	<1.8	U
C4-Chrysenes	<1.6	U	<1.6	U	<1.8	U
Benzo(b)fluoranthene	6.75		1268		1.81	J
Benzo(k,j)fluoranthene	1.46	J	356		0.346	J
Benzo(a)fluoranthene	0.451	J	39.1		<2.9	U
Benzo(e)pyrene	3.81		646		1.54	J
Benzo(a)pyrene	2.26		384		0.607	J
Perylene	0.847		76.1		<0.7	U
Indeno(1,2,3-c,d)pyrene	3.41		579		1.473	J
Dibenzo(a,h)anthracene	1.26		129		0.530	J
Benzo(g,h,i)perylene	4.76		631		2.19	J
Total PAHs	295		8889		165	

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1972.D	ARC1974.D	ARC1980.D
Client Name	BG1-WS-BKG-003	BG2-WS-BKG-004	BG4-WS-BKG-006
Matrix	Water	Water	Water
Collection Date	09/20/13	09/20/13	09/20/13
Received Date	09/24/13	09/24/13	09/24/13
Extraction Date	09/26/13	09/26/13	09/26/13
Extraction Batch	ENV 3122	ENV 3122	ENV 3122
Date Acquired	10/2/13 14:16	10/2/13 15:22	10/2/13 16:28
Method	PAH-2012.M	PAH-2012.M	PAH-2012.M
Sample Volume (L)	1.0	1.1	0.9
% Dry	NA	NA	NA
% Moisture	NA	NA	NA
Dilution	1X	1X	1X

Target Compounds	Su. Corrected Conc. (ng/L)	Q	Su. Corrected Conc. (ng/L)	Q	Su. Corrected Conc. (ng/L)	Q
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	2.24		3.38		2.11	
1-Methylnaphthalene	3.83		4.59		1.68	
2,6-Dimethylnaphthalene	<0.7	U	1.60		<0.8	U
1,6,7-Trimethylnaphthalene	<0.7	U	<0.7	U	<0.8	U
1-Methylfluorene	<1.5	U	<1.5	U	<1.7	U
4-Methyldibenzothiophene	1.21		4.24		0.460	J
2/3-Methyldibenzothiophene	0.93	J	5.67		0.485	J
1-Methyldibenzothiophene	1.50		4.78		0.580	J
3-Methylphenanthrene	2.08		23.8		1.14	
2-Methylphenanthrene	2.59		36.1		1.41	
2-Methylanthracene	0.270	J	8.01		0.141	J
4/9-Methylphenanthrene	1.58		21.0		1.03	J
1-Methylphenanthrene	1.41		18.3		0.988	J
3,6-Dimethylphenanthrene	<1.7	U	<1.7	U	<1.9	U
Retene	<1.6	U	<1.6	U	<1.8	U
2-Methylfluoranthene	0.798	J	47.7		0.353	J
Benzo(b)fluorene	0.916	J	45.9		0.493	J
C29-Hopane	16.3		35.6		6.46	J
18a-Oleanane	<8.2	U	<8.2	U	<9.3	U
C30-Hopane	16.3		36.5		8.33	J
C20-TAS	<2.6	U	<2.6	U	<3	U
C21-TAS	<2.6	U	<2.6	U	<3	U
C26(20S)-TAS	<2.6	U	<2.6	U	<3	U
C26(20R)/C27(20S)-TAS	<2.6	U	<2.6	U	<3	U
C28(20S)-TAS	<2.6	U	<2.6	U	<3	U
C27(20R)-TAS	<2.6	U	<2.6	U	<3	U
C28(20R)-TAS	<2.6	U	<2.6	U	<3	U

Surrogate Recovery			
Naphthalene-d8	72	84	82
Acenaphthene-d10	79	89	82
Phenanthrene-d10	86	90	86
Chrysene-d12	83	92	86
Perylene-d12	85	90	86

Sample Name	ENV3122A.D
Client Name	Procedural Blank
Matrix	Water
Collection Date	NA
Received Date	NA
Extraction Date	09/26/13
Extraction Batch	ENV 3122
Date Acquired	10/2/13 8:45
Method	PAH-2012.M
Sample Volume (L)	1.0
% Dry	NA
% Moisture	NA
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/L)	Q	3X MDL	Actual MDL
cis/trans Decalin	<1.1	U	3.43	1.14
C1-Decalins	<2.3	U	6.85	2.28
C2-Decalins	<2.3	U	6.85	2.28
C3-Decalins	<2.3	U	6.85	2.28
C4-Decalins	<2.3	U	6.85	2.28
Naphthalene	3.91		8.72	2.91
C1-Naphthalenes	1.76		4.09	1.36
C2-Naphthalenes	<5.8	U	17.4	5.82
C3-Naphthalenes	<5.8	U	17.4	5.82
C4-Naphthalenes	<5.8	U	17.4	5.82
Benzothiophene	<1.3	U	3.86	1.29
C1-Benzothiophenes	<2.6	U	7.72	2.57
C2-Benzothiophenes	<2.6	U	7.72	2.57
C3-Benzothiophenes	<2.6	U	7.72	2.57
C4-Benzothiophenes	<2.6	U	7.72	2.57
Biphenyl	1.034	J	15.27	5.09
Acenaphthylene	<1.2	U	3.52	1.17
Acenaphthene	<1.4	U	4.31	1.44
Dibenzofuran	1.185	J	3.57	1.19
Fluorene	0.692	J	2.44	0.81
C1-Fluorenes	<1.6	U	4.88	1.63
C2-Fluorenes	<1.6	U	4.88	1.63
C3-Fluorenes	<1.6	U	4.88	1.63
Carbazole	<0.8	U	2.50	0.833
Anthracene	<0.8	U	2.30	0.767
Phenanthrene	2.42		6.79	2.26
C1-Phenanthrenes/Anthracenes	<0.7	U	2.10	0.701
C2-Phenanthrenes/Anthracenes	<3	U	9.09	3.03
C3-Phenanthrenes/Anthracenes	<3	U	9.09	3.03
C4-Phenanthrenes/Anthracenes	<3	U	9.09	3.03
Dibenzothiophene	<0.8	U	2.47	0.824
C1-Dibenzothiophenes	<0.7	U	2.01	0.670
C2-Dibenzothiophenes	<1.3	U	4.02	1.34
C3-Dibenzothiophenes	<1.3	U	4.02	1.34
C4-Dibenzothiophenes	<1.3	U	4.02	1.34
Fluoranthene	0.9	J	3.28	1.09
Pyrene	1.2	J	4.12	1.37
C1-Fluoranthenes/Pyrenes	<2.5	U	7.41	2.47
C2-Fluoranthenes/Pyrenes	<2.5	U	7.41	2.47
C3-Fluoranthenes/Pyrenes	<2.5	U	7.41	2.47
C4-Fluoranthenes/Pyrenes	<2.5	U	7.41	2.47
Naphthobenzothiophene	<1	U	3.10	1.03
C1-Naphthobenzothiophenes	<2.1	U	6.20	2.07
C2-Naphthobenzothiophenes	<2.1	U	6.20	2.07
C3-Naphthobenzothiophenes	<2.1	U	6.20	2.07
C4-Naphthobenzothiophenes	<2.1	U	6.20	2.07
Benz(a)anthracene	<0.7	U	2.21	0.737
Chrysene/Triphenylene	<0.8	U	2.40	0.799
C1-Chrysenes	<1.6	U	4.80	1.60
C2-Chrysenes	<1.6	U	4.80	1.60
C3-Chrysenes	<1.6	U	4.80	1.60
C4-Chrysenes	<1.6	U	4.80	1.60
Benzo(b)fluoranthene	<2.4	U	7.15	2.38
Benzo(k,j)fluoranthene	<2.5	U	7.53	2.51
Benzo(a)fluoranthene	<2.5	U	7.53	2.51
Benzo(e)pyrene	<2.7	U	8.08	2.69
Benzo(a)pyrene	<1.9	U	5.74	1.91
Perylene	<0.6	U	1.90	0.63
Indeno(1,2,3-c,d)pyrene	<1.4	U	4.18	1.39
Dibenzo(a,h)anthracene	<1.1	U	3.41	1.14
Benzo(g,h,i)perylene	<2.5	U	7.53	2.51
Total PAHs	13.1			

Sample Name	ENV3122A.D
Client Name	Procedural Blank
Matrix	Water
Collection Date	NA
Received Date	NA
Extraction Date	09/26/13
Extraction Batch	ENV 3122
Date Acquired	10/2/13 8:45
Method	PAH-2012.M
Sample Volume (L)	1.0
% Dry	NA
% Moisture	NA
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/L)	Q	3X MDL	Actual MDL
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	1.71		3.31	1.10
1-Methylnaphthalene	1.01	J	4.26	1.42
2,6-Dimethylnaphthalene	<0.7	U	2.09	0.696
1,6,7-Trimethylnaphthalene	<0.7	U	2.00	0.668
1-Methylfluorene	<1.5	U	4.41	1.47
4-Methyldibenzothiophene	<1	U	2.90	0.966
2/3-Methyldibenzothiophene	<1	U	2.90	0.966
1-Methyldibenzothiophene	<1	U	2.90	0.966
3-Methylphenanthrene	<0.9	U	2.82	0.939
2-Methylphenanthrene	<0.9	U	2.82	0.939
2-Methylanthracene	<0.9	U	2.82	0.939
4/9-Methylphenanthrene	<0.9	U	2.82	0.939
1-Methylphenanthrene	<0.9	U	2.82	0.939
3,6-Dimethylphenanthrene	<1.7	U	5.01	1.67
Retene	<1.6	U	4.78	1.59
2-Methylfluoranthene	<1.1	U	3.44	1.15
Benzo(b)fluorene	<1.4	U	4.12	1.37
C29-Hopane	<8.2	U	24.58	8.19
18a-Oleanane	<8.2	U	24.58	8.19
C30-Hopane	<8.2	U	24.58	8.19
C20-TAS	<2.6	U	7.80	2.60
C21-TAS	<2.6	U	7.80	2.60
C26(20S)-TAS	<2.6	U	7.80	2.60
C26(20R)/C27(20S)-TAS	<2.6	U	7.80	2.60
C28(20S)-TAS	<2.6	U	7.80	2.60
C27(20R)-TAS	<2.6	U	7.80	2.60
C28(20R)-TAS	<2.6	U	7.80	2.60

Surrogate Recovery	
Naphthalene-d8	77
Acenaphthene-d10	83
Phenanthrene-d10	83
Chrysene-d12	84
Perylene-d12	83

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Blank Spike Report

Sample Name	ENV3122B.D	ENV3122C.D
Client Name	Blank Spike	Blank Spike Dupl.
Matrix	Water	Water
Collection Date	NA	NA
Received Date	NA	NA
Extraction Date	09/26/13	09/26/13
Extraction Batch	ENV 3122	ENV 3122
Date Acquired	10/2/13 9:51	10/2/13 10:57
Method	PAH-2012.M	PAH-2012.M
Sample Volume (L)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/L)	Q	Recovery (%)	Q	Su. Corrected Conc. (ng/L)	Q	Recovery (%)	RPD (%)	Q	Spike amount (ng)
cis/trans Decalin	90.4		91		83.9		85	7		98.9
C1-Decalins	NA				NA					
C2-Decalins	NA				NA					
C3-Decalins	NA				NA					
C4-Decalins	NA				NA					
Naphthalene	103		103		104		104	1		100
C1-Naphthalenes	NA				NA					
C2-Naphthalenes	NA				NA					
C3-Naphthalenes	NA				NA					
C4-Naphthalenes	NA				NA					
Benzothiophene	96.1		97		98.1		99	2		99.4
C1-Benzothiophenes	NA				NA					
C2-Benzothiophenes	NA				NA					
C3-Benzothiophenes	NA				NA					
C4-Benzothiophenes	NA				NA					
Biphenyl	96.1		97		95.1		96	1		99.1
Acenaphthylene	91.4		92		89.5		90	2		99.2
Acenaphthene	97.9		98		98.2		98	0		100
Dibenzofuran	97.0		97		99.3		100	2		99.5
Fluorene	98		98		98		98	1		100
C1-Fluorenes	NA				NA					
C2-Fluorenes	NA				NA					
C3-Fluorenes	NA				NA					
Carbazole	97.0		98		92		93	5		99.1
Anthracene	91.3		91		84.1		84	8		100
Phenanthrene	96.9		98		98.2		99	1		99.1
C1-Phenanthrenes/Anthracenes	NA				NA					
C2-Phenanthrenes/Anthracenes	NA				NA					
C3-Phenanthrenes/Anthracenes	NA				NA					
C4-Phenanthrenes/Anthracenes	NA				NA					
Dibenzothiophene	93.2		95		94.2		96	1		98.6
C1-Dibenzothiophenes	NA				NA					
C2-Dibenzothiophenes	NA				NA					
C3-Dibenzothiophenes	NA				NA					
C4-Dibenzothiophenes	NA				NA					
Fluoranthene	102		102		101		101	1		100
Pyrene	103		103		104		104	1		100
C1-Fluoranthenes/Pyrenes	NA				NA					
C2-Fluoranthenes/Pyrenes	NA				NA					
C3-Fluoranthenes/Pyrenes	NA				NA					
C4-Fluoranthenes/Pyrenes	NA				NA					
Naphthobenzothiophene	99.1		99		100		100	1		101
C1-Naphthobenzothiophenes	NA				NA					
C2-Naphthobenzothiophenes	NA				NA					
C3-Naphthobenzothiophenes	NA				NA					
C4-Naphthobenzothiophenes	NA				NA					
Benz(a)anthracene	95.6		96		94.5		95	1		99.8
Chrysene/Triphenylene	94.9		95		98.1		99	3		99.4
C1-Chrysenes	NA				NA					
C2-Chrysenes	NA				NA					
C3-Chrysenes	NA				NA					
C4-Chrysenes	NA				NA					
Benzo(b)fluoranthene	97.4		97		96.9		97	1		100
Benzo(k,j)fluoranthene	108		108		104		104	4		99.6
Benzo(a)fluoranthene	NA				NA					
Benzo(e)pyrene	105		106		104		105	1		99.6
Benzo(a)pyrene	100		100		98.9		99	1		99.8
Perylene	98.8		99		98.5		98	0		100
Indeno(1,2,3-c,d)pyrene	94.4		96		96.8		98	2		98.3
Dibenzo(a,h)anthracene	94.2		95		95.0		96	1		99.1
Benzo(g,h,i)perylene	98.9		100		101		102	2		99.1
Average % Recovery			99				98			

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Blank Spike Report

Sample Name	ENV3122B.D	ENV3122C.D
Client Name	Blank Spike	Blank Spike Dupl.
Matrix	Water	Water
Collection Date	NA	NA
Received Date	NA	NA
Extraction Date	09/26/13	09/26/13
Extraction Batch	ENV 3122	ENV 3122
Date Acquired	10/2/13 9:51	10/2/13 10:57
Method	PAH-2012.M	PAH-2012.M
Sample Volume (L)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/L)	Q	Recovery (%)	Q	Su. Corrected Conc. (ng/L)	Q	Recovery (%)	Q	RPD (%)	Q	Spike amount (ng)
Individual Alkyl Isomers and Hopanes											
2-Methylnaphthalene	96.2		96		97.2		97		1		100
1-Methylnaphthalene	96.7		97		97.1		97		0		99.9
2,6-Dimethylnaphthalene	93.3		93		91.9		92		2		100
1,6,7-Trimethylnaphthalene	97.9		98		95.5		95		3		100
1-Methylfluorene	106		105		102		101		3		101
4-Methyldibenzothiophene	101		100		100		99		1		101
2/3-Methyldibenzothiophene	NA				NA						
1-Methyldibenzothiophene	NA				NA						
3-Methylphenanthrene	NA				NA						
2-Methylphenanthrene	NA				NA						
2-Methylanthracene	NA				NA						
4/9-Methylphenanthrene	NA				NA						
1-Methylphenanthrene	99.0		100		97.3		98		2		98.9
3,6-Dimethylphenanthrene	99.4		99		99.5		99		0		100
Retene	95.3		107		93.7		105		2		89.4
2-Methylfluoranthene	102		102		103		102		0		101
Benzo(b)fluorene	99.5		99		98.2		97		1		101
C29-Hopane	NA				NA						
18a-Oleanane	NA				NA						
C30-Hopane	109		109		106		106		3		100
C20-TAS	NA				NA						
C21-TAS	NA				NA						
C26(20S)-TAS	NA				NA						
C26(20R)/C27(20S)-TAS	109		109		105		105		3		100
C28(20S)-TAS	NA				NA						
C27(20R)-TAS	NA				NA						
C28(20R)-TAS	NA				NA						

Surrogate Recovery		
Naphthalene-d8	82	87
Acenaphthene-d10	85	86
Phenanthrene-d10	86	87
Chrysene-d12	84	87
Perylene-d12	87	87

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Matrix Spike Report

Sample Name	ARC1974.D	ENV3122D.D	ENV3122E.D
Client Name	BG2-WS-BKG-004	MS (BG2-WS-BKG-004 MS/MSD)	MSD (BG2-WS-BKG-004 MS/MSD)
Matrix	Water	Water	Water
Collection Date	09/20/13	09/20/13	09/20/13
Received Date	09/24/13	09/24/13	09/24/13
Extraction Date	09/26/13	09/26/13	09/26/13
Extraction Batch	ENV 3122	ENV 3122	ENV 3122
Date Acquired	10/2/13 15:22	10/2/13 12:03	10/2/13 13:10
Method	PAH-2012.M	PAH-2012.M	PAH-2012.M
Sample Volume (L)	1.1	0.9	1.1
% Dry	NA	NA	NA
% Moisture	NA	NA	NA
Dilution	1X	1X	1X

Target Compounds	Su. Corrected Conc. (ng/L)	Q	Su. Corrected Conc. (ng/L)	Q	Recovery (%)	Q	Q1	Su. Corrected Conc. (ng/L)	Q	Recovery (%)	Q	Q1	RPD (%)	Q	Spike Amount (ng)
cis/trans Decalin	84.7		163		62			145		63			12		98.9
C1-Decalins	26.3		NA					NA							
C2-Decalins	<2.3	U	NA					NA							
C3-Decalins	<2.3	U	NA					NA							
C4-Decalins	<2.3	U	NA					NA							
Naphthalene	44.9		180		119			151		111			17		100
C1-Naphthalenes	5.12		NA					NA							
C2-Naphthalenes	7.90		NA					NA							
C3-Naphthalenes	<5.8	U	NA					NA							
C4-Naphthalenes	<5.8	U	NA					NA							
Benzothiophene	1.9		99		91			87		90			13		99.4
C1-Benzothiophenes	<2.6	U	NA					NA							
C2-Benzothiophenes	<2.6	U	NA					NA							
C3-Benzothiophenes	<2.6	U	NA					NA							
C4-Benzothiophenes	<2.6	U	NA					NA							
Biphenyl	3.37	J	106		96			91.9		94			14		99.1
Acenaphthylene	11.5		89.0		71			81.7		74			9		99.2
Acenaphthene	11.1		106		87			98.8		92			7		100
Dibenzofuran	23.2		127		94			117		98			8		100
Fluorene	22.3		132		99			122		104			7		100
C1-Fluorenes	<1.6	U	NA					NA							
C2-Fluorenes	<1.6	U	NA					NA							
C3-Fluorenes	<1.6	U	NA					NA							
Carbazole	153		250		71			248		99			1		99.1
Anthracene	20.2		105		76			100		84			5		100
Phenanthrene	360		367		-40		Y	444		86		Y	19		99.1
C1-Phenanthrenes/Anthracenes	77.3		NA					NA							
C2-Phenanthrenes/Anthracenes	<3	U	NA					NA							
C3-Phenanthrenes/Anthracenes	<3	U	NA					NA							
C4-Phenanthrenes/Anthracenes	<3	U	NA					NA							
Dibenzothiophene	25.4		126		92			119		99			6		98.6
C1-Dibenzothiophenes	11.4		NA					NA							
C2-Dibenzothiophenes	<1.3	U	NA					NA							
C3-Dibenzothiophenes	<1.3	U	NA					NA							
C4-Dibenzothiophenes	<1.3	U	NA					NA							
Fluoranthene	1206		964		-381		Y	1161		-60		Y	18		100
Pyrene	658		554		-182		Y	674		10		Y	19		100
C1-Fluoranthenes/Pyrenes	225		NA					NA							
C2-Fluoranthenes/Pyrenes	259		NA					NA							
C3-Fluoranthenes/Pyrenes	90.7		NA					NA							
C4-Fluoranthenes/Pyrenes	<2.5	U	NA					NA							
Naphthobenzothiophene	207		NA					NA							
C1-Naphthobenzothiophenes	78.6		NA					NA							
C2-Naphthobenzothiophenes	<2.1	U	NA					NA							
C3-Naphthobenzothiophenes	<2.1	U	NA					NA							
C4-Naphthobenzothiophenes	<2.1	U	NA					NA							
Benz(a)anthracene	107		196		69			214		111			8		100
Chrysene/Triphenylene	841		701		-241		Y	775		-77		Y	10		99.4
C1-Chrysenes	147		NA					NA							
C2-Chrysenes	70.2		NA					NA							
C3-Chrysenes	<1.6	U	NA					NA							
C4-Chrysenes	<1.6	U	NA					NA							
Benzo(b)fluoranthene	1268		994		-419		Y	1229		-54		Y	21		100
Benzo(k,j)fluoranthene	356		327		-74		Y	378		19		Y	14		100
Benzo(a)fluoranthene	39.1		NA					NA							
Benzo(e)pyrene	646		548		-176		Y	662		10		Y	19		100
Benzo(a)pyrene	384		338		-93		Y	407		21		Y	19		100
Perylene	76.1		146		55			161		89			10		100
Indeno(1,2,3-c,d)pyrene	579		487		-164		Y	599		15		Y	21		98.3
Dibenzo(a,h)anthracene	129		200		50			220		94			9		99.1
Benzo(g,h,i)perylene	631		515		-191		Y	641		4		Y	22		99.1
Average % Recovery					9	*				70	*				

Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
Matrix Spike Report

Sample Name	ARC1974.D	ENV3122D.D	ENV3122E.D
Client Name	BG2-WS-BKG-004	MS (BG2-WS-BKG-004 MS/MSD)	MSD (BG2-WS-BKG-004 MS/MSD)
Matrix	Water	Water	Water
Collection Date	09/20/13	09/20/13	09/20/13
Received Date	09/24/13	09/24/13	09/24/13
Extraction Date	09/26/13	09/26/13	09/26/13
Extraction Batch	ENV 3122	ENV 3122	ENV 3122
Date Acquired	10/2/13 15:22	10/2/13 12:03	10/2/13 13:10
Method	PAH-2012.M	PAH-2012.M	PAH-2012.M
Sample Volume (L)	1.1	0.9	1.1
% Dry	NA	NA	NA
% Moisture	NA	NA	NA
Dilution	1X	1X	1X

Target Compounds	Su. Corrected Conc. (ng/L)	Q	Su. Corrected Conc. (ng/L)	Q	Recovery (%)	Q1	Su. Corrected Conc. (ng/L)	Q	Recovery (%)	Q1	RPD (%)	Q	Spike Amount (ng)
Individual Alkyl Isomers and Hopanes													
2-Methylnaphthalene	3.38		101		90		92.3		93		9		100
1-Methylnaphthalene	4.59		102		90		91.8		92		11		100
2,6-Dimethylnaphthalene	1.60		98.5		90		90.2		93		9		100
1,6,7-Trimethylnaphthalene	<0.7	U	104		96		96.8		102		7		100
1-Methylfluorene	<1.5	U	115		106		104		108		10		101
4-Methyldibenzothiophene	4.24		113		100		103		103		9		101
2/3-Methyldibenzothiophene	5.67		NA				NA						
1-Methyldibenzothiophene	4.78		NA				NA						
3-Methylphenanthrene	23.8		NA				NA						
2-Methylphenanthrene	36.1		NA				NA						
2-Methylanthracene	8.01		NA				NA						
4/9-Methylphenanthrene	21.0		NA				NA						
1-Methylphenanthrene	18.3		119		92		110		97		8		98.9
3,6-Dimethylphenanthrene	<1.7	U	123		114		107		112		13		100
Retene	<1.6	U	105		109		101		118		4		89.4
2-Methylfluoranthene	47.7		144		83		145		101		0		101
Benzo(b)fluorene	45.9		150		90		142		99		5		101
C29-Hopane	35.6		NA				NA						
18a-Oleanane	<8.2	U	NA				NA						
C30-Hopane	36.5		NA				NA						
C20-TAS	<2.6	U	NA				NA						
C21-TAS	<2.6	U	NA				NA						
C26(20S)-TAS	<2.6	U	NA				NA						
C26(20R)/C27(20S)-TAS	<2.6	U	117		109		105		111		10		100
C28(20S)-TAS	<2.6	U	NA				NA						
C27(20R)-TAS	<2.6	U	NA				NA						
C28(20R)-TAS	<2.6	U	NA				NA						

Surrogate Recovery			
Naphthalene-d8	84	78	75
Acenaphthene-d10	89	82	83
Phenanthrene-d10	90	86	87
Chrysene-d12	92	88	88
Perylene-d12	90	86	87

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

Sample Name	MS50171K.D
Client Name	AR-SRM2779-WK-4.0-003
Matrix	Gulf of Mexico Crude Oil
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3122
Date Acquired	10/2/13 7:38
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	847						
C1-Decalins	1289						
C2-Decalins	1083						
C3-Decalins	968						
C4-Decalins	662						
Naphthalene	895			5	855 ± 46	647	1081
C1-Naphthalenes	1927						
C2-Naphthalenes	2385						
C3-Naphthalenes	1568						
C4-Naphthalenes	880						
Benzothiophene	10.9						
C1-Benzothiophenes	39.6						
C2-Benzothiophenes	36.7						
C3-Benzothiophenes	41.1						
C4-Benzothiophenes	28.0						
Biphenyl	208						
Acenaphthylene	9.10	J					
Acenaphthene	20.9						
Dibenzofuran	32.9						
Fluorene	145						
C1-Fluorenes	316						
C2-Fluorenes	477						
C3-Fluorenes	315						
Carbazole	6.4	J					
Anthracene	3.0	J		12	3.42 ± 0.59	2.26	4.81
Phenanthrene	295			13	258 ± 27	185	342
C1-Phenanthrenes/Anthracenes	684						
C2-Phenanthrenes/Anthracenes	762						
C3-Phenanthrenes/Anthracenes	492						
C4-Phenanthrenes/Anthracenes	248						
Dibenzothiophene	55.2			6	51.8 ± 2.1	39.8	64.7
C1-Dibenzothiophenes	150						
C2-Dibenzothiophenes	212						
C3-Dibenzothiophenes	123						
C4-Dibenzothiophenes	69.2						
Fluoranthene	4.68	J		7	4.36 ± 0.40	3.17	5.71
Pyrene	18.2			21	14.81 ± 0.39	11.5	18.2
C1-Fluoranthenes/Pyrenes	73						
C2-Fluoranthenes/Pyrenes	130						
C3-Fluoranthenes/Pyrenes	144						
C4-Fluoranthenes/Pyrenes	89						
Naphthobenzothiophene	40.6						
C1-Naphthobenzothiophenes	69.2						
C2-Naphthobenzothiophenes	101.2						
C3-Naphthobenzothiophenes	63.3						
C4-Naphthobenzothiophenes	34.3						
Benz(a)anthracene	6.90	J		2	7.03 ± 0.85	4.94	9.5
Chrysene/Triphenylene	50.4			6	47.4 ± 1.7	36.6	58.9
C1-Chrysenes	129						
C2-Chrysenes	158						
C3-Chrysenes	94						
C4-Chrysenes	68.9						
Benzo(b)fluoranthene	5.52	J		2	5.62 ± 0.34	4.22	7.15
Benzo(k,j)fluoranthene	0.84	J					
Benzo(a)fluoranthene	<10	U					
Benzo(e)pyrene	11.5			7	10.78 ± 0.60	8.14	13.7
Benzo(a)pyrene	1.63	J					
Perylene	0.818	J					
Indeno(1,2,3-c,d)pyrene	0.730	J					
Dibenzo(a,h)anthracene	0.488	J		16	0.574 ± 0.091	0.386	0.798
Benzo(g,h,i)perylene	2.23	J		6	2.11 ± 0.26	1.48	2.84
Total PAHs	18582						

Sample Name	MS50171K.D
Client Name	AR-SRM2779-WK-4.0-003
Matrix	Gulf of Mexico Crude Oil
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3122
Date Acquired	10/2/13 7:38
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	1796		10	1630 ± 50	1264	2016
1-Methylnaphthalene	1191		4	1140 ± 20	896	1392
2,6-Dimethylnaphthalene	1112					
1,6,7-Trimethylnaphthalene	318					
1-Methylfluorene	258					
4-Methyldibenzothiophene	110					
2/3-Methyldibenzothiophene	49.3					
1-Methyldibenzothiophene	33.7					
3-Methylphenanthrene	228		10	206 ± 32	139	286
2-Methylphenanthrene	231		1	230 ± 14	173	293
2-Methylanthracene	14.2					
4/9-Methylphenanthrene	288		21	232 ± 19	170	301
1-Methylphenanthrene	187		10	169 ± 10	127	215
3,6-Dimethylphenanthrene	60.0					
Retene	9.3	J				
2-Methylfluoranthene	7.74	J				
Benzo(b)fluorene	21.1					
C29-Hopane	25.3					
18a-Oleanane	<10	U				
C30-Hopane	48.5					
C20-TAS	6.82	J				
C21-TAS	8.83	J				
C26(20S)-TAS	5.03	J				
C26(20R)/C27(20S)-TAS	14.9					
C28(20S)-TAS	12.0					
C27(20R)-TAS	9.44	J				
C28(20R)-TAS	7.99	J				

Surrogate Recovery	
Naphthalene-d8	93
Acenaphthene-d10	97
Phenanthrene-d10	99
Chrysene-d12	96
Perylene-d12	96

Peak Resolution	
4/9-Methylphenanthrene from 1-Methylyphenanthrene (m/z 192)	92%

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

Sample Name	MS50171J.D
Client Name	AR-WKCC-250-039
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3122
Date Acquired	10/2/13 6:32
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	263		6.2	247	210	284
C1-Decalins	NA					
C2-Decalins	NA					
C3-Decalins	NA					
C4-Decalins	NA					
Naphthalene	259		3.7	250	213	288
C1-Naphthalenes	NA					
C2-Naphthalenes	NA					
C3-Naphthalenes	NA					
C4-Naphthalenes	NA					
Benzothiophene	255		2.7	249	211	286
C1-Benzothiophenes	NA					
C2-Benzothiophenes	NA					
C3-Benzothiophenes	NA					
C4-Benzothiophenes	NA					
Biphenyl	252		1.8	248	211	285
Acenaphthylene	233		6.1	248	211	285
Acenaphthene	249		0.4	251	213	288
Dibenzofuran	252		1.3	249	211	286
Fluorene	246		1.7	251	213	288
C1-Fluorenes	NA					
C2-Fluorenes	NA					
C3-Fluorenes	NA					
Carbazole	229		7.8	248	211	285
Anthracene	248		1.0	251	213	288
Phenanthrene	252		1.9	248	211	285
C1-Phenanthrenes/Anthracenes	NA					
C2-Phenanthrenes/Anthracenes	NA					
C3-Phenanthrenes/Anthracenes	NA					
C4-Phenanthrenes/Anthracenes	NA					
Dibenzothiophene	244		1.0	247	210	283
C1-Dibenzothiophenes	NA					
C2-Dibenzothiophenes	NA					
C3-Dibenzothiophenes	NA					
C4-Dibenzothiophenes	NA					
Fluoranthene	243		2.8	250	213	288
Pyrene	251		0.4	250	213	288
C1-Fluoranthenes/Pyrenes	NA					
C2-Fluoranthenes/Pyrenes	NA					
C3-Fluoranthenes/Pyrenes	NA					
C4-Fluoranthenes/Pyrenes	NA					
Naphthobenzothiophene	234		7.4	252	214	289
C1-Naphthobenzothiophenes	NA					
C2-Naphthobenzothiophenes	NA					
C3-Naphthobenzothiophenes	NA					
C4-Naphthobenzothiophenes	NA					
Benz(a)anthracene	222		11.7	250	212	287
Chrysene/Triphenylene	242		2.7	249	211	286
C1-Chrysenes	NA					
C2-Chrysenes	NA					
C3-Chrysenes	NA					
C4-Chrysenes	NA					
Benzo(b)fluoranthene	228		9.4	251	213	288
Benzo(k,j)fluoranthene	260		4.5	249	212	286
Benzo(a)fluoranthene	NA					
Benzo(e)pyrene	247		0.8	249	212	286
Benzo(a)pyrene	250		0.1	250	212	287
Perylene	248		1.0	250	213	288
Indeno(1,2,3-c,d)pyrene	236		4.1	246	209	283
Dibenzo(a,h)anthracene	237		4.6	248	211	285
Benzo(g,h,i)perylene	247		0.5	248	211	285

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

Sample Name	MS50171J.D
Client Name	AR-WKCC-250-039
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3122
Date Acquired	10/2/13 6:32
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	253		1.2	250	213	288
1-Methylnaphthalene	252		0.9	250	212	287
2,6-Dimethylnaphthalene	250		0.1	250	213	288
1,6,7-Trimethylnaphthalene	245		2.0	250	213	288
1-Methylfluorene	248		1.7	252	214	290
4-Methyldibenzothiophene	258		2.2	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	243		1.8	247	210	284
3,6-Dimethylphenanthrene	240		4.1	250	213	288
Retene	216		3.3	223	190	257
2-Methylfluoranthene	237		5.9	252	214	289
Benzo(b)fluorene	226		11.0	252	214	290
C29-Hopane	NA					
18a-Oleanane	NA					
C30-Hopane	250		0.1	250	213	288
C20-TAS	NA					
C21-TAS	NA					
C26(20S)-TAS	NA					
C26(20R)/C27(20S)-TAS	230		8.3	250	213	288
C28(20S)-TAS	NA					
C27(20R)-TAS	NA					
C28(20R)-TAS	NA					

Surrogate Recovery	
Naphthalene-d8	102
Acenaphthene-d10	99
Phenanthrene-d10	103
Chrysene-d12	99
Perylene-d12	97

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

Sample Name	MS50171I.D
Client Name	AR-WKICV-250-005
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3122
Date Acquired	10/2/13 5:26
Method	PAH-2012.M
Sample Volume (mL)	1.0

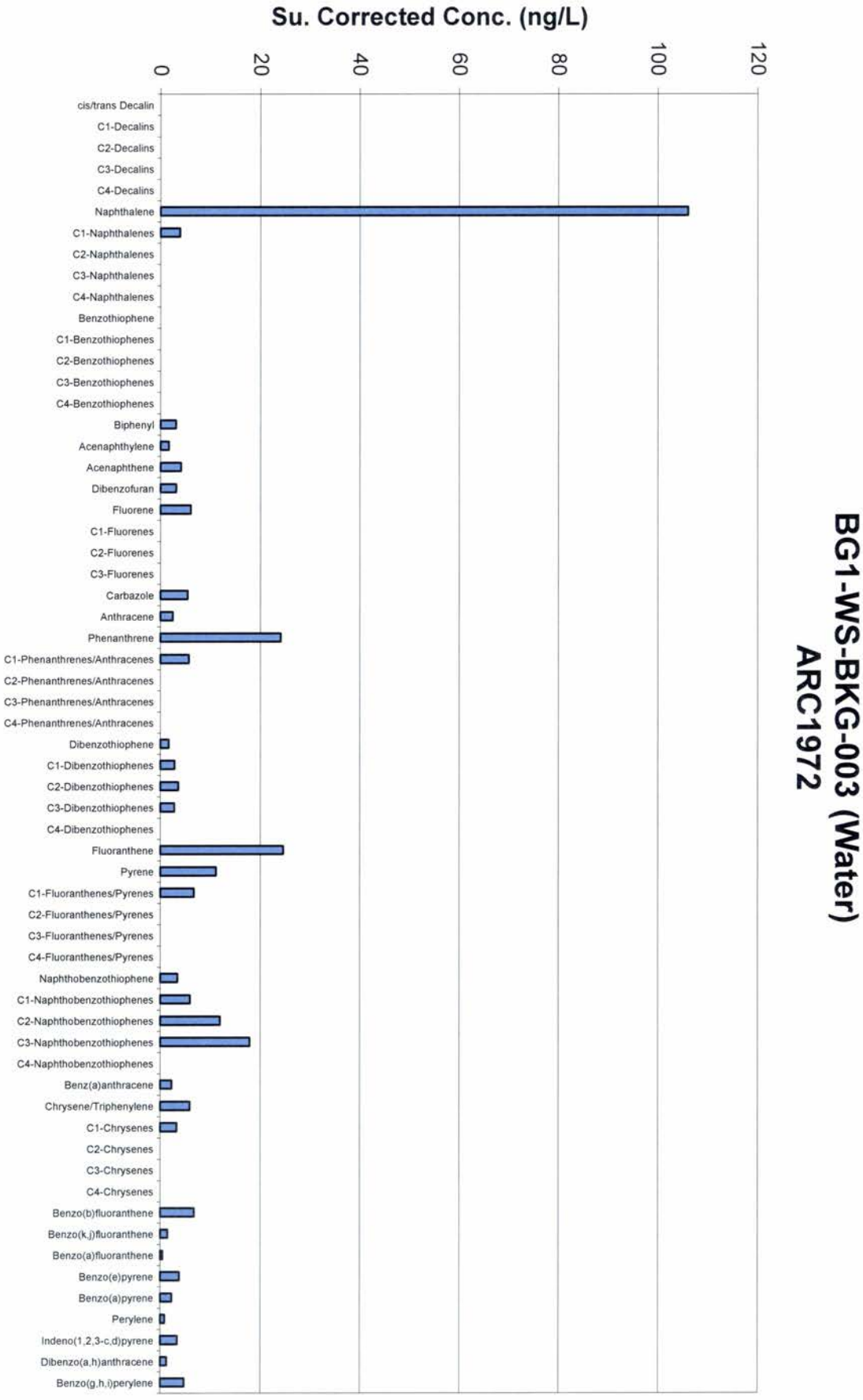
Target Compounds	Concentration (ng/mL)	Q	RPD (%)	ICV Certified Conc. (ng/mL)	-20% Certified Conc. (ng/mL)	+20% Certified Conc. (ng/mL)
cis/trans Decalin	270		7.7	250	200	300
C1-Decalins	NA					
C2-Decalins	NA					
C3-Decalins	NA					
C4-Decalins	NA					
Naphthalene	268		6.9	250	200	300
C1-Naphthalenes	NA					
C2-Naphthalenes	NA					
C3-Naphthalenes	NA					
C4-Naphthalenes	NA					
Benzothiophene	270		7.6	250	200	300
C1-Benzothiophenes	NA					
C2-Benzothiophenes	NA					
C3-Benzothiophenes	NA					
C4-Benzothiophenes	NA					
Biphenyl	262		4.4	251	201	301
Acenaphthylene	248					
Acenaphthene	267		6.4	250	200	300
Dibenzofuran	269		7.2	250	200	300
Fluorene	256		2.2	250	200	300
C1-Fluorenes	NA					
C2-Fluorenes	NA					
C3-Fluorenes	NA					
Carbazole	239		4.6	250	200	300
Anthracene	258		3.1	250	200	300
Phenanthrene	262		4.5	250	200	300
C1-Phenanthrenes/Anthracenes	NA					
C2-Phenanthrenes/Anthracenes	NA					
C3-Phenanthrenes/Anthracenes	NA					
C4-Phenanthrenes/Anthracenes	NA					
Dibenzothiophene	257		2.6	250	200	300
C1-Dibenzothiophenes	NA					
C2-Dibenzothiophenes	NA					
C3-Dibenzothiophenes	NA					
C4-Dibenzothiophenes	NA					
Fluoranthene	257		2.8	250	200	300
Pyrene	266		6.2	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	246		1.7	250	200	300
Chrysene/Triphenylene	250		0.0	250	200	300
C1-Chrysenes	NA					
C2-Chrysenes	NA					
C3-Chrysenes	NA					
C4-Chrysenes	NA					
Benzo(b)fluoranthene	261		4.1	250	200	300
Benzo(k,j)fluoranthene	292		15.4	250	200	300
Benzo(a)fluoranthene	NA					
Benzo(e)pyrene	269		7.3	250	200	300
Benzo(a)pyrene	265		5.8	250	200	300
Perylene	255		1.9	251	200	301
Indeno(1,2,3-c,d)pyrene	266		6.3	250	200	300
Dibenzo(a,h)anthracene	271		7.9	250	200	300
Benzo(g,h,i)perylene	271		8.0	250	200	300

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

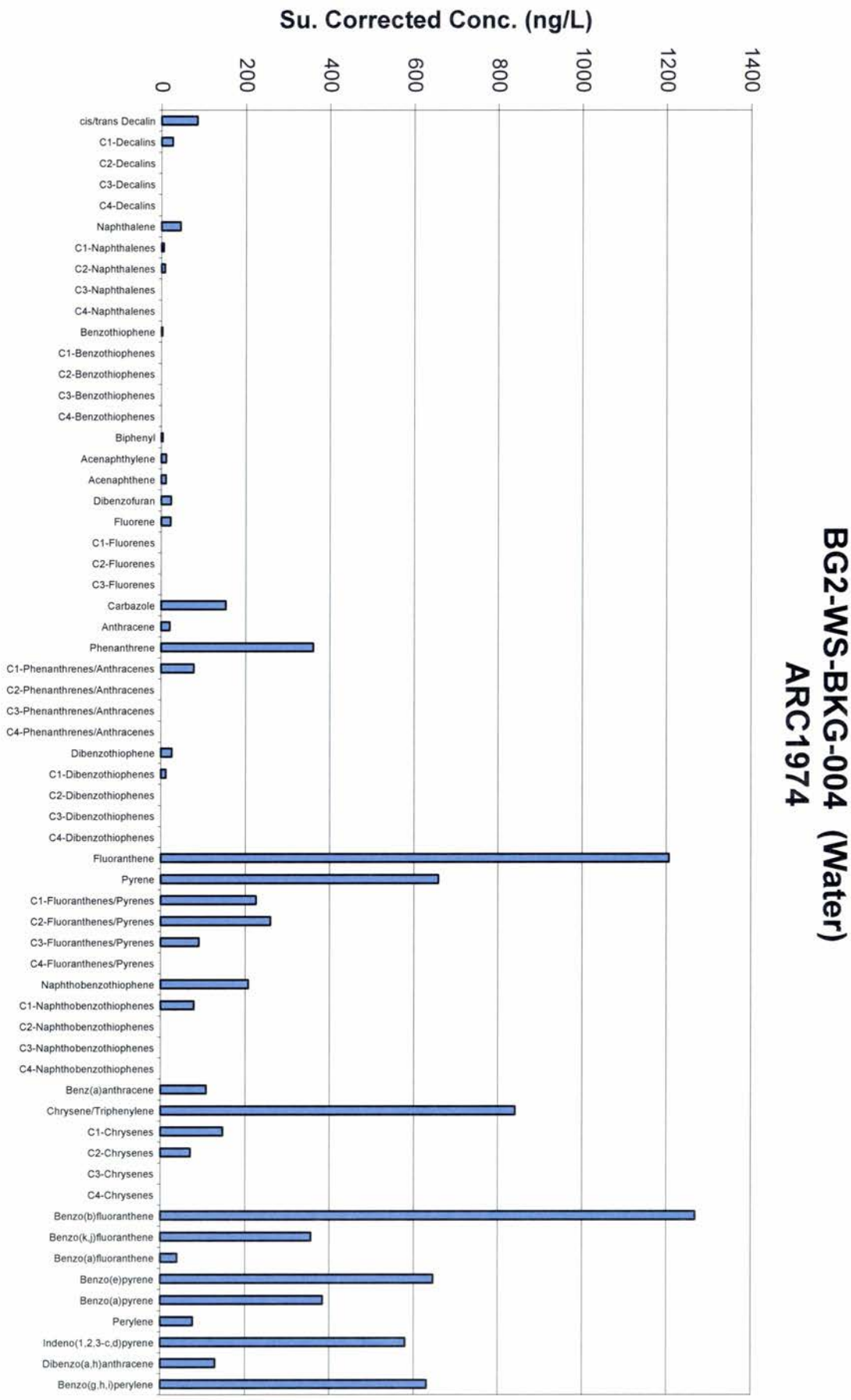
Sample Name	MS50171I.D
Client Name	AR-WKICV-250-005
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 3122
Date Acquired	10/2/13 5:26
Method	PAH-2012.M
Sample Volume (mL)	1.0

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	274		9.1	250	200	301
1-Methylnaphthalene	275		9.2	251	200	301
2,6-Dimethylnaphthalene	263		4.9	250	200	300
1,6,7-Trimethylnaphthalene	268		6.6	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	259		3.4	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	267		6.6	250	200	300
Acenaphthene-d10	263		4.9	250	200	300
Phenanthrene-d10	266		6.3	250	200	300
Chrysene-d12	261		4.4	250	200	300
Perylene-d12	258		3.2	250	200	300

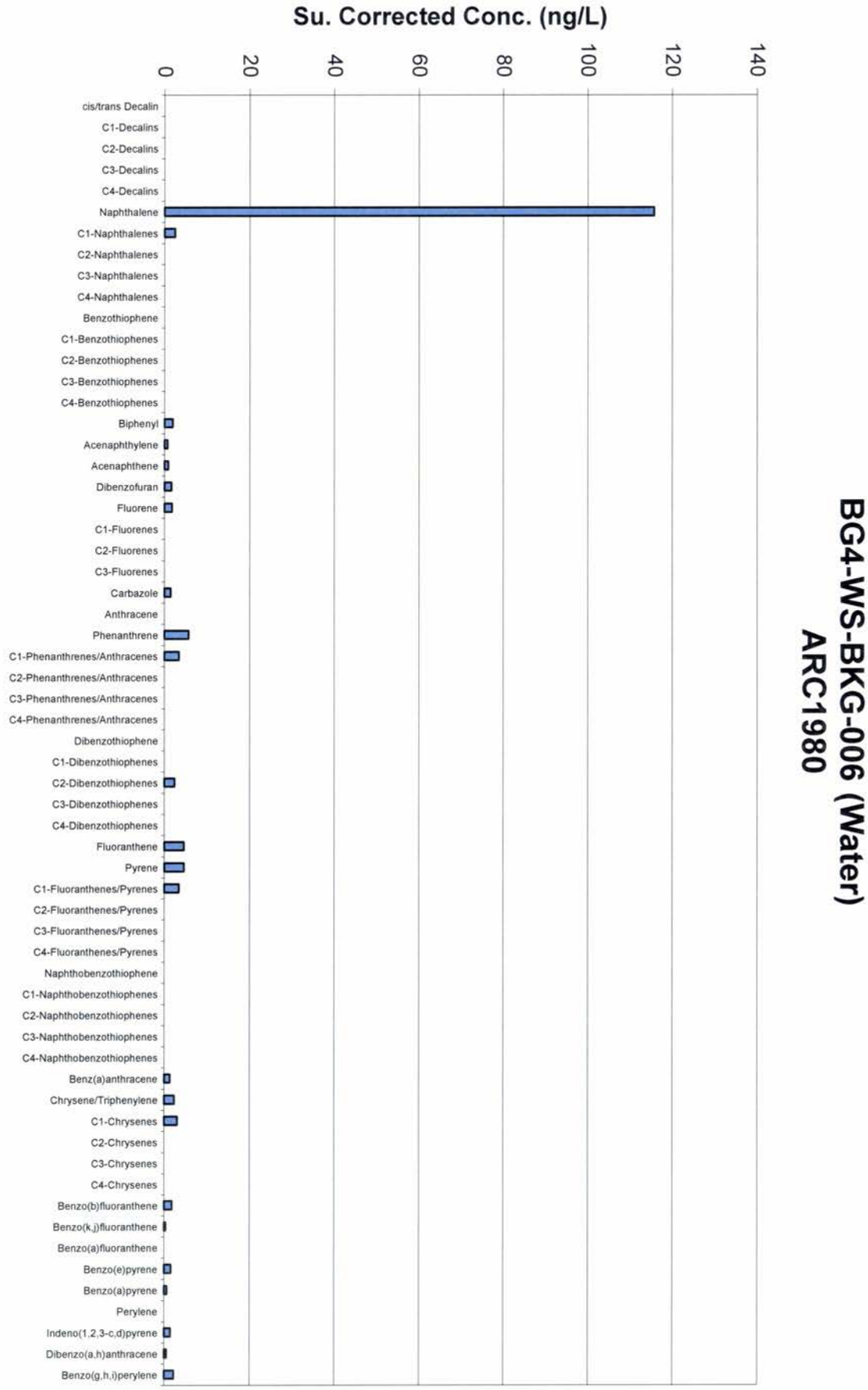
Polycyclic Aromatic Hydrocarbon Histograms



BG1-WS-BKG-003 (Water)
ARC1972



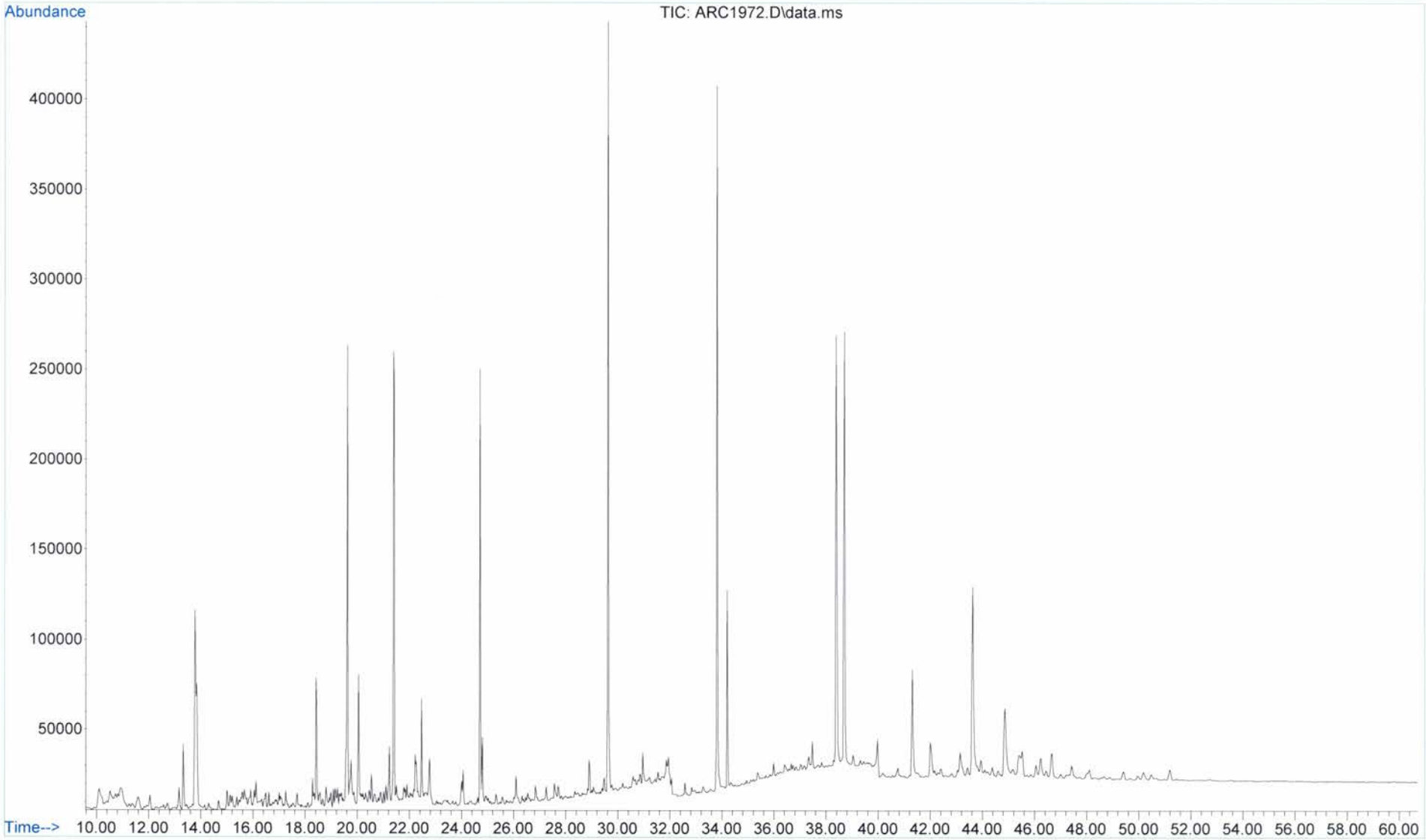
BG2-WS-BKG-004 (Water)
ARC1974



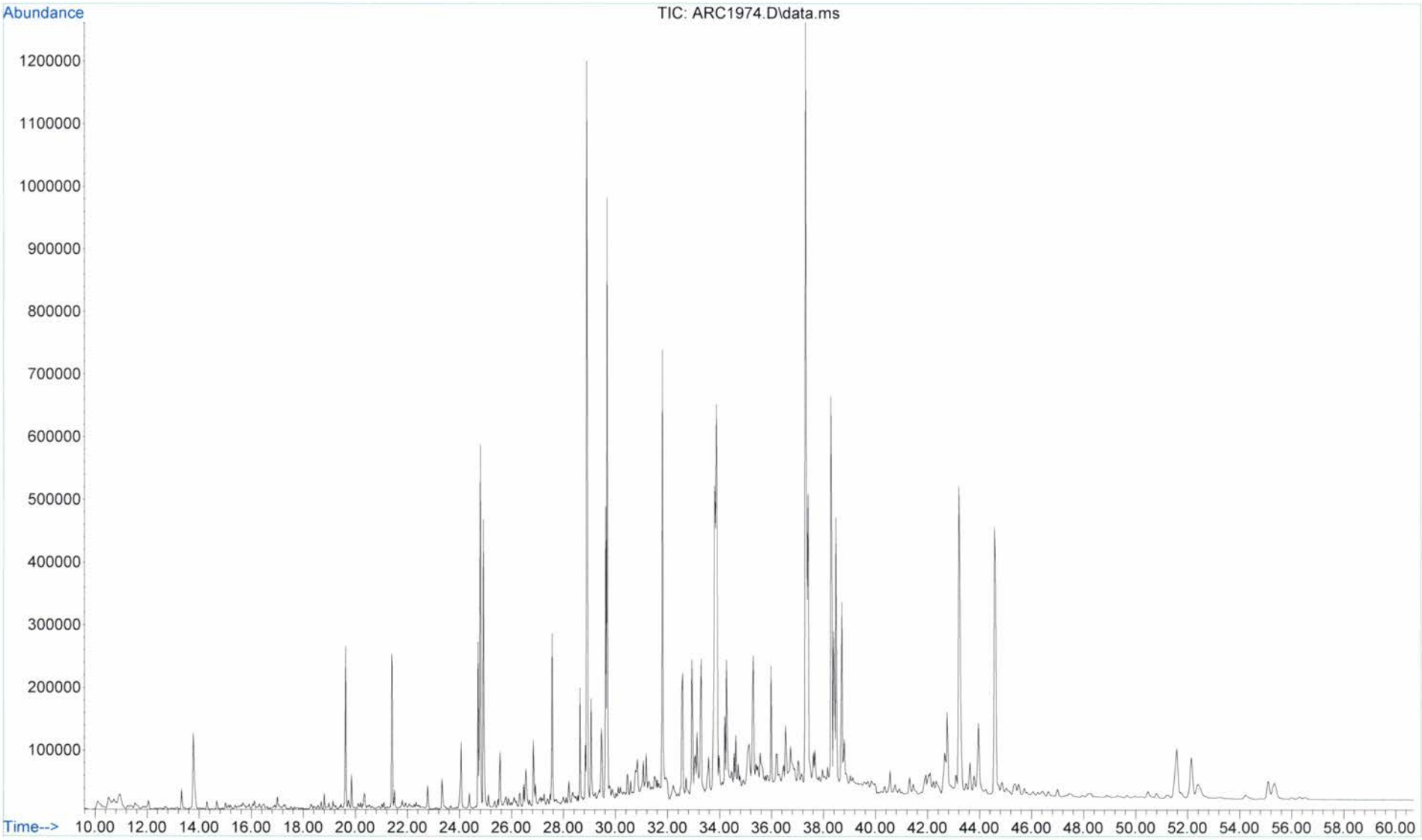
BG4-WS-BKG-006 (Water)
ARC1980

Polycyclic Aromatic Hydrocarbon Total Ion Chromatograms

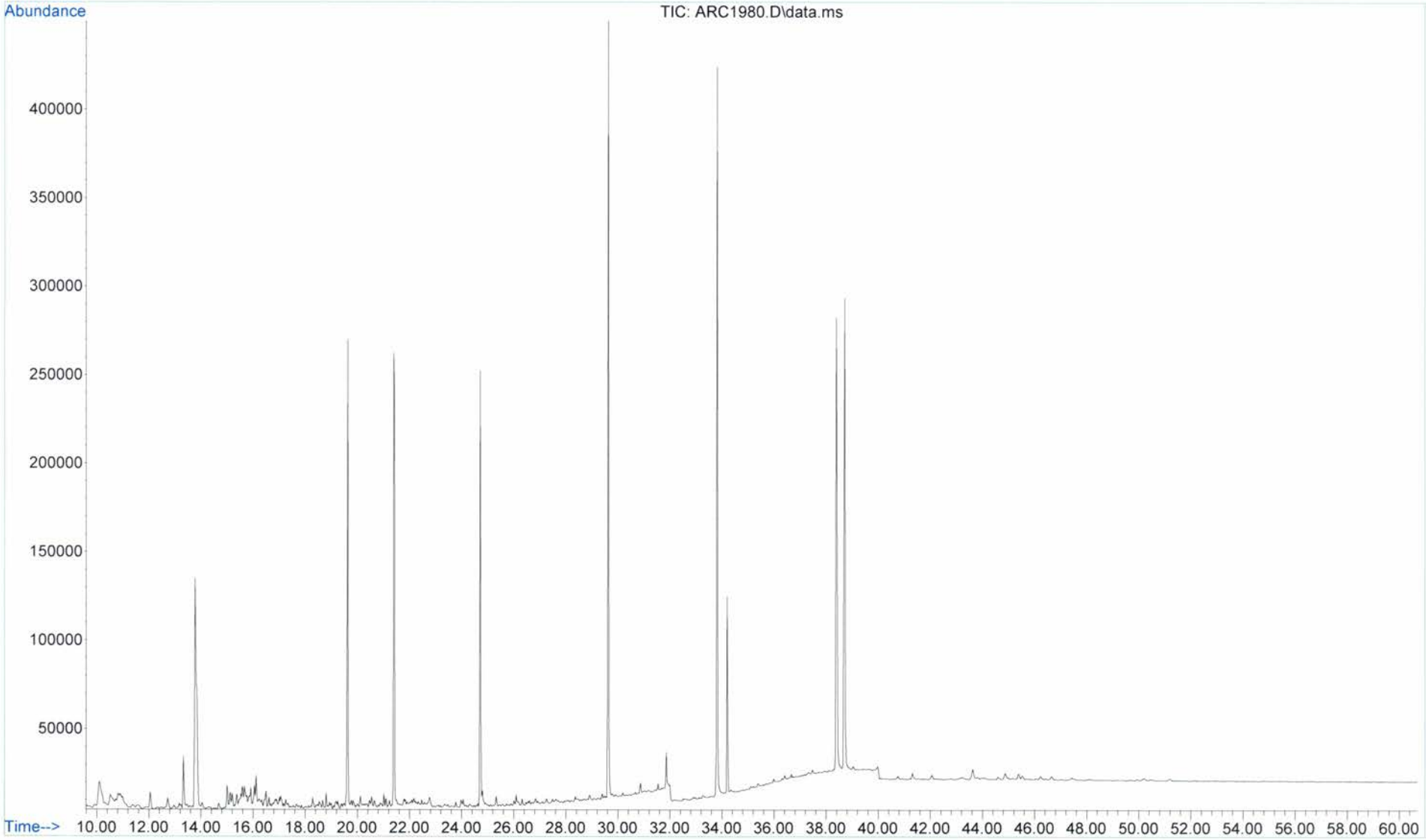
```
File        :C:\GCMS5\MS50171\ARC1972.D
Operator    : ECM(YMIAO)
Acquired    :  2 Oct 2013  14:16     using AcqMethod PAH-2012.M
Instrument  :   GCMS5
Sample Name: BG1-WS-BKG-003
Misc Info   :
Vial Number: 17
```



```
File        :C:\GCMS5\MS50171\ARC1974.D
Operator    : ECM(YMIAO)
Acquired    :  2 Oct 2013  15:22      using AcqMethod PAH-2012.M
Instrument  :   GCMS5
Sample Name: BG2-WS-BKG-004
Misc Info   :
Vial Number: 18
```



```
File        :C:\GCMS5\MS50171\ARC1980.D
Operator    : ECM(YMIAO)
Acquired    :  2 Oct 2013  16:28     using AcqMethod PAH-2012.M
Instrument  :   GCMS5
Sample Name: BG4-WS-BKG-006
Misc Info   :
Vial Number: 19
```



Polycyclic Aromatic Hydrocarbon Raw Data

B&B LABORATORIES PAHs QA FORM

Extraction Page: ENV 3122	Analyst: Y. Miao
Client: Arcadis - Mayflower AR	Date: October 8, 2013
Job: #: J13034	Project Quality Manager: W Grand
SDG #: 13092402	Date: 10/09/13

Initial Calibration: No failures	ICV (from the second source): No failures
Surrogate Recoveries: No failures	
Procedural Blank: No failures	
Blank Spike: No failures	
Blank Spike Duplicate: No failures	
Laboratory Duplicate: NA	
Matrix Spike: Ten compounds were detected outside of the laboratory %recovery limits of 40-120%. However these compounds are outside of the limits due to high native concentrations of PAHs Peaks are qualifed with a "Y" - invalid spike	
Matirx Spike Duplicate: Ten compounds were detected outside of the laboratory %recovery limits of 40-120%. However these compounds are outside of the limits due to high native concentrations of PAHs Peaks are qualifed with a "Y" - invalid spike	
SRM/LCS (Solution, Tissue, Sediment): Solution: 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\DATA\MS50171\MS50171.s
Comment: Arcadis-Mayflower-AR-Water-PAH (10/01/13)
Operator: ECM(YMIAO)
Data Path: C:\MSDCHEM\1\DATA\MS50171\
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	MS50171A	PAH-2012	Solvent
2)	Sample 2	MS50171B	PAH-2012	AR-WKC1-020-031
3)	Sample 3	MS50171C	PAH-2012	AR-WKC2-100-031
4)	Sample 4	MS50171D	PAH-2012	AR-WKC3-250-031
5)	Sample 5	MS50171E	PAH-2012	AR-WKC4-500-031
6)	Sample 6	MS50171F	PAH-2012	AR-WKC5-1000-031
7)	Sample 7	MS50171G	PAH-2012	AR-WKC6-5000-031
8)	Sample 8	MS50171H	PAH-2012	AR-WKISSU-250-005
9)	Sample 9	MS50171I	PAH-2012	AR-WKICV-250-005
10)	Sample 10	MS50171J	PAH-2012	AR-WKCC-250-039
11)	Sample 11	MS50171K	PAH-2012	AR-SRM2779-WK-4.0-003
12)	Sample 12	ENV3122A	PAH-2012	
13)	Sample 13	ENV3122B	PAH-2012	
14)	Sample 14	ENV3122C	PAH-2012	
15)	Sample 15	ENV3122D	PAH-2012	
16)	Sample 16	ENV3122E	PAH-2012	
17)	Sample 17	ARC1972	PAH-2012	
18)	Sample 18	ARC1974	PAH-2012	
19)	Sample 19	ARC1980	PAH-2012	
20)	Sample 20	MS50171L	PAH-2012	AR-WKCC-250-039

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171J.D
Acq On : 2 Oct 2013 6:32 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 04 16:48:47 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	91	0.00
2	S	Naphthalene-d8	1.510	1.547	-2.5	91	0.00
3	T	cis/trans Decalin	0.280	0.298	-6.4	95	0.00
4	un	C1-Decalins	0.280	0.000	100.0#	0#	-12.45#
5	un	C2-Decalins	0.280	0.000	100.0#	0#	-13.07#
6	un	C3-Decalins	0.280	0.000	100.0#	0#	-16.09#
7	un	C4-Decalins	0.280	0.000	100.0#	0#	-18.82#
8	T	Naphthalene	1.565	1.623	-3.7	93	0.00
9	T	2-Methylnaphthalene	1.020	1.032	-1.2	92	0.02
10	T	1-Methylnaphthalene	0.994	1.003	-0.9	91	0.00
11	T	2,6-Dimethylnaphthalene	0.930	0.928	0.2	91	0.00
12	T	1,6,7-Trimethylnaphthalene	0.917	0.899	2.0	90	0.00
13	un	C2-Naphthalenes	1.565	0.000	100.0#	0#	-18.55#
14	un	C3-Naphthalenes	1.565	0.000	100.0#	0#	-20.01#
15	un	C4-Naphthalenes	1.565	0.000	100.0#	0#	-22.26#
16	T	Benzothiophene	1.277	1.312	-2.7	92	0.02
17	un	C1-Benzothiophenes	1.277	0.000	100.0#	0#	-15.44#
18	un	C2-Benzothiophenes	1.277	0.000	100.0#	0#	-18.35#
19	un	C3-Benzothiophenes	1.277	0.000	100.0#	0#	-20.27#
20	un	C4-Benzothiophenes	1.277	0.000	100.0#	0#	-21.57#
21	S	Acenaphthene-d10	0.914	0.909	0.5	91	0.00
22	T	Biphenyl	1.300	1.323	-1.8	92	0.00
23	T	Acenaphthylene	1.571	1.477	6.0	88	0.00
24	T	Acenaphthene	0.942	0.938	0.4	90	0.00
25	T	Dibenzofuran	1.394	1.413	-1.4	91	0.00
26	T	Fluorene	1.149	1.130	1.7	91	0.00
27	T	1-Methylfluorene	0.701	0.689	1.7	89	0.00
28	un	C1-Fluorenes	1.149	0.000	100.0#	0#	-23.47#
29	un	C2-Fluorenes	1.149	0.000	100.0#	0#	-25.87#
30	un	C3-Fluorenes	1.149	0.000	100.0#	0#	-27.28#
31	I	Pyrene-d10	1.000	1.000	0.0	90	0.00
32	S	Phenanthrene-d10	0.794	0.816	-2.8	92	0.00
33	T	Carbazole	0.626	0.579	7.5	87	0.00
34	T	Dibenzothiophene	0.835	0.826	1.1	90	0.00
35	T	4-Methyldibenzothiophene	0.648	0.663	-2.3	91	0.00
36	un	2/3-Methyldibenzothiophene	0.648	0.000	100.0#	0#	-26.15#
37	un	1-Methyldibenzothiophene	0.648	0.000	100.0#	0#	-26.52#
38	un	C2-Dibenzothiophenes	0.835	0.000	100.0#	0#	-27.82#
39	un	C3-Dibenzothiophenes	0.835	0.000	100.0#	0#	-28.78#
40	un	C4-Dibenzothiophenes	0.835	0.000	100.0#	0#	-30.44#
41	T	Phenanthrene	0.916	0.933	-1.9	91	0.00
42	T	Anthracene	0.830	0.822	1.0	91	0.00
43	un	3-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
44	un	2-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
45	un	2-Methylanthracene	0.660	0.000	100.0#	0#	-26.91#
46	un	4/9-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
47	T	1-Methylphenanthrene	0.660	0.649	1.7	89	0.00
48	T	3,6-Dimethylphenanthrene	0.594	0.570	4.0	90	-0.03
49	T	Retene	0.316	0.306	3.2	90	0.00

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171J.D
Acq On : 2 Oct 2013 6:32 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 04 16:48:47 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	0.916	0.000	100.0#	0#	-28.55#
51	un	C3-Phenanthrenes/Anthracene	0.916	0.000	100.0#	0#	-29.79#
52	un	C4-Phenanthrenes/Anthracene	0.916	0.000	100.0#	0#	-32.06#
53	T	Naphthobenzothiophene	0.899	0.835	7.1	88	0.00
54	un	C1-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-34.23#
55	un	C2-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-36.50#
56	un	C3-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-37.73#
57	un	C4-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-37.70#
58	T	Fluoranthene	0.947	0.921	2.7	89	-0.03
59	T	Pyrene	1.116	1.121	-0.4	90	0.00
60	T	2-Methylfluoranthene	0.727	0.685	5.8	88	0.00
61	T	Benzo(b)fluorene	0.634	0.568	10.4	85	0.00
62	un	C1-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-31.49#
63	un	C2-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-32.16#
64	un	C3-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-33.81#
65	un	C4-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-35.79#
66	S	Chrysene-d12	1.030	1.022	0.8	90	0.00
67	T	Benz(a)anthracene	0.916	0.815	11.0	86	0.00
68	T	Chrysene/Triphenylene	0.939	0.914	2.7	93	0.00
69	un	C1-Chrysenes	0.939	0.000	100.0#	0#	-35.82#
70	un	C2-Chrysenes	0.939	0.000	100.0#	0#	-36.24#
71	un	C3-Chrysenes	0.939	0.000	100.0#	0#	-38.12#
72	un	C4-Chrysenes	0.939	0.000	100.0#	0#	-39.45#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	88	-0.03
74	un	C29-Hopane	0.474	0.000	100.0#	0#	-41.05#
75	un	18a-Oleanane	0.474	0.000	100.0#	0#	-42.06#
76	T	C30-Hopane	0.474	0.475	-0.2	87	-0.03
77	T	Benzo(b)fluoranthene	1.294	1.178	9.0	76	0.00
78	T	Benzo(k,j)fluoranthene	1.114	1.164	-4.5	104	0.00
79	un	Benzo(a)fluoranthene	1.114	0.000	100.0#	0#	-37.31#
80	T	Benzo(e)pyrene	1.245	1.236	0.7	89	-0.03
81	T	Benzo(a)pyrene	1.151	1.153	-0.2	90	0.00
82	T	Indeno(1,2,3-c,d)pyrene	1.227	1.178	4.0	87	-0.03
83	T	Dibenzo(a,h)anthracene	0.957	0.914	4.5	88	-0.03
84	un	C1-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-49.12#
85	un	C2-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-50.50#
86	un	C3-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-49.78#
87	T	Benzo(g,h,i)perylene	1.081	1.076	0.5	89	-0.03
88	S	Perylene-d12	1.109	1.071	3.4	88	0.00
89	T	Perylene	1.181	1.170	0.9	90	0.00
90	S	5(b)H-Cholane	0.277	0.272	1.8	88	0.00
91	un	C20-TAS	1.620	0.000	100.0#	0#	-33.81#
92	un	C21-TAS	1.620	0.000	100.0#	0#	-34.23#
93	un	C26(20S)-TAS	1.620	0.000	100.0#	0#	-38.71#
94	T	C26(20R)/C27(20S)-TAS	1.620	1.491	8.0	83	0.00
95	un	C28(20S)-TAS	1.620	0.000	100.0#	0#	-40.69#
96	un	C27(20R)-TAS	1.620	0.000	100.0#	0#	-40.69#
97	un	C28(20R)-TAS	1.620	0.000	100.0#	0#	-41.60#

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171J.D
Acq On : 2 Oct 2013 6:32 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 04 16:48:47 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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\MS50171\
Data File : MS50171J.D
Acq On : 2 Oct 2013 6:32 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 04 16:48:47 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	315501m	251.05		0.00
31) Pyrene-d10	29.625	212	604048m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	548531m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	486315m	256.30		0.00
21) Acenaphthene-d10	19.625	164	285756m	248.65		0.00
32) Phenanthrene-d10	24.709	188	492066m	257.25		0.00
66) Chrysene-d12	33.810	240	616115m	248.10		0.00
88) Perylene-d12	38.705	264	586857m	241.60		0.00
90) 5(b)H-Cholane	34.199	217	149170m	246.02		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	92551m	262.97		
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	13.835	128	509974m	259.32		
9) 2-Methylnaphthalene	16.093	142	324603m	253.21		
10) 1-Methylnaphthalene	16.406	142	314804m	252.05		
11) 2,6-Dimethylnaphthalene	18.172	156	291713m	249.69		
12) 1,6,7-Trimethylnaphtha...	21.034	170	282595m	245.16		
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	14.014	134	409667m	255.31		
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	17.658	154	411912m	252.15		
23) Acenaphthylene	19.134	152	460473m	233.26		
24) Acenaphthene	19.737	154	295166m	249.41		
25) Dibenzofuran	20.318	168	441779m	252.11		
26) Fluorene	21.503	166	355778m	246.38		
27) 1-Methylfluorene	23.466	180	218071m	247.52		
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	25.557	167	345726m	229.08		
34) Dibenzothiophene	24.370	184	491018m	244.01		
35) 4-Methyldibenzothiophene	25.868	198	402518m	257.69		
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	24.794	178	557089m	252.46		
42) Anthracene	24.964	178	496630m	248.15		
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\MS50171\
Data File : MS50171J.D
Acq On : 2 Oct 2013 6:32 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 04 16:48:47 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

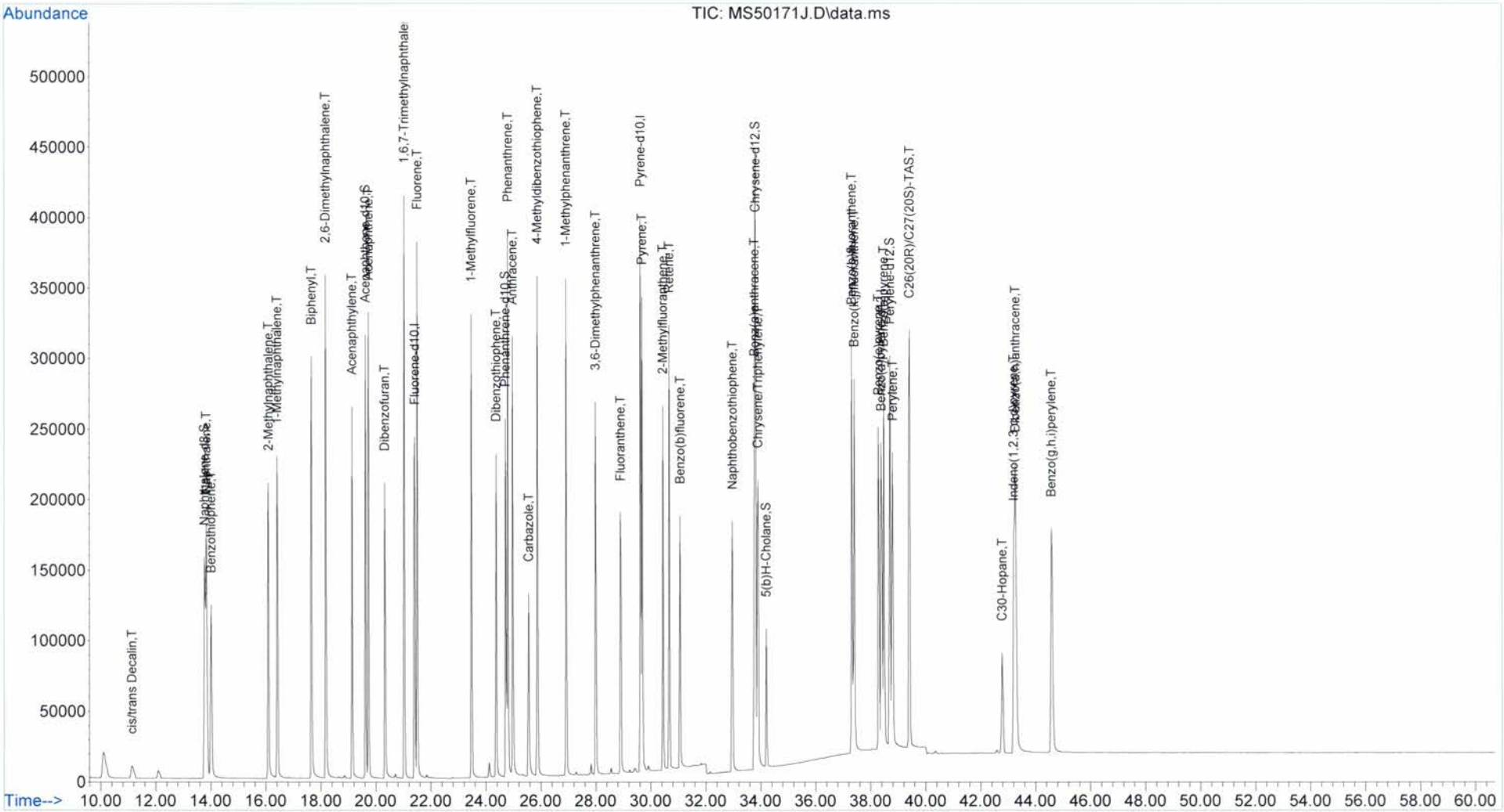
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46)	4/9-Methylphenanthrene	0.000		0	N.D.	d	
47)	1-Methylphenanthrene	26.913	192	386684m	242.95		
48)	3,6-Dimethylphenanthrene	27.987	206	344065m	240.19		
49)	Retene	30.671	234	164827m	216.18		
50)	C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51)	C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52)	C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53)	Naphthobenzothiophene	32.967	234	506293m	233.69		
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	28.891	202	555434m	243.24		
59)	Pyrene	29.682	202	675308m	251.00		
60)	2-Methylfluoranthene	30.445	216	415348m	237.21		
61)	Benzo(b)fluorene	31.066	216	345441m	226.01		
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	33.777	228	489890m	221.91		
68)	Chrysene/Triphenylene	33.907	228	547333m	241.82		
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	42.781	191	260249m	250.36		
77)	Benzo(b)fluoranthene	37.311	252	646792m	228.10		
78)	Benzo(k,j)fluoranthene	37.408	252	635368m	260.40		
79)	Benzo(a)fluoranthene	0.000		0	N.D.	d	
80)	Benzo(e)pyrene	38.284	252	674147m	247.11		
81)	Benzo(a)pyrene	38.478	252	630352m	249.82		
82)	Indeno(1,2,3-c,d)pyrene	43.206	276	634359m	235.92		
83)	Dibenzo(a,h)anthracene	43.272	278	496283m	236.71		
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	44.579	276	584091m	246.59		
89)	Perylene	38.803	252	641455m	247.78		
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	39.419	231	816873m	230.05		
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\MS50171\
Data File : MS50171J.D
Acq On : 2 Oct 2013 6:32 am
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 04 16:48:47 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171L.D
Acq On : 2 Oct 2013 5:35 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 03 21:08:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	92	0.00
2	S	Naphthalene-d8	1.510	1.520	-0.7	91	0.00
3	T	cis/trans Decalin	0.280	0.287	-2.5	93	0.00
4	un	C1-Decalins	0.280	0.000	100.0#	0#	-12.45#
5	un	C2-Decalins	0.280	0.000	100.0#	0#	-13.07#
6	un	C3-Decalins	0.280	0.000	100.0#	0#	-16.09#
7	un	C4-Decalins	0.280	0.000	100.0#	0#	-18.82#
8	T	Naphthalene	1.565	1.584	-1.2	92	0.00
9	T	2-Methylnaphthalene	1.020	1.014	0.6	92	0.02
10	T	1-Methylnaphthalene	0.994	0.999	-0.5	92	0.00
11	T	2,6-Dimethylnaphthalene	0.930	0.924	0.6	92	0.00
12	T	1,6,7-Trimethylnaphthalene	0.917	0.890	2.9	91	0.00
13	un	C2-Naphthalenes	1.565	0.000	100.0#	0#	-18.55#
14	un	C3-Naphthalenes	1.565	0.000	100.0#	0#	-20.01#
15	un	C4-Naphthalenes	1.565	0.000	100.0#	0#	-22.26#
16	T	Benzothiophene	1.277	1.287	-0.8	92	0.02
17	un	C1-Benzothiophenes	1.277	0.000	100.0#	0#	-15.44#
18	un	C2-Benzothiophenes	1.277	0.000	100.0#	0#	-18.35#
19	un	C3-Benzothiophenes	1.277	0.000	100.0#	0#	-20.27#
20	un	C4-Benzothiophenes	1.277	0.000	100.0#	0#	-21.57#
21	S	Acenaphthene-d10	0.914	0.903	1.2	92	0.00
22	T	Biphenyl	1.300	1.309	-0.7	92	0.00
23	T	Acenaphthylene	1.571	1.468	6.6	89	0.00
24	T	Acenaphthene	0.942	0.929	1.4	91	0.00
25	T	Dibenzofuran	1.394	1.378	1.1	90	0.00
26	T	Fluorene	1.149	1.114	3.0	91	0.00
27	T	1-Methylfluorene	0.701	0.677	3.4	89	0.00
28	un	C1-Fluorenes	1.149	0.000	100.0#	0#	-23.47#
29	un	C2-Fluorenes	1.149	0.000	100.0#	0#	-25.87#
30	un	C3-Fluorenes	1.149	0.000	100.0#	0#	-27.28#
31	I	Pyrene-d10	1.000	1.000	0.0	94	0.00
32	S	Phenanthrene-d10	0.794	0.792	0.3	94	0.00
33	T	Carbazole	0.626	0.583	6.9	92	0.00
34	T	Dibenzothiophene	0.835	0.798	4.4	91	0.00
35	T	4-Methyldibenzothiophene	0.648	0.641	1.1	92	0.00
36	un	2/3-Methyldibenzothiophene	0.648	0.000	100.0#	0#	-26.15#
37	un	1-Methyldibenzothiophene	0.648	0.000	100.0#	0#	-26.52#
38	un	C2-Dibenzothiophenes	0.835	0.000	100.0#	0#	-27.82#
39	un	C3-Dibenzothiophenes	0.835	0.000	100.0#	0#	-28.78#
40	un	C4-Dibenzothiophenes	0.835	0.000	100.0#	0#	-30.44#
41	T	Phenanthrene	0.916	0.899	1.9	92	0.00
42	T	Anthracene	0.830	0.795	4.2	92	0.00
43	un	3-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
44	un	2-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
45	un	2-Methylanthracene	0.660	0.000	100.0#	0#	-26.91#
46	un	4/9-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
47	T	1-Methylphenanthrene	0.660	0.638	3.3	92	0.00
48	T	3,6-Dimethylphenanthrene	0.594	0.563	5.2	93	-0.03
49	T	Retene	0.316	0.302	4.4	93	0.00

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171L.D
Acq On : 2 Oct 2013 5:35 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 03 21:08:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	0.916	0.000	100.0#	0#	-28.55#
51	un	C3-Phenanthrenes/Anthracene	0.916	0.000	100.0#	0#	-29.79#
52	un	C4-Phenanthrenes/Anthracene	0.916	0.000	100.0#	0#	-32.06#
53	T	Naphthobenzothiophene	0.899	0.820	8.8	91	0.00
54	un	C1-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-34.23#
55	un	C2-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-36.50#
56	un	C3-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-37.73#
57	un	C4-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-37.70#
58	T	Fluoranthene	0.947	0.910	3.9	92	-0.03
59	T	Pyrene	1.116	1.104	1.1	93	0.00
60	T	2-Methylfluoranthene	0.727	0.674	7.3	91	0.00
61	T	Benzo(b)fluorene	0.634	0.563	11.2	88	0.00
62	un	C1-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-31.49#
63	un	C2-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-32.16#
64	un	C3-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-33.81#
65	un	C4-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-35.79#
66	S	Chrysene-d12	1.030	0.999	3.0	92	0.00
67	T	Benz(a)anthracene	0.916	0.807	11.9	89	0.00
68	T	Chrysene/Triphenylene	0.939	0.881	6.2	94	0.00
69	un	C1-Chrysenes	0.939	0.000	100.0#	0#	-35.82#
70	un	C2-Chrysenes	0.939	0.000	100.0#	0#	-36.24#
71	un	C3-Chrysenes	0.939	0.000	100.0#	0#	-38.12#
72	un	C4-Chrysenes	0.939	0.000	100.0#	0#	-39.45#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	91	-0.03
74	un	C29-Hopane	0.474	0.000	100.0#	0#	-41.05#
75	un	18a-Oleanane	0.474	0.000	100.0#	0#	-42.06#
76	T	C30-Hopane	0.474	0.466	1.7	88	-0.03
77	T	Benzo(b)fluoranthene	1.294	1.191	8.0	80	0.00
78	T	Benzo(k,j)fluoranthene	1.114	1.148	-3.1	106	0.00
79	un	Benzo(a)fluoranthene	1.114	0.000	100.0#	0#	-37.31#
80	T	Benzo(e)pyrene	1.245	1.208	3.0	90	-0.03
81	T	Benzo(a)pyrene	1.151	1.133	1.6	91	0.00
82	T	Indeno(1,2,3-c,d)pyrene	1.227	1.138	7.3	87	-0.03
83	T	Dibenzo(a,h)anthracene	0.957	0.906	5.3	90	-0.03
84	un	C1-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-49.12#
85	un	C2-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-50.50#
86	un	C3-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-49.78#
87	T	Benzo(g,h,i)perylene	1.081	1.015	6.1	87	-0.03
88	S	Perylene-d12	1.109	1.051	5.2	89	0.00
89	T	Perylene	1.181	1.123	4.9	89	0.00
90	S	5(b)H-Cholane	0.277	0.278	-0.4	94	0.00
91	un	C20-TAS	1.620	0.000	100.0#	0#	-33.81#
92	un	C21-TAS	1.620	0.000	100.0#	0#	-34.23#
93	un	C26(20S)-TAS	1.620	0.000	100.0#	0#	-38.71#
94	T	C26(20R)/C27(20S)-TAS	1.620	1.508	6.9	86	0.00
95	un	C28(20S)-TAS	1.620	0.000	100.0#	0#	-40.69#
96	un	C27(20R)-TAS	1.620	0.000	100.0#	0#	-40.69#
97	un	C28(20R)-TAS	1.620	0.000	100.0#	0#	-41.60#

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171L.D
Acq On : 2 Oct 2013 5:35 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 03 21:08:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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\MS50171\
Data File : MS50171L.D
Acq On : 2 Oct 2013 5:35 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 03 21:08:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	320611m	251.05		0.00
31) Pyrene-d10	29.625	212	631815m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	567701m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	485643m	251.87		0.00
21) Acenaphthene-d10	19.625	164	288589m	247.12		0.00
32) Phenanthrene-d10	24.709	188	499579m	249.70		0.00
66) Chrysene-d12	33.810	240	629868m	242.49		0.00
88) Perylene-d12	38.705	264	595906m	237.04		0.00
90) 5(b)H-Cholane	34.199	217	157829m	251.51		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	90514m	253.08		
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	13.835	128	505800m	253.10		
9) 2-Methylnaphthalene	16.093	142	324039m	248.75		
10) 1-Methylnaphthalene	16.406	142	318622m	251.04		
11) 2,6-Dimethylnaphthalene	18.172	156	294892m	248.39		
12) 1,6,7-Trimethylnaphtha...	21.034	170	284070m	242.51		
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	14.014	134	408297m	250.40		
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	17.658	154	414144m	249.47		
23) Acenaphthylene	19.133	152	464788m	231.70		
24) Acenaphthene	19.737	154	297143m	247.08		
25) Dibenzofuran	20.318	168	437624m	245.76		
26) Fluorene	21.503	166	356352m	242.85		
27) 1-Methylfluorene	23.466	180	217886m	243.37		
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	25.557	167	363884m	230.52		
34) Dibenzothiophene	24.370	184	495646m	235.49		
35) 4-Methyldibenzothiophene	25.868	198	407584m	249.47		
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	24.794	178	561355m	243.22		
42) Anthracene	24.964	178	502337m	239.97		
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\MS50171\
Data File : MS50171L.D
Acq On : 2 Oct 2013 5:35 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 03 21:08:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

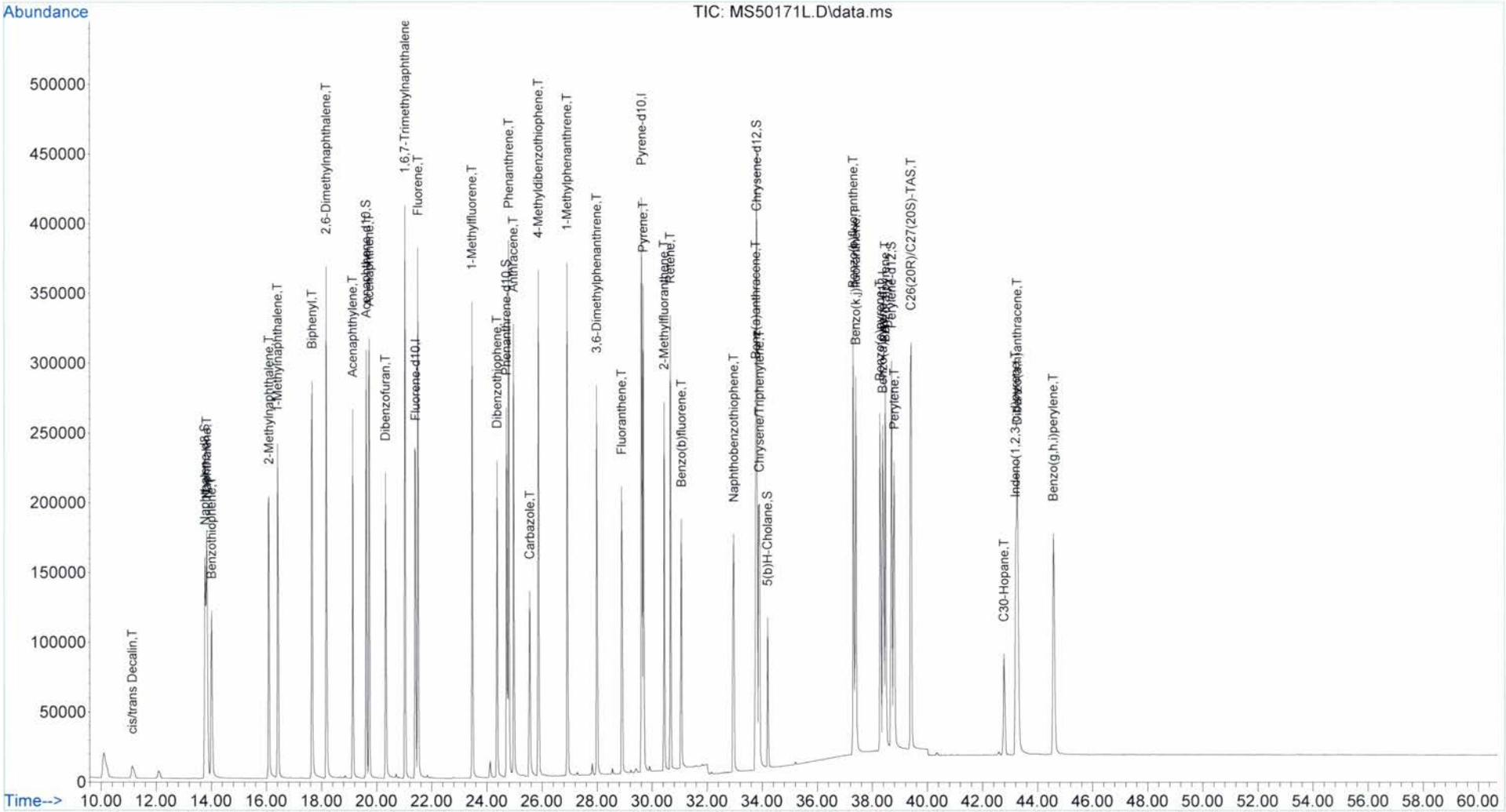
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46)	4/9-Methylphenanthrene	0.000		0	N.D.	d	
47)	1-Methylphenanthrene	26.913	192	397435m	238.73		
48)	3,6-Dimethylphenanthrene	27.987	206	355372m	237.18		
49)	Retene	30.671	234	170191m	213.40		
50)	C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51)	C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52)	C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53)	Naphthobenzothiophene	32.967	234	520119m	229.52		
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	28.891	202	574230m	240.42		
59)	Pyrene	29.682	202	695658m	247.21		
60)	2-Methylfluoranthene	30.445	216	427501m	233.42		
61)	Benzo(b)fluorene	31.066	216	358025m	223.95		
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	33.777	228	507725m	219.88		
68)	Chrysene/Triphenylene	33.907	228	552021m	233.18		
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	42.781	191	264111m	245.50		
77)	Benzo(b)fluoranthene	37.311	252	676568m	230.55		
78)	Benzo(k,j)fluoranthene	37.408	252	648305m	256.73		
79)	Benzo(a)fluoranthene	0.000		0	N.D.	d	
80)	Benzo(e)pyrene	38.284	252	682275m	241.65		
81)	Benzo(a)pyrene	38.478	252	641353m	245.60		
82)	Indeno(1,2,3-c,d)pyrene	43.206	276	634361m	227.95		
83)	Dibenzo(a,h)anthracene	43.272	278	509008m	234.59		
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	44.579	276	570488m	232.71		
89)	Perylene	38.802	252	637297m	237.86		
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	39.418	231	854789m	232.60		
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\MS50171\
Data File : MS50171L.D
Acq On : 2 Oct 2013 5:35 pm
Operator : ECM(YMIAO)
Sample : AR-WKCC-250-039
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 03 21:08:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name MS50171H.D
Data File Path C:\GCMS5\MS50171\
Operator ECM(YMIAO)
Date Acquired 10/2/2013 4:20
Acq. Method File PAH-2012.M
Sample Name AR-WKISSU-250-005
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

MS50171H.D
AR-WKISSU-250-005
10/2/2013 4:20
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	13.77	508194	255.81	102.27
21)	Acenaphthene-d10	19.63	301683	250.73	100.23
32)	Phenanthrene-d10	24.71	505161	251.38	100.47
66)	Chrysene-d12	33.81	587553	225.20	90.07
88)	Perylene-d12	38.71	592691	254.44	101.76
90)	5(b)H-Cholane	34.20	155996	268.28	107.31
	Internal Standards				
1)	Fluorene-d10	21.41	330322	251.05	
31)	Pyrene-d10	29.63	634624	250.63	
73)	Benzo(a)pyrene-d12	38.38	526031	250.33	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : MS50171H.D
Acq On : 2 Oct 2013 4:20 am
Operator : ECM(YMIAO)
Sample : AR-WKISSU-250-005
Misc :
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 03 20:32:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	330322m	251.05		0.00
31) Pyrene-d10	29.625	212	634624m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	526031m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	508194m	255.81		0.00
21) Acenaphthene-d10	19.625	164	301683m	250.73		0.00
32) Phenanthrene-d10	24.709	188	505161m	251.38		0.00
66) Chrysene-d12	33.810	240	587553m	225.20		0.00
88) Perylene-d12	38.705	264	592691m	254.44		0.00
90) 5(b)H-Cholane	34.199	217	155996m	268.28		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	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : MS50171H.D
Acq On : 2 Oct 2013 4:20 am
Operator : ECM(YMIAO)
Sample : AR-WKISSU-250-005
Misc :
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 03 20:32:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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 : C:\msdchem\2\data\MS50171\
Data File : MS50171H.D
Acq On : 2 Oct 2013 4:20 am
Operator : ECM(YMIAO)
Sample : AR-WKISSU-250-005
Misc :
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 03 20:32:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

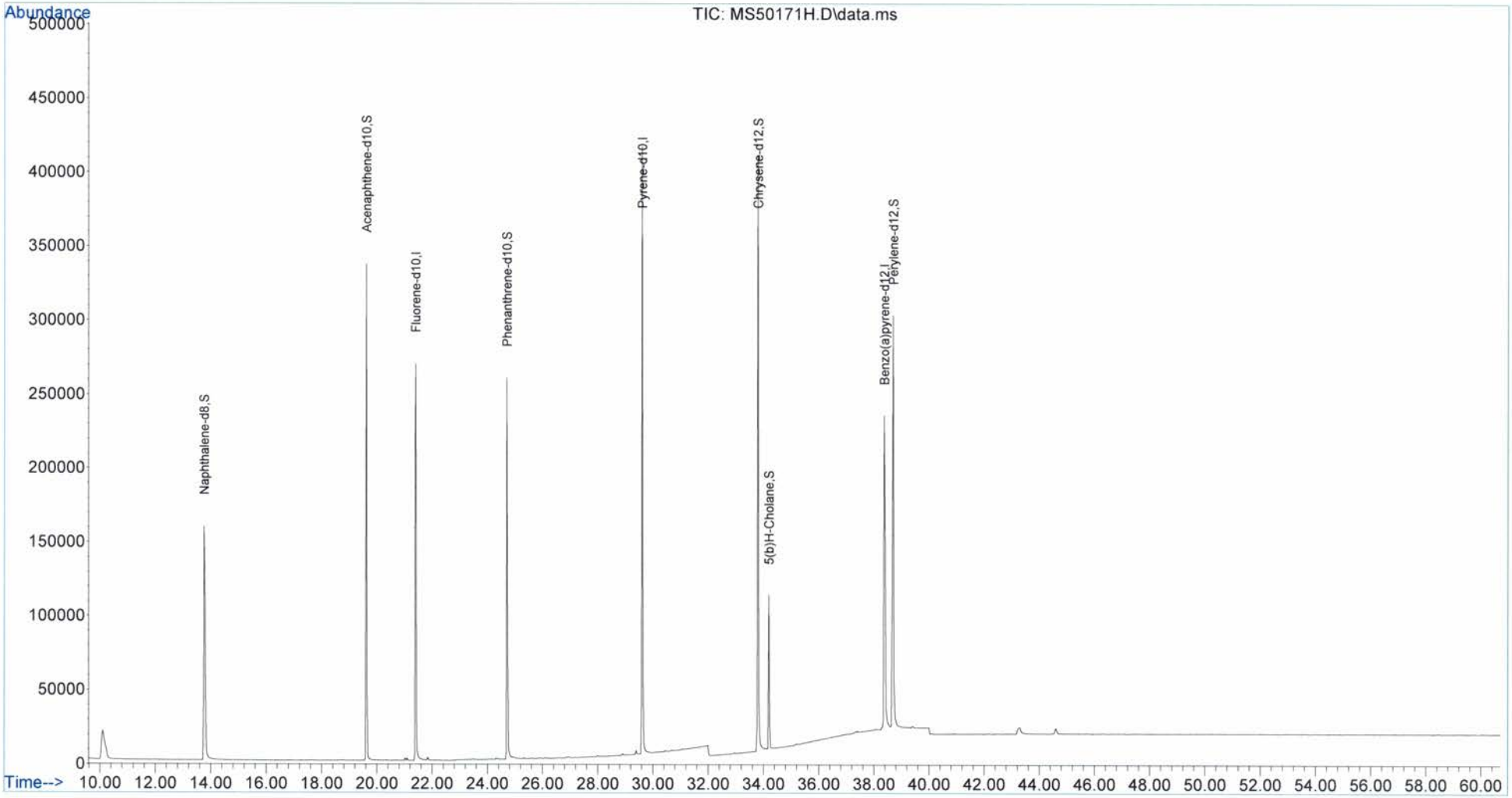
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : MS50171H.D
Acq On : 2 Oct 2013 4:20 am
Operator : ECM(YMIAO)
Sample : AR-WKISSU-250-005
Misc :
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 03 20:32:14 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name MS50171K.D
Data File Path C:\msdchem\2\data\MS50171\
Operator ECM(YMIAO)
Date Acquired 10/2/2013 7:38
Acq. Method File PAH-2012.M
Sample Name AR-SRM2779-WK-4.0-003
Misc Info 0
Instrument Name GCMS5
Vial Number 11
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

MS50171K.D
.R-SRM2779-WK-4.0-003
10/2/2013 7:38
PAH-2012.M
4.088140305

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.13	1492230	834.6998	846.6383
4)	C1-Decalins	12.29	2271790	1270.7563	1288.9316
5)	C2-Decalins	14.66	1908900	1067.7716	1083.0436
6)	C3-Decalins	16.65	1706870	954.7642	968.4199
7)	C4-Decalins	17.68	1167400	653.0011	662.3408
8)	Naphthalene	13.83	8812190	882.1395	894.7565
9)+10)	C1-Naphthalenes	16.26	18982850	1900.2679	1927.4469
13)	C2-Naphthalenes	18.46	23485300	2350.9907	2384.6164
14)	C3-Naphthalenes	20.45	15445400	1546.1529	1568.2671
15)	C4-Naphthalenes	22.78	8669650	867.8714	880.2843
16)	Benzothiophene	14.04	87364	10.7186	10.8719
17)	C1-Benzothiophenes	15.60	318064	39.0229	39.5810
18)	C2-Benzothiophenes	18.60	295266	36.2260	36.7441
19)	C3-Benzothiophenes	20.27	330654	40.5676	41.1478
20)	C4-Benzothiophenes	22.06	224989	27.6037	27.9986
22)	Biphenyl	17.66	1705650	205.5463	208.4861
23)	Acenaphthylene	19.13	89929	8.9684	9.0967
24)	Acenaphthene	19.74	123930	20.6153	20.9101
25)	Dibenzofuran	20.32	288673	32.4314	32.8952
26)	Fluorene	21.50	1045750	142.5719	144.6111
28)	C1-Fluorenes	23.47	2284960	311.5182	315.9737
29)	C2-Fluorenes	25.22	3447530	470.0157	476.7382
30)	C3-Fluorenes	26.86	2279970	310.8382	315.2840
33)	Carbazole	25.56	47497	6.3103	6.4005
42)	Anthracene	24.96	29985	3.0041	3.0470
41)	Phenanthrene	24.79	3202680	291.0150	295.1773
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.69	7421241	674.3390	683.9839
50)	C2-Phenanthrenes/Anthracenes	28.35	8266310	751.1264	761.8695
51)	C3-Phenanthrenes/Anthracenes	29.79	5333940	484.6727	491.6048
52)	C4-Phenanthrenes/Anthracenes	31.77	2687570	244.2088	247.7017
34)	Dibenzothiophene	24.37	546014	54.4057	55.1838
35)+36)+37)	C1-Dibenzothiophenes	26.19	1483124	147.7807	149.8944
38)	C2-Dibenzothiophenes	27.28	2101900	209.4368	212.4323
39)	C3-Dibenzothiophenes	28.81	1215260	121.0900	122.8219
40)	C4-Dibenzothiophenes	30.22	684798	68.2344	69.2104
58)	Fluoranthene	28.92	52600	4.6186	4.6846
59)	Pyrene	29.68	240785	17.9446	18.2013
62)	C1-Fluoranthenes/Pyrenes	30.84	819059	71.9175	72.9462
63)	C2-Fluoranthenes/Pyrenes	32.32	1454480	127.7111	129.5377
64)	C3-Fluoranthenes/Pyrenes	34.00	1616620	141.9472	143.9774
65)	C4-Fluoranthenes/Pyrenes	35.14	1002440	88.0188	89.2777
53)	Naphthobenzothiophene	32.97	433022	40.0745	40.6476
54)	C1-Naphthobenzothiophenes	34.72	737517	68.2543	69.2305
55)	C2-Naphthobenzothiophenes	35.79	1078300	99.7926	101.2199
56)	C3-Naphthobenzothiophenes	37.18	674748	62.4453	63.3384
57)	C4-Naphthobenzothiophenes	38.19	365155	33.7936	34.2769
67)	Benz(a)anthracene	33.78	74886	6.8015	6.8987
68)	Chrysene/Triphenylene	33.91	560380	49.6426	50.3526
69)	C1-Chrysenes	35.11	1435540	127.1705	128.9894
70)	C2-Chrysenes	36.31	1754920	155.4636	157.6872
71)	C3-Chrysenes	37.99	1047450	92.7908	94.1180
72)	C4-Chrysenes	39.42	766657	67.9160	68.8874
77)	Benzo(b)fluoranthene	37.31	85095	5.4437	5.5215
78)	Benzo(k,j)fluoranthene	37.41	11129	0.8274	0.8392
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.32	171252	11.3866	11.5495
81)	Benzo(a)pyrene	38.48	22354	1.6070	1.6300
89)	Perylene	38.80	11505	0.8061	0.8177
82)	Indeno(1,2,3-c,d)pyrene	43.24	10674	0.7201	0.7304
83)	Dibenzo(a,h)anthracene	43.30	5562	0.4812	0.4881
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	44.61	28759	2.2023	2.2338

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.09	11531500	1770.8957	1796.2243
10)	1-Methylnaphthalene	16.43	7451350	1174.5096	1191.3083
11)	2,6-Dimethylnaphthalene	18.22	6508060	1096.6404	1112.3254
12)	1,6,7-Trimethylnaphthalene	21.03	1832890	313.0396	317.5170
27)	1-Methylfluorene	23.47	1138260	254.3504	257.9883
35)	4-Methyldibenzothiophene	25.87	845548	108.5381	110.0905
36)	2/3-Methyldibenzothiophene	26.18	378856	48.6316	49.3272
37)	1-Methyldibenzothiophene	26.52	258720	33.2105	33.6855
43)	3-Methylphenanthrene	26.46	1786670	225.0762	228.2954
44)	2-Methylphenanthrene	26.55	1811160	228.1610	231.4243
45)	2-Methylanthracene	26.72	111131	13.9998	14.2000
46)	4/9-Methylphenanthrene	26.83	2250640	283.5250	287.5802
47)	1-Methylphenanthrene	26.91	1461640	184.1299	186.7635
48)	3,6-Dimethylphenanthrene	27.99	422341	59.1161	59.9616
49)	Retene	30.67	34720	9.1303	9.2609
60)	2-Methylfluoranthene	30.44	66607	7.6271	7.7362
61)	Benzo(b)fluorene	31.07	158460	20.7874	21.0847
74)	C29-Hopane	40.75	142762	24.9123	25.2686
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.06	274099	47.8308	48.5149
91)	C20-TAS	33.36	131535	6.7193	6.8154
92)	C21-TAS	34.43	170405	8.7049	8.8294
93)	C26(20S)-TAS	38.54	97163	4.9635	5.0344
94)	C26(20R)/C27(20S)-TAS	39.45	287068	14.6645	14.8743
95)	C28(20S)-TAS	40.23	230767	11.7885	11.9571
96)	C27(20R)-TAS	40.69	182184	9.3067	9.4398
97)	C28(20R)-TAS	41.83	154245	7.8794	7.9921
	Surrogate Standards				
2)	Naphthalene-d8	13.77	550309	57.10	93.32
21)	Acenaphthene-d10	19.63	346948	59.43	97.13
32)	Phenanthrene-d10	24.71	575598	60.34	98.59
66)	Chrysene-d12	33.81	723905	58.45	95.56
88)	Perylene-d12	38.71	784888	58.61	95.83
90)	5(b)H-Cholane	34.20	204843	61.28	100.21
	Internal Standards				
1)	Fluorene-d10	21.41	392016	61.41	
31)	Pyrene-d10	29.63	736920	61.31	
73)	Benzo(a)pyrene-d12	38.41	739697	61.23	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : MS50171K.D
Acq On : 2 Oct 2013 7:38 am
Operator : ECM(YMIAO)
Sample : AR-SRM2779-WK-4.0-003
Misc :
ALS Vial : 11 Sample Multiplier: 0.24461

Quant Time: Oct 08 18:47:02 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	392016m	251.05		0.00
31) Pyrene-d10	29.625	212	736920m	250.63		0.00
73) Benzo(a)pyrene-d12	38.413	264	739697m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	550309m	57.10		0.00
21) Acenaphthene-d10	19.625	164	346948m	59.43		0.00
32) Phenanthrene-d10	24.709	188	575598m	60.34		0.00
66) Chrysene-d12	33.810	240	723905m	58.45		0.00
88) Perylene-d12	38.705	264	784888m	58.61		0.00
90) 5(b)H-Cholane	34.199	217	204843m	61.28		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	1492233m	834.70		
4) C1-Decalins	12.292	152	2271791m	1270.76		
5) C2-Decalins	14.662	166	1908904m	1067.77		
6) C3-Decalins	16.652	180	1706874m	954.76		
7) C4-Decalins	17.680	194	1167401m	653.00		
8) Naphthalene	13.835	128	8812186m	882.14		
9) 2-Methylnaphthalene	16.093	142	11531513m	1770.90		
10) 1-Methylnaphthalene	16.428	142	7451351m	1174.51		
11) 2,6-Dimethylnaphthalene	18.217	156	6508061m	1096.64		
12) 1,6,7-Trimethylnaphtha...	21.034	170	1832891m	313.04		
13) C2-Naphthalenes	18.463	156	23485337m	2350.99		
14) C3-Naphthalenes	20.452	170	15445359m	1546.15		
15) C4-Naphthalenes	22.777	184	8669650m	867.87		
16) Benzothiophene	14.036	134	87364m	10.72		
17) C1-Benzothiophenes	15.601	148	318064m	39.02		
18) C2-Benzothiophenes	18.597	162	295266m	36.23		
19) C3-Benzothiophenes	20.274	176	330654m	40.57		
20) C4-Benzothiophenes	22.062	190	224989m	27.60		
22) Biphenyl	17.658	154	1705649m	205.55		
23) Acenaphthylene	19.133	152	89929m	8.97		
24) Acenaphthene	19.737	154	123930m	20.62		
25) Dibenzofuran	20.318	168	288673m	32.43		
26) Fluorene	21.503	166	1045753m	142.57		
27) 1-Methylfluorene	23.466	180	1138257m	254.35		
28) C1-Fluorenes	23.466	180	2284962m	311.52		
29) C2-Fluorenes	25.218	194	3447533m	470.02		
30) C3-Fluorenes	26.856	208	2279969m	310.84		
33) Carbazole	25.557	167	47497m	6.31		
34) Dibenzothiophene	24.370	184	546014m	54.41		
35) 4-Methyldibenzothiophene	25.868	198	845548m	108.54		
36) 2/3-Methyldibenzothiop...	26.178	198	378856m	48.63		
37) 1-Methyldibenzothiophene	26.517	198	258720m	33.21		
38) C2-Dibenzothiophenes	27.280	212	2101899m	209.44		
39) C3-Dibenzothiophenes	28.806	226	1215256m	121.09		
40) C4-Dibenzothiophenes	30.218	240	684798m	68.23		
41) Phenanthrene	24.794	178	3202675m	291.01		
42) Anthracene	24.963	178	29985m	3.00		
43) 3-Methylphenanthrene	26.461	192	1786671m	225.08		

Data Path : C:\msdchem\2\data\MS50171\
Data File : MS50171K.D
Acq On : 2 Oct 2013 7:38 am
Operator : ECM(YMIAO)
Sample : AR-SRM2779-WK-4.0-003
Misc :
ALS Vial : 11 Sample Multiplier: 0.24461

Quant Time: Oct 08 18:47:02 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.546	192	1811158m	228.16		
45) 2-Methylanthracene	26.715	192	111131m	14.00		
46) 4/9-Methylphenanthrene	26.828	192	2250639m	283.52		
47) 1-Methylphenanthrene	26.913	192	1461636m	184.13		
48) 3,6-Dimethylphenanthrene	27.986	206	422341m	59.12		
49) Retene	30.670	234	34720m	9.13		
50) C2-Phenanthrenes/Anthr...	28.354	206	8266305m	751.13		
51) C3-Phenanthrenes/Anthr...	29.795	220	5333935m	484.67		
52) C4-Phenanthrenes/Anthr...	31.772	234	2687571m	244.21		
53) Naphthobenzothiophene	32.967	234	433022m	40.07		
54) C1-Naphthobenzothiophenes	34.717	248	737517m	68.25		
55) C2-Naphthobenzothiophenes	35.787	262	1078303m	99.79		
56) C3-Naphthobenzothiophenes	37.181	276	674748m	62.45		
57) C4-Naphthobenzothiophenes	38.186	290	365155m	33.79		
58) Fluoranthene	28.919	202	52600m	4.62		
59) Pyrene	29.682	202	240785m	17.94		
60) 2-Methylfluoranthene	30.444	216	66607m	7.63		
61) Benzo(b)fluorene	31.066	216	158460m	20.79		
62) C1-Fluoranthenes/Pyrenes	30.840	216	819059m	71.92		
63) C2-Fluoranthenes/Pyrenes	32.318	230	1454484m	127.71		
64) C3-Fluoranthenes/Pyrenes	34.004	244	1616617m	141.95		
65) C4-Fluoranthenes/Pyrenes	35.139	258	1002435m	88.02		
67) Benz(a)anthracene	33.777	228	74886m	6.80		
68) Chrysene/Triphenylene	33.907	228	560380m	49.64		
69) C1-Chrysenes	35.106	242	1435541m	127.17		
70) C2-Chrysenes	36.306	256	1754921m	155.46		
71) C3-Chrysenes	37.992	270	1047451m	92.79		
72) C4-Chrysenes	39.418	284	766657m	67.92		
74) C29-Hopane	40.754	191	142762m	24.91		
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.062	191	274099m	47.83		
77) Benzo(b)fluoranthene	37.311	252	85095m	5.44		
78) Benzo(k,j)fluoranthene	37.408	252	11129m	0.83		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.316	252	171252m	11.39		
81) Benzo(a)pyrene	38.478	252	22354m	1.61		
82) Indeno(1,2,3-c,d)pyrene	43.239	276	10674m	0.72		
83) Dibenzo(a,h)anthracene	43.304	278	5562m	0.48		
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	44.612	276	28759m	2.20		
89) Perylene	38.802	252	11505m	0.81		
91) C20-TAS	33.356	231	131535m	6.72		
92) C21-TAS	34.426	231	170405m	8.70		
93) C26(20S)-TAS	38.543	231	97163m	4.96		
94) C26(20R)/C27(20S)-TAS	39.451	231	287068m	14.66		
95) C28(20S)-TAS	40.230	231	230767m	11.79		
96) C27(20R)-TAS	40.688	231	182184m	9.31		
97) C28(20R)-TAS	41.833	231	154245m	7.88		

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : MS50171K.D
Acq On : 2 Oct 2013 7:38 am
Operator : ECM(YMIAO)
Sample : AR-SRM2779-WK-4.0-003
Misc :
ALS Vial : 11 Sample Multiplier: 0.24461

Quant Time: Oct 08 18:47:02 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

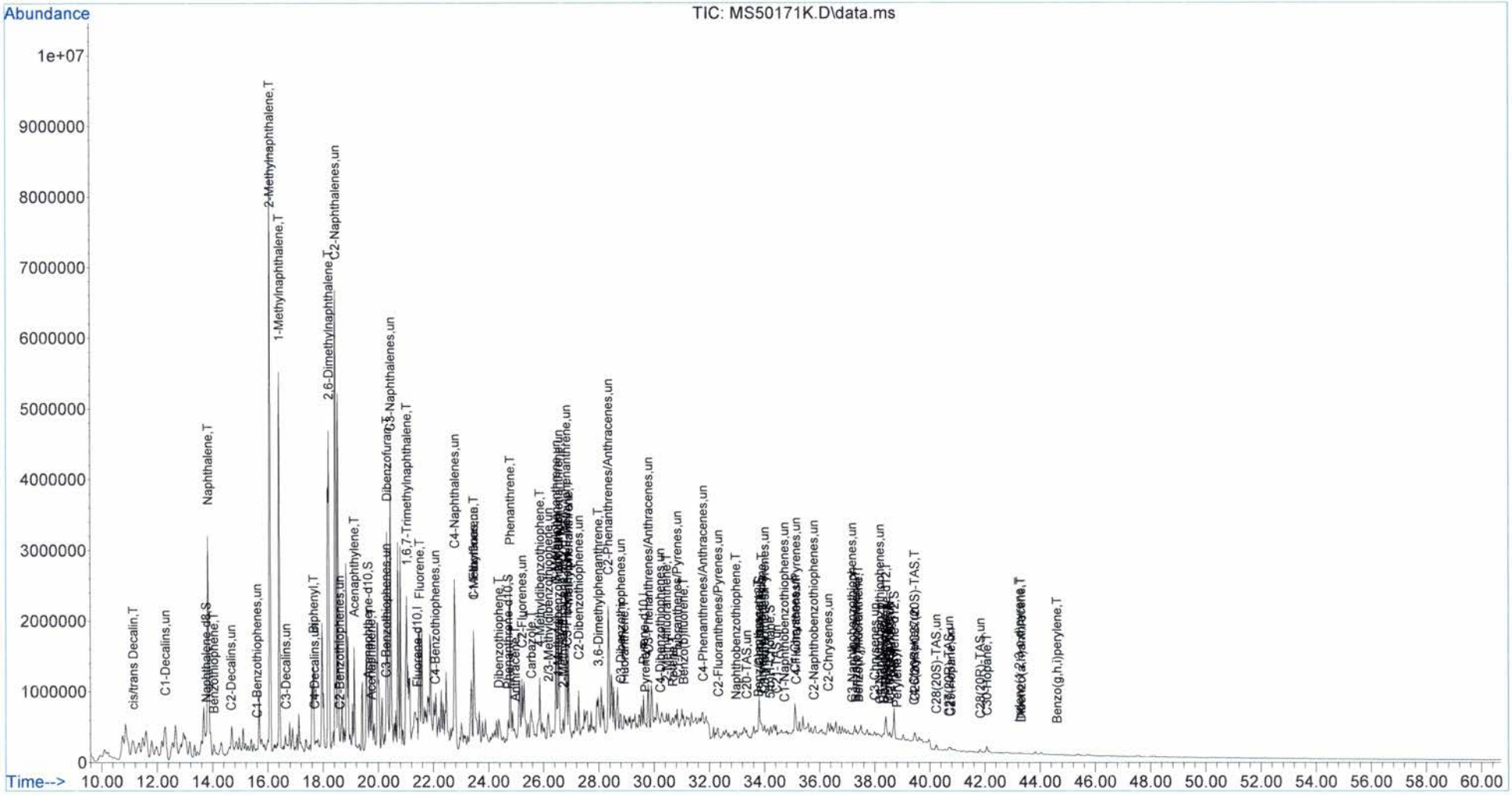
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : MS50171K.D
Acq On : 2 Oct 2013 7:38 am
Operator : ECM(YMIAO)
Sample : AR-SRM2779-WK-4.0-003
Misc :
ALS Vial : 11 Sample Multiplier: 0.24461

Quant Time: Oct 08 18:47:02 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name	ENV3122A.D
Data File Path	C:\msdchem\2\data\MS50171\
Operator	ECM(YMIAO)
Date Acquired	10/2/2013 8:45
Acq. Method File	PAH-2012.M
Sample Name	Procedural Blank
Misc Info	0
Instrument Name	GCMS5
Vial Number	12
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

ENV3122A.D
Procedural Blank
10/2/2013 8:45
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	13.83	6373	3.2548	3.9111
9)+10)	C1-Naphthalenes	16.26	2862	1.4616	1.7564
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	17.66	1399	0.8601	1.0336
23)	Acenaphthylene	0.00	0	0.0000	0.0000
24)	Acenaphthene	0.00	0	0.0000	0.0000
25)	Dibenzofuran	20.34	1721	0.9864	1.1853
26)	Fluorene	21.50	828	0.5759	0.6920
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	24.79	4741	2.0106	2.4160
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	28.92	1846	0.7565	0.9090
59)	Pyrene	29.68	2824	0.9822	1.1803
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	16.09	1813	1.4205	1.7069
10)	1-Methylnaphthalene	16.43	1049	0.8436	1.0137
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	13.77	364973	193.19	77.24
21)	Acenaphthene-d10	19.63	236981	207.11	82.79
32)	Phenanthrene-d10	24.71	425579	208.21	83.22
66)	Chrysene-d12	33.81	558191	210.34	84.12
88)	Perylene-d12	38.71	532436	207.61	83.03
90)	5(b)H-Cholane	34.20	164778	257.40	102.96
	Internal Standards				
1)	Fluorene-d10	21.41	314130	251.05	
31)	Pyrene-d10	29.63	645498	250.63	
73)	Benzo(a)pyrene-d12	38.38	579141	250.33	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122A.D
Acq On : 2 Oct 2013 8:45 am
Operator : ECM(YMIAO)
Sample : Procedural Blank
Misc :
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Oct 08 10:52:21 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	314130m	251.05		0.00
31) Pyrene-d10	29.625	212	645498m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	579141m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	364973m	193.19		0.00
21) Acenaphthene-d10	19.625	164	236981m	207.11		0.00
32) Phenanthrene-d10	24.709	188	425579m	208.21		0.00
66) Chrysene-d12	33.810	240	558191m	210.34		0.00
88) Perylene-d12	38.705	264	532436m	207.61		0.00
90) 5(b)H-Cholane	34.199	217	164778m	257.40		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	13.835	128	6373m	3.25		
9) 2-Methylnaphthalene	16.093	142	1813m	1.42		
10) 1-Methylnaphthalene	16.428	142	1049m	0.84		
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	17.658	154	1399m	0.86		
23) Acenaphthylene	0.000		0	N.D.	d	
24) Acenaphthene	0.000		0	N.D.	d	
25) Dibenzofuran	20.341	168	1721m	0.99		
26) Fluorene	21.503	166	828m	0.58		
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	24.794	178	4741m	2.01		
42) Anthracene	0.000		0	N.D.	d	
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122A.D
Acq On : 2 Oct 2013 8:45 am
Operator : ECM(YMIAO)
Sample : Procedural Blank
Misc :
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Oct 08 10:52:21 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	28.919	202	1846m	0.76		
59) Pyrene	29.682	202	2824m	0.98		
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 : C:\msdchem\2\data\MS50171\
Data File : ENV3122A.D
Acq On : 2 Oct 2013 8:45 am
Operator : ECM(YMIAO)
Sample : Procedural Blank
Misc :
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Oct 08 10:52:21 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

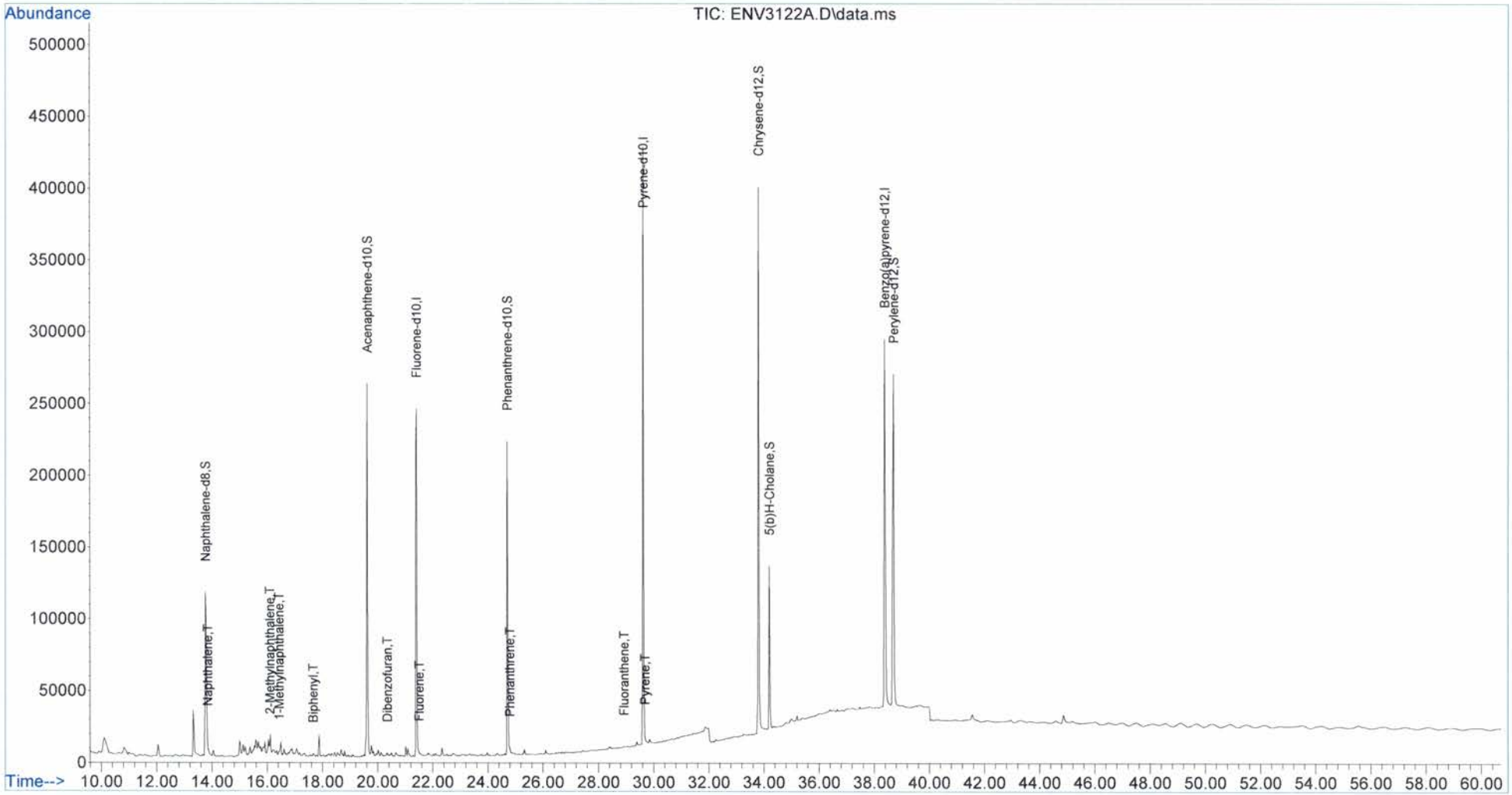
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122A.D
Acq On : 2 Oct 2013 8:45 am
Operator : ECM(YMIAO)
Sample : Procedural Blank
Misc :
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Oct 08 10:52:21 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name ENV3122B.D
Data File Path C:\msdchem\2\data\MS50171\
Operator ECM(YMIAO)
Date Acquired 10/2/2013 9:51
Acq. Method File PAH-2012.M
Sample Name Blank Spike
Misc Info 0
Instrument Name GCMS5
Vial Number 13
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

ENV3122B.D
Blank Spike
10/2/2013 9:51
PAH-2012.M
1

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.13	29051	77.4276	90.3836
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	13.84	184891	88.1882	102.9448
9)+10)	C1-Naphthalenes	16.25	222909	106.3218	124.1127
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	14.01	140806	82.3129	96.0864
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	17.66	143366	82.3203	96.0950
23)	Acenaphthylene	19.13	164846	78.3312	91.4384
24)	Acenaphthene	19.74	105808	83.8633	97.8962
25)	Dibenzofuran	20.32	155217	83.0884	96.9916
26)	Fluorene	21.50	129812	84.3257	98.4360
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	25.56	143491	83.0706	96.9709
42)	Anthracene	24.96	179096	78.1866	91.2696
41)	Phenanthrene	24.79	209748	83.0504	96.9473
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	5.38	154492	61.1716	71.4075
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	24.37	183896	79.8465	93.2073
35)+36)+37)	C1-Dibenzothiophenes	8.62	155018	67.3079	78.5705
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	28.89	228532	87.4398	102.0712
59)	Pyrene	29.68	271853	88.2840	103.0566
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	32.97	210618	84.9368	99.1493
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	33.78	206850	81.8651	95.5636
68)	Chrysene/Triphenylene	33.91	210513	81.2630	94.8608
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	37.31	267760	83.4613	97.4269
78)	Benzo(k,j)fluoranthene	37.41	254703	92.2612	107.6993
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.28	278827	90.3328	105.4483
81)	Benzo(a)pyrene	38.48	244530	85.6553	99.9881
89)	Perylene	38.80	248019	84.6767	98.8457
82)	Indeno(1,2,3-c,d)pyrene	43.21	246151	80.9087	94.4472
83)	Dibenzo(a,h)anthracene	43.27	191408	80.6914	94.1936
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	44.58	227010	84.7041	98.8777

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.09	112571	82.3709	96.1541
10)	1-Methylnaphthalene	16.41	110338	82.8681	96.7345
11)	2,6-Dimethylnaphthalene	18.17	99527	79.9087	93.2799
12)	1,6,7-Trimethylnaphthalene	21.03	103066	83.8722	97.9066
27)	1-Methylfluorene	23.47	84938	90.4346	105.5671
35)	4-Methyldibenzothiophene	25.87	155018	86.7099	101.2191
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	26.91	154492	84.8074	98.9983
48)	3,6-Dimethylphenanthrene	27.99	139634	85.1681	99.4193
49)	Retene	30.67	71236	81.6294	95.2885
60)	2-Methylfluoranthene	30.44	175866	87.7531	102.4369
61)	Benzo(b)fluorene	31.07	149106	85.2351	99.4976
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.78	110029	93.5531	109.2074
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	39.42	373628	92.9981	108.5595
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	13.77	416762	206.03	82.37
21)	Acenaphthene-d10	19.63	259840	212.09	84.78
32)	Phenanthrene-d10	24.71	469220	214.33	85.67
66)	Chrysene-d12	33.81	599575	210.95	84.37
88)	Perylene-d12	38.71	596025	216.87	86.74
90)	5(b)H-Cholane	34.20	169865	247.61	99.04
	Internal Standards				
1)	Fluorene-d10	21.41	336348	251.05	
31)	Pyrene-d10	29.63	691359	250.63	
73)	Benzo(a)pyrene-d12	38.38	620624	250.33	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122B.D
Acq On : 2 Oct 2013 9:51 am
Operator : ECM(YMIAO)
Sample : Blank Spike
Misc :
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 08 11:31:54 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	336348m	251.05		0.00
31) Pyrene-d10	29.625	212	691359m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	620624m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	416762m	206.03		0.00
21) Acenaphthene-d10	19.625	164	259840m	212.09		0.00
32) Phenanthrene-d10	24.709	188	469220m	214.33		0.00
66) Chrysene-d12	33.810	240	599575m	210.95		0.00
88) Perylene-d12	38.705	264	596025m	216.87		0.00
90) 5(b)H-Cholane	34.199	217	169865m	247.61		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	29051m	77.43		
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	13.835	128	184891m	88.19		
9) 2-Methylnaphthalene	16.093	142	112571m	82.37		
10) 1-Methylnaphthalene	16.406	142	110338m	82.87		
11) 2,6-Dimethylnaphthalene	18.172	156	99527m	79.91		
12) 1,6,7-Trimethylnaphtha...	21.034	170	103066m	83.87		
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	14.014	134	140806m	82.31		
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	17.658	154	143366m	82.32		
23) Acenaphthylene	19.134	152	164846m	78.33		
24) Acenaphthene	19.737	154	105808m	83.86		
25) Dibenzofuran	20.318	168	155217m	83.09		
26) Fluorene	21.503	166	129812m	84.33		
27) 1-Methylfluorene	23.466	180	84938m	90.43		
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	25.557	167	143491m	83.07		
34) Dibenzothiophene	24.370	184	183896m	79.85		
35) 4-Methyldibenzothiophene	25.868	198	155018m	86.71		
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	24.794	178	209748m	83.05		
42) Anthracene	24.964	178	179096m	78.19		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122B.D
Acq On : 2 Oct 2013 9:51 am
Operator : ECM(YMIAO)
Sample : Blank Spike
Misc :
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 08 11:31:54 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	26.913	192	154492m	84.81		
48) 3,6-Dimethylphenanthrene	27.987	206	139634m	85.17		
49) Retene	30.671	234	71236m	81.63		
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	32.967	234	210618m	84.94		
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	28.891	202	228532m	87.44		
59) Pyrene	29.682	202	271853m	88.28		
60) 2-Methylfluoranthene	30.445	216	175866m	87.75		
61) Benzo(b)fluorene	31.066	216	149106m	85.24		
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	33.777	228	206850m	81.87		
68) Chrysene/Triphenylene	33.907	228	210513m	81.26		
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	42.781	191	110029m	93.55		
77) Benzo(b)fluoranthene	37.311	252	267760m	83.46		
78) Benzo(k,j)fluoranthene	37.409	252	254703m	92.26		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.284	252	278827m	90.33		
81) Benzo(a)pyrene	38.478	252	244530m	85.66		
82) Indeno(1,2,3-c,d)pyrene	43.206	276	246151m	80.91		
83) Dibenzo(a,h)anthracene	43.272	278	191408m	80.69		
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	44.580	276	227010m	84.70		
89) Perylene	38.803	252	248019m	84.68		
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	39.419	231	373628m	93.00		
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 : C:\msdchem\2\data\MS50171\
Data File : ENV3122B.D
Acq On : 2 Oct 2013 9:51 am
Operator : ECM(YMIAO)
Sample : Blank Spike
Misc :
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 08 11:31:54 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

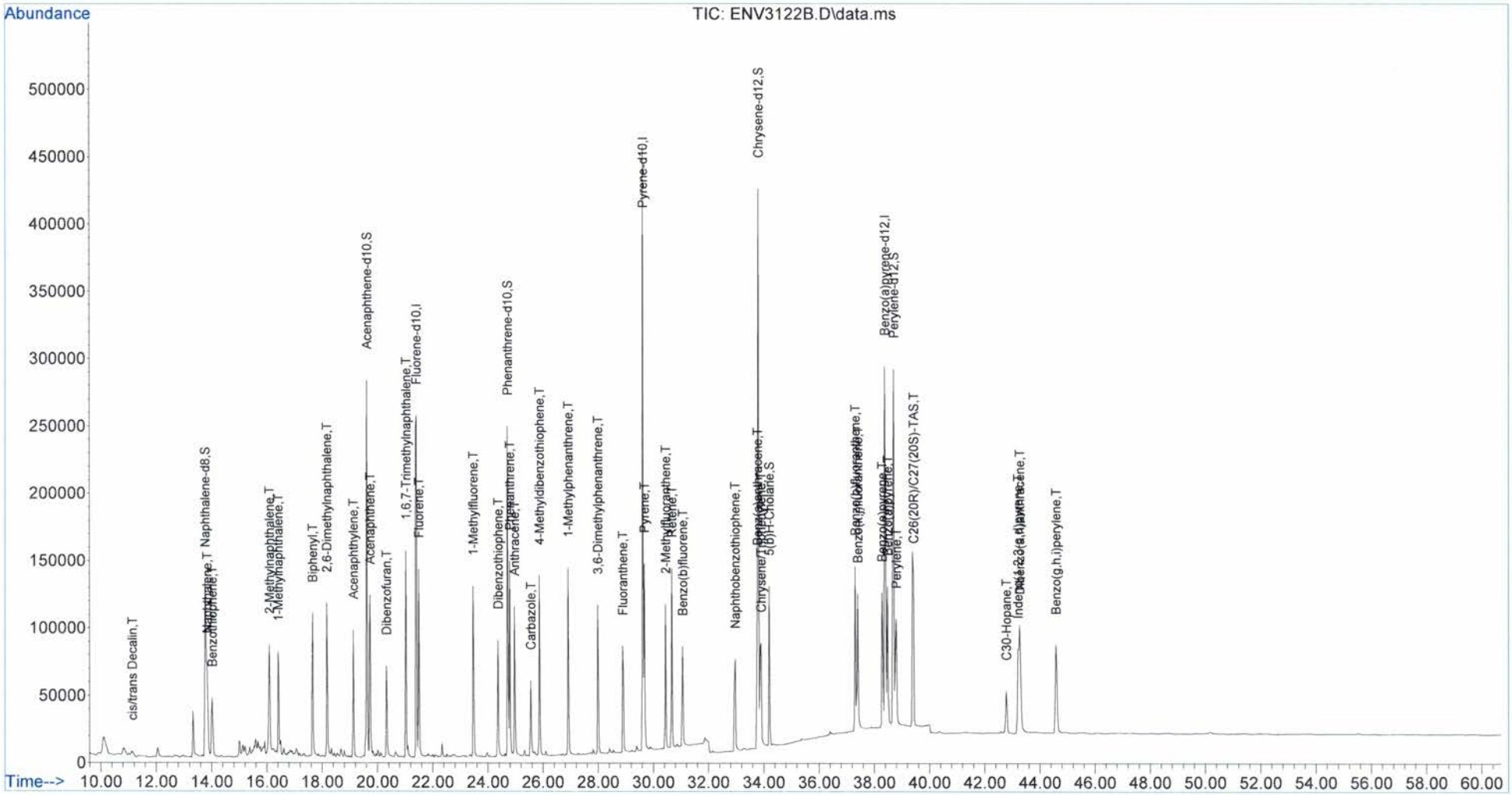
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122B.D
Acq On : 2 Oct 2013 9:51 am
Operator : ECM(YMIAO)
Sample : Blank Spike
Misc :
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 08 11:31:54 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name	ENV3122C.D
Data File Path	C:\GCMS5\MS50171\
Operator	ECM(YMIAO)
Date Acquired	10/2/2013 10:57
Acq. Method File	PAH-2012.M
Sample Name	Blank Spike Dupl.
Misc Info	0
Instrument Name	GCMS5
Vial Number	14
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

ENV3122C.D
Blank Spike Dupl.
10/2/2013 10:57
PAH-2012.M
1

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.13	23974	72.9486	83.8878
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	13.84	165976	90.3819	103.9354
9)+10)	C1-Naphthalenes	16.25	199672	108.7310	125.0360
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	14.01	127776	85.2780	98.0661
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	17.66	126202	82.7310	95.1372
23)	Acenaphthylene	19.13	143473	77.8337	89.5055
24)	Acenaphthene	19.74	94412	85.4323	98.2435
25)	Dibenzofuran	20.32	141263	86.3318	99.2779
26)	Fluorene	21.50	114564	84.9640	97.7050
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	25.56	118975	80.0216	92.0215
42)	Anthracene	24.96	144267	73.1716	84.1442
41)	Phenanthrene	24.79	185699	85.4245	98.2346
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	5.38	132691	61.0400	70.1934
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	24.37	162356	81.8994	94.1808
35)+36)+37)	C1-Dibenzothiophenes	8.62	133696	67.4421	77.5555
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	28.89	198444	88.2123	101.4404
59)	Pyrene	29.68	240186	90.6201	104.2093
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	32.97	185835	87.0676	100.1241
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	33.78	178767	82.1977	94.5239
68)	Chrysene/Triphenylene	33.91	190187	85.2950	98.0856
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	37.31	232706	84.2850	96.9242
78)	Benzo(k,j)fluoranthene	37.41	213841	90.0077	103.5050
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.28	240748	90.6310	104.2218
81)	Benzo(a)pyrene	38.48	211260	85.9890	98.8837
89)	Perylene	38.80	215896	85.6499	98.4938
82)	Indeno(1,2,3-c,d)pyrene	43.21	220326	84.1517	96.7709
83)	Dibenzo(a,h)anthracene	43.27	168622	82.6009	94.9875
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	44.58	202889	87.9673	101.1587

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.09	101148	84.4979	97.1690
10)	1-Methylnaphthalene	16.41	98524	84.4784	97.1466
11)	2,6-Dimethylnaphthalene	18.17	87146	79.8808	91.8595
12)	1,6,7-Trimethylnaphthalene	21.03	89354	83.0153	95.4641
27)	1-Methylfluorene	23.47	72966	88.6941	101.9945
35)	4-Methyldibenzothiophene	25.87	133696	86.8829	99.9117
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	26.91	132691	84.6249	97.3151
48)	3,6-Dimethylphenanthrene	27.99	122108	86.5284	99.5040
49)	Retene	30.67	61232	81.5182	93.7425
60)	2-Methylfluoranthene	30.44	154391	89.5017	102.9232
61)	Benzo(b)fluorene	31.07	128628	85.4255	98.2357
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.78	93256	92.1365	105.9531
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	39.39	315340	91.2047	104.8815
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	13.77	385734	217.71	87.04
21)	Acenaphthene-d10	19.63	231221	215.47	86.13
32)	Phenanthrene-d10	24.71	409978	217.57	86.96
66)	Chrysene-d12	33.81	532728	217.75	87.09
88)	Perylene-d12	38.71	512669	216.76	86.69
90)	5(b)H-Cholane	34.20	148061	250.79	100.31
	Internal Standards				
1)	Fluorene-d10	21.41	294610	251.05	
31)	Pyrene-d10	29.63	595079	250.63	
73)	Benzo(a)pyrene-d12	38.38	534103	250.33	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122C.D
Acq On : 2 Oct 2013 10:57 am
Operator : ECM(YMIAO)
Sample : Blank Spike Dupl.
Misc :
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Oct 08 13:13:51 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	294610m	251.05		0.00
31) Pyrene-d10	29.625	212	595079m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	534103m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	385734m	217.71		0.00
21) Acenaphthene-d10	19.625	164	231221m	215.47		0.00
32) Phenanthrene-d10	24.709	188	409978m	217.57		0.00
66) Chrysene-d12	33.810	240	532728m	217.75		0.00
88) Perylene-d12	38.705	264	512669m	216.76		0.00
90) 5(b)H-Cholane	34.199	217	148061m	250.79		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	23974m	72.95		
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	13.835	128	165976m	90.38		
9) 2-Methylnaphthalene	16.093	142	101148m	84.50		
10) 1-Methylnaphthalene	16.406	142	98524m	84.48		
11) 2,6-Dimethylnaphthalene	18.172	156	87146m	79.88		
12) 1,6,7-Trimethylnaphtha...	21.034	170	89354m	83.02		
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	14.014	134	127776m	85.28		
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	17.658	154	126202m	82.73		
23) Acenaphthylene	19.134	152	143473m	77.83		
24) Acenaphthene	19.737	154	94412m	85.43		
25) Dibenzofuran	20.318	168	141263m	86.33		
26) Fluorene	21.503	166	114564m	84.96		
27) 1-Methylfluorene	23.466	180	72966m	88.69		
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	25.557	167	118975m	80.02		
34) Dibenzothiophene	24.370	184	162356m	81.90		
35) 4-Methyldibenzothiophene	25.868	198	133696m	86.88		
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	24.794	178	185699m	85.42		
42) Anthracene	24.964	178	144267m	73.17		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122C.D
Acq On : 2 Oct 2013 10:57 am
Operator : ECM(YMIAO)
Sample : Blank Spike Dupl.
Misc :
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Oct 08 13:13:51 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	26.913	192	132691m	84.62		
48) 3,6-Dimethylphenanthrene	27.987	206	122108m	86.53		
49) Retene	30.671	234	61232m	81.52		
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	32.967	234	185835m	87.07		
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	28.891	202	198444m	88.21		
59) Pyrene	29.682	202	240186m	90.62		
60) 2-Methylfluoranthene	30.445	216	154391m	89.50		
61) Benzo(b)fluorene	31.066	216	128628m	85.43		
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	33.777	228	178767m	82.20		
68) Chrysene/Triphenylene	33.907	228	190187m	85.29		
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	42.781	191	93256m	92.14		
77) Benzo(b)fluoranthene	37.311	252	232706m	84.29		
78) Benzo(k,j)fluoranthene	37.408	252	213841m	90.01		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.284	252	240748m	90.63		
81) Benzo(a)pyrene	38.478	252	211260m	85.99		
82) Indeno(1,2,3-c,d)pyrene	43.206	276	220326m	84.15		
83) Dibenzo(a,h)anthracene	43.272	278	168622m	82.60		
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	44.580	276	202889m	87.97		
89) Perylene	38.803	252	215896m	85.65		
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	39.386	231	315340m	91.20		
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 : C:\msdchem\2\data\MS50171\
Data File : ENV3122C.D
Acq On : 2 Oct 2013 10:57 am
Operator : ECM(YMIAO)
Sample : Blank Spike Dupl.
Misc :
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Oct 08 13:13:51 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

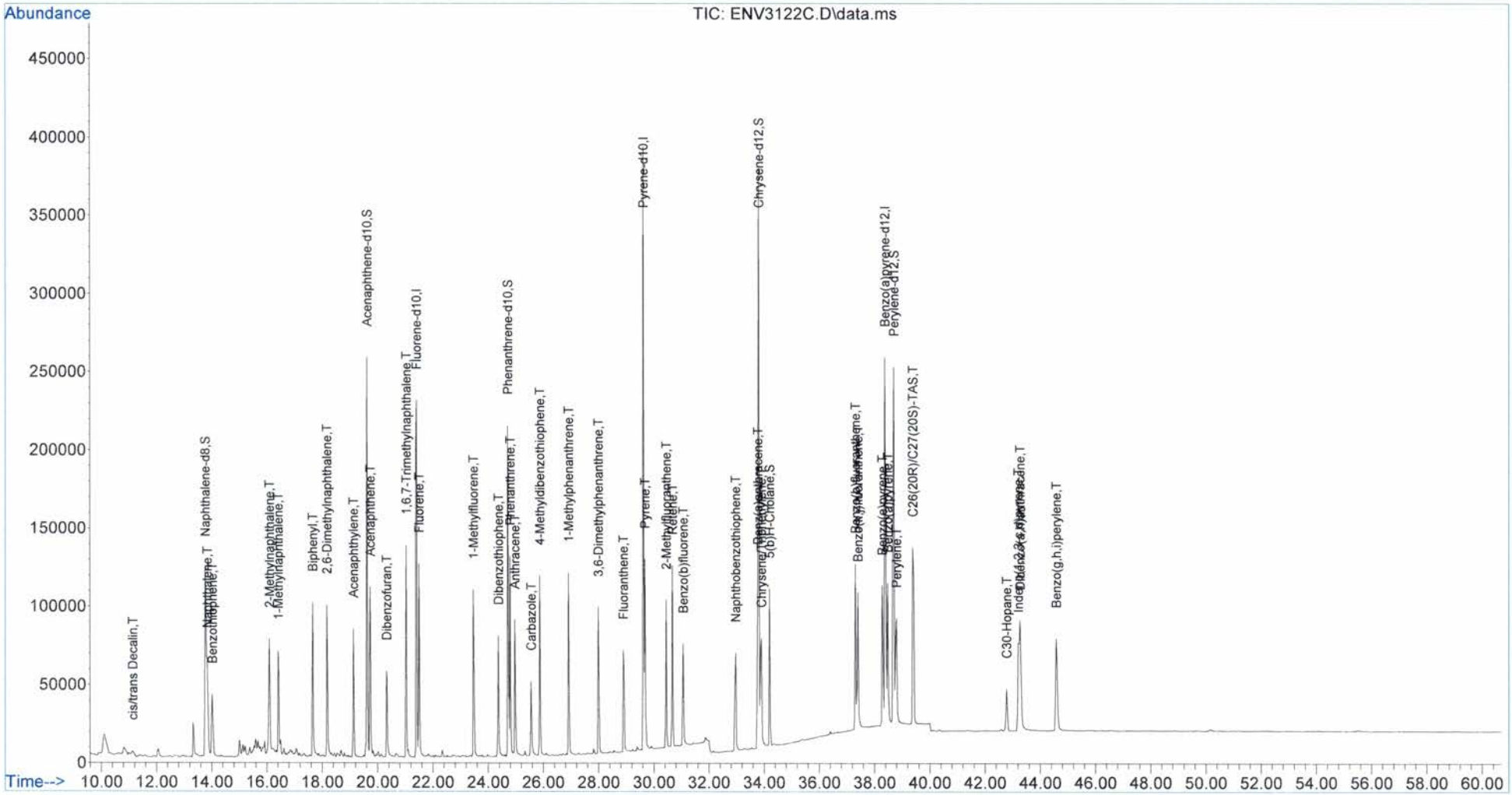
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122C.D
Acq On : 2 Oct 2013 10:57 am
Operator : ECM(YMIAO)
Sample : Blank Spike Dupl.
Misc :
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Oct 08 13:13:51 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name ENV3122D.D
Data File Path C:\msdchem\2\data\MS50171\
Operator ECM(YMIAO)
Date Acquired 10/2/2013 12:03
Acq. Method File PAH-2012.M
Sample Name MS (BG2-WS-BKG-004 MS/MSD)
Misc Info 0
Instrument Name GCMS5
Vial Number 15
Sample Multiplier 1.07527
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

ENV3122D.D
BG2-WS-BKG-004 MS/MSD)
10/2/2013 12:03
PAH-2012.M
0.929998977

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	12.07	46255	140.6109	162.9021
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	13.84	285040	155.0701	179.6534
9)+10)	C1-Naphthalenes	16.25	206836	112.5248	130.3635
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	14.01	128163	85.4547	99.0019
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	17.66	139931	91.6434	106.1717
23)	Acenaphthylene	19.13	141793	76.8489	89.0318
24)	Acenaphthene	19.74	101305	91.5821	106.1007
25)	Dibenzofuran	20.32	178974	109.2743	126.5977
26)	Fluorene	21.50	153299	113.5829	131.5893
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	25.56	334839	215.6540	249.8418
42)	Anthracene	24.96	186917	90.7810	105.1725
41)	Phenanthrene	24.79	719957	317.1391	367.4154
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	5.38	167646	73.8476	85.5547
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	24.37	225487	108.9195	126.1866
35)+36)+37)	C1-Dibenzothiophenes	8.62	156925	75.8012	87.8180
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	28.89	1955380	832.3267	964.2762
59)	Pyrene	29.68	1324580	478.5468	554.4112
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	33.78	385016	169.5206	196.3949
68)	Chrysene/Triphenylene	33.87	1408050	604.6888	700.5507
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	37.31	2461960	858.3870	994.4678
78)	Benzo(k,j)fluoranthene	37.41	696839	282.3444	327.1047
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.28	1304670	472.7962	547.7490
81)	Benzo(a)pyrene	38.48	743926	291.4831	337.6922
89)	Perylene	38.80	329740	125.9249	145.8878
82)	Indeno(1,2,3-c,d)pyrene	43.21	1142990	420.2392	486.8600
83)	Dibenzo(a,h)anthracene	43.27	366647	172.8927	200.3015
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	44.58	1065450	444.6865	515.1830

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.09	104008	86.8042	100.5653
10)	1-Methylnaphthalene	16.41	102828	88.0847	102.0489
11)	2,6-Dimethylnaphthalene	18.17	92801	84.9831	98.4555
12)	1,6,7-Trimethylnaphthalene	21.03	96453	89.5252	103.7176
27)	1-Methylfluorene	23.47	81714	99.2329	114.9644
35)	4-Methyldibenzothiophene	25.87	156925	97.6514	113.1322
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	26.91	167646	102.3813	118.6119
48)	3,6-Dimethylphenanthrene	27.99	155916	105.7976	122.5698
49)	Retene	30.67	71115	90.6584	105.0305
60)	2-Methylfluoranthene	30.44	224344	124.5356	144.2784
61)	Benzo(b)fluorene	31.07	202986	129.0894	149.5540
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	39.42	363116	101.0980	117.1251
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	13.77	371615	209.54	77.91
21)	Acenaphthene-d10	19.63	237019	220.66	82.03
32)	Phenanthrene-d10	24.71	456963	232.21	86.32
66)	Chrysene-d12	33.81	601263	235.34	87.53
88)	Perylene-d12	38.71	569296	231.71	86.18
90)	5(b)H-Cholane	34.20	166770	271.92	101.15
	Internal Standards				
1)	Fluorene-d10	21.41	317088	269.95	
31)	Pyrene-d10	29.63	668223	269.49	
73)	Benzo(a)pyrene-d12	38.38	596601	269.17	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122D.D
Acq On : 2 Oct 2013 12:03 pm
Operator : ECM(YMIAO)
Sample : MS (BG2-WS-BKG-004 MS/MSD)
Misc :
ALS Vial : 15 Sample Multiplier: 1.07527

Quant Time: Oct 08 13:17:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	317088m	251.05		0.00
31) Pyrene-d10	29.625	212	668223m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	596601m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	371615m	209.54		0.00
21) Acenaphthene-d10	19.625	164	237019m	220.66		0.00
32) Phenanthrene-d10	24.709	188	456963m	232.21		0.00
66) Chrysene-d12	33.810	240	601263m	235.34		0.00
88) Perylene-d12	38.705	264	569296m	231.71		0.00
90) 5(b)H-Cholane	34.199	217	166770m	271.92		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	12.069	138	46255m	140.61		
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	13.835	128	285040m	155.07		
9) 2-Methylnaphthalene	16.093	142	104008m	86.80		
10) 1-Methylnaphthalene	16.406	142	102828m	88.08		
11) 2,6-Dimethylnaphthalene	18.172	156	92801m	84.98		
12) 1,6,7-Trimethylnaphtha...	21.034	170	96453m	89.53		
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	14.014	134	128163m	85.45		
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	17.658	154	139931m	91.64		
23) Acenaphthylene	19.134	152	141793m	76.85		
24) Acenaphthene	19.737	154	101305m	91.58		
25) Dibenzofuran	20.318	168	178974m	109.27		
26) Fluorene	21.503	166	153299m	113.58		
27) 1-Methylfluorene	23.466	180	81714m	99.23		
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	25.557	167	334839m	215.65		
34) Dibenzothiophene	24.370	184	225487m	108.92		
35) 4-Methyldibenzothiophene	25.868	198	156925m	97.65		
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	24.794	178	719957m	317.14		
42) Anthracene	24.964	178	186917m	90.78		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122D.D
Acq On : 2 Oct 2013 12:03 pm
Operator : ECM(YMIAO)
Sample : MS (BG2-WS-BKG-004 MS/MSD)
Misc :
ALS Vial : 15 Sample Multiplier: 1.07527

Quant Time: Oct 08 13:17:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	26.913	192	167646m	102.38		
48)	3,6-Dimethylphenanthrene	27.987	206	155916m	105.80		
49)	Retene	30.671	234	71115m	90.66		
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	28.891	202	1955384m	832.33		
59)	Pyrene	29.682	202	1324576m	478.55		
60)	2-Methylfluoranthene	30.445	216	224344m	124.54		
61)	Benzo(b)fluorene	31.066	216	202986m	129.09		
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	33.777	228	385016m	169.52		
68)	Chrysene/Triphenylene	33.875	228	1408052m	604.69		
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	37.311	252	2461963m	858.39		
78)	Benzo(k,j)fluoranthene	37.408	252	696839m	282.34		
79)	Benzo(a)fluoranthene	0.000		0	N.D.	d	
80)	Benzo(e)pyrene	38.284	252	1304673m	472.80		
81)	Benzo(a)pyrene	38.478	252	743926m	291.48		
82)	Indeno(1,2,3-c,d)pyrene	43.206	276	1142986m	420.24		
83)	Dibenzo(a,h)anthracene	43.272	278	366647m	172.89		
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	44.580	276	1065448m	444.69		
89)	Perylene	38.803	252	329740m	125.93		
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	39.419	231	363116m	101.10		
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.		

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122D.D
Acq On : 2 Oct 2013 12:03 pm
Operator : ECM(YMIAO)
Sample : MS (BG2-WS-BKG-004 MS/MSD)
Misc :
ALS Vial : 15 Sample Multiplier: 1.07527

Quant Time: Oct 08 13:17:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

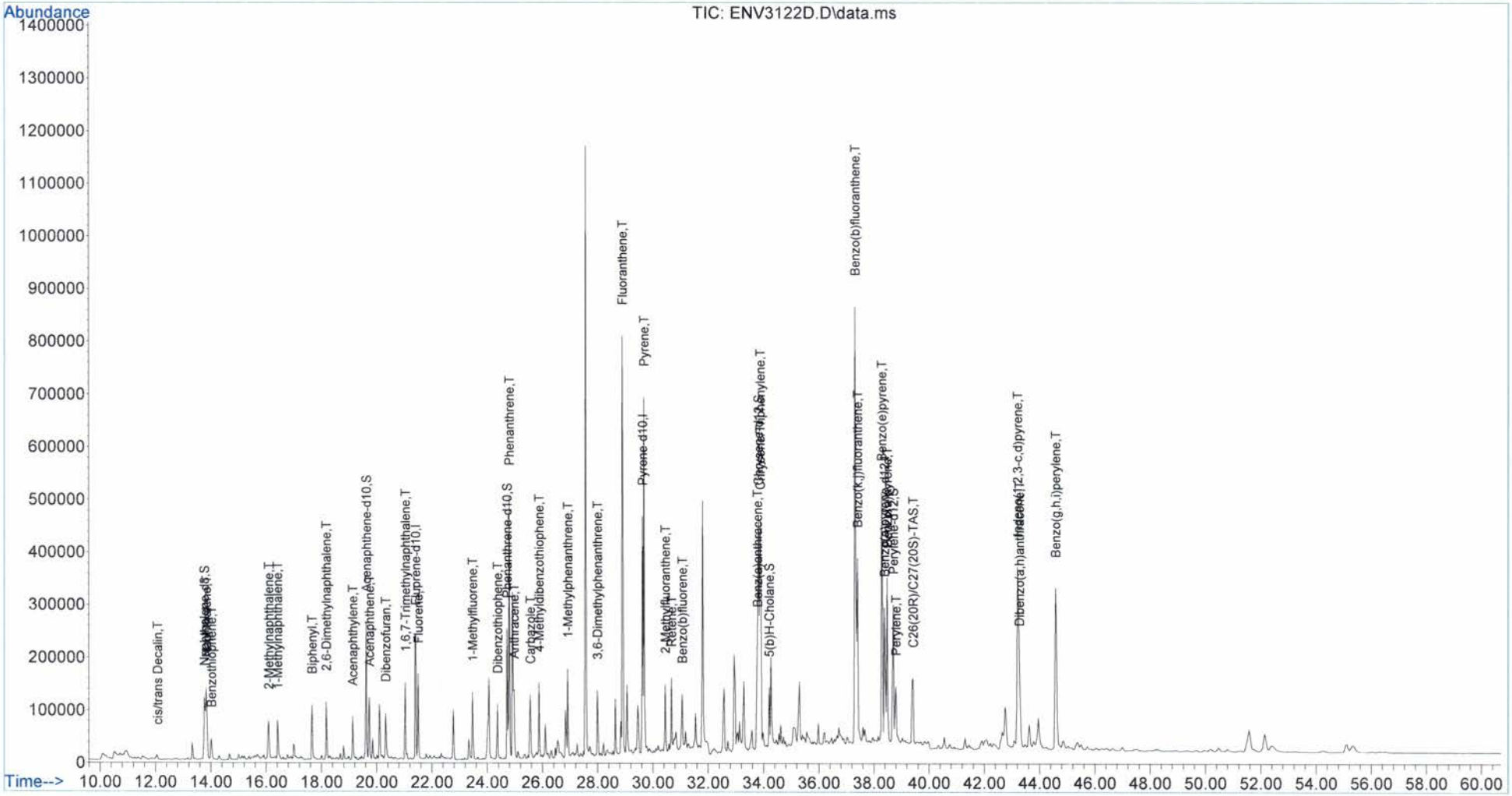
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122D.D
Acq On : 2 Oct 2013 12:03 pm
Operator : ECM(YMIAO)
Sample : MS (BG2-WS-BKG-004 MS/MSD)
Misc :
ALS Vial : 15 Sample Multiplier: 1.07527

Quant Time: Oct 08 13:17:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name ENV3122E.D
Data File Path C:\msdchem\2\data\MS50171\
Operator ECM(YMIAO)
Date Acquired 10/2/2013 13:10
Acq. Method File PAH-2012.M
Sample Name MSD (BG2-WS-BKG-004 MS/MSD)
Misc Info 0
Instrument Name GCMS5
Vial Number 16
Sample Multiplier 0.95238
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

ENV3122E.D
(BG2-WS-BKG-004 MS/MSD)
10/2/2013 13:10
PAH-2012.M
1.05000105

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.13	49699	126.1846	144.5621
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	13.83	290554	132.0218	151.2494
9)+10)	C1-Naphthalenes	16.09	227526	103.3831	118.4399
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	14.01	136417	75.9696	87.0338
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	17.66	146606	80.1933	91.8726
23)	Acenaphthylene	19.13	157528	71.3081	81.6934
24)	Acenaphthene	19.74	114189	86.2190	98.7759
25)	Dibenzofuran	20.32	199847	101.9113	116.7537
26)	Fluorene	21.50	172206	106.5656	122.0858
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	25.56	400096	216.4026	247.9195
42)	Anthracene	24.96	214851	87.6315	100.3942
41)	Phenanthrene	24.79	1048280	387.7901	444.2678
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	5.38	187087	69.2091	79.2887
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	24.37	255342	103.5818	118.6674
35)+36)+37)	C1-Dibenzothiophenes	8.62	172453	69.9571	80.1457
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	28.89	2834410	1013.2180	1160.7830
59)	Pyrene	29.68	1937640	587.8908	673.5112
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	33.78	504097	186.3951	213.5416
68)	Chrysene/Triphenylene	33.87	1876780	676.8650	775.4436
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	37.31	3550850	1072.6846	1228.9103
78)	Benzo(k,j)fluoranthene	37.41	939824	329.9378	377.9899
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.28	1840060	577.7547	661.8988
81)	Benzo(a)pyrene	38.48	1046770	355.3644	407.1196
89)	Perylene	38.80	425422	140.7665	161.2677
82)	Indeno(1,2,3-c,d)pyrene	43.21	1640880	522.7242	598.8537
83)	Dibenzo(a,h)anthracene	43.27	468998	191.6189	219.5262
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	44.58	1547250	559.5261	641.0154

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.09	115547	80.5436	92.2740
10)	1-Methylnaphthalene	16.09	111979	80.1169	91.7851
11)	2,6-Dimethylnaphthalene	18.17	102996	78.7769	90.2499
12)	1,6,7-Trimethylnaphthalene	21.03	109008	84.5057	96.8131
27)	1-Methylfluorene	23.47	89428	90.7051	103.9153
35)	4-Methyldibenzothiophene	25.87	172453	90.1227	103.2481
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	26.91	187087	95.9504	109.9246
48)	3,6-Dimethylphenanthrene	27.99	164071	93.4961	107.1129
49)	Retene	30.67	82103	87.8987	100.7002
60)	2-Methylfluoranthene	30.44	271113	126.3884	144.7956
61)	Benzo(b)fluorene	31.07	231436	123.6037	141.6053
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	39.42	381730	92.0856	105.4970
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	13.77	381717	179.77	75.46
21)	Acenaphthene-d10	19.63	253539	197.14	82.75
32)	Phenanthrene-d10	24.71	487368	207.99	87.29
66)	Chrysene-d12	33.81	636130	209.10	87.81
88)	Perylene-d12	38.71	585140	206.35	86.65
90)	5(b)H-Cholane	34.20	170767	241.25	101.32
	Internal Standards				
1)	Fluorene-d10	21.41	336259	239.09	
31)	Pyrene-d10	29.63	704754	238.69	
73)	Benzo(a)pyrene-d12	38.38	609871	238.40	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122E.D
Acq On : 2 Oct 2013 1:10 pm
Operator : ECM(YMIAO)
Sample : MSD (BG2-WS-BKG-004 MS/MSD)
Misc :
ALS Vial : 16 Sample Multiplier: 0.95238

Quant Time: Oct 08 13:19:46 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	336259m	251.05		0.00
31) Pyrene-d10	29.625	212	704754m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	609871m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	381717m	179.77		0.00
21) Acenaphthene-d10	19.625	164	253539m	197.14		0.00
32) Phenanthrene-d10	24.709	188	487368m	207.99		0.00
66) Chrysene-d12	33.810	240	636130m	209.10		0.00
88) Perylene-d12	38.705	264	585140m	206.35		0.00
90) 5(b)H-Cholane	34.199	217	170767m	241.25		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	49699m	126.19		
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	13.835	128	290554m	132.02		
9) 2-Methylnaphthalene	16.093	142	115547m	80.54		
10) 1-Methylnaphthalene	16.093	142	111979m	80.12		
11) 2,6-Dimethylnaphthalene	18.172	156	102996m	78.78		
12) 1,6,7-Trimethylnaphtha...	21.034	170	109008m	84.51		
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	14.014	134	136417m	75.97		
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	17.658	154	146606m	80.19		
23) Acenaphthylene	19.133	152	157528m	71.31		
24) Acenaphthene	19.737	154	114189m	86.22		
25) Dibenzofuran	20.318	168	199847m	101.91		
26) Fluorene	21.503	166	172206m	106.57		
27) 1-Methylfluorene	23.466	180	89428m	90.71		
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	25.557	167	400096m	216.40		
34) Dibenzothiophene	24.370	184	255342m	103.58		
35) 4-Methyldibenzothiophene	25.868	198	172453m	90.12		
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	24.794	178	1048278m	387.79		
42) Anthracene	24.964	178	214851m	87.63		
43) 3-Methylphenanthrene	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122E.D
Acq On : 2 Oct 2013 1:10 pm
Operator : ECM(YMIAO)
Sample : MSD (BG2-WS-BKG-004 MS/MSD)
Misc :
ALS Vial : 16 Sample Multiplier: 0.95238

Quant Time: Oct 08 13:19:46 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	26.913	192	187087m	95.95		
48)	3,6-Dimethylphenanthrene	27.987	206	164071m	93.50		
49)	Retene	30.671	234	82103m	87.90		
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	28.891	202	2834411m	1013.21		
59)	Pyrene	29.682	202	1937637m	587.89		
60)	2-Methylfluoranthene	30.445	216	271113m	126.39		
61)	Benzo(b)fluorene	31.066	216	231436m	123.60		
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	33.777	228	504097m	186.39		
68)	Chrysene/Triphenylene	33.875	228	1876775m	676.87		
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.		
75)	18a-Oleanane	0.000		0	N.D.	d	
76)	C30-Hopane	0.000		0	N.D.	d	
77)	Benzo(b)fluoranthene	37.311	252	3550852m	1072.69		
78)	Benzo(k,j)fluoranthene	37.408	252	939824m	329.94		
79)	Benzo(a)fluoranthene	0.000		0	N.D.	d	
80)	Benzo(e)pyrene	38.284	252	1840060m	577.75		
81)	Benzo(a)pyrene	38.478	252	1046770m	355.36		
82)	Indeno(1,2,3-c,d)pyrene	43.206	276	1640884m	522.72		
83)	Dibenzo(a,h)anthracene	43.272	278	468998m	191.62		
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	44.579	276	1547249m	559.53		
89)	Perylene	38.802	252	425422m	140.77		
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	39.418	231	381730m	92.09		
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.		

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122E.D
Acq On : 2 Oct 2013 1:10 pm
Operator : ECM(YMIAO)
Sample : MSD (BG2-WS-BKG-004 MS/MSD)
Misc :
ALS Vial : 16 Sample Multiplier: 0.95238

Quant Time: Oct 08 13:19:46 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

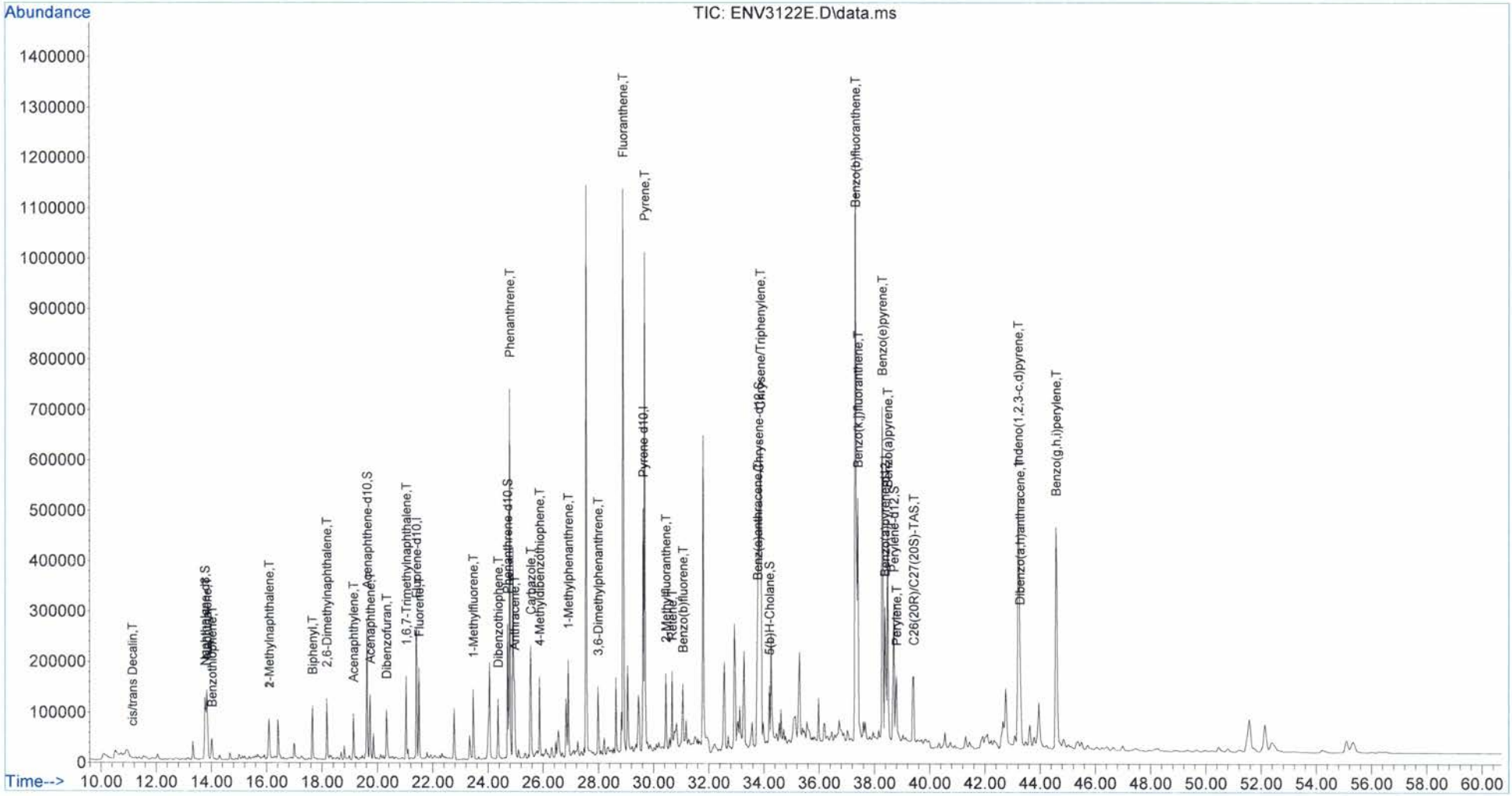
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ENV3122E.D
Acq On : 2 Oct 2013 1:10 pm
Operator : ECM(YMIAO)
Sample : MSD (BG2-WS-BKG-004 MS/MSD)
Misc :
ALS Vial : 16 Sample Multiplier: 0.95238

Quant Time: Oct 08 13:19:46 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name	ARC1972.D
Data File Path	C:\msdchem\2\data\MS50171\
Operator	ECM(YMIAO)
Date Acquired	10/2/2013 14:16
Acq. Method File	PAH-2012.M
Sample Name	BG1-WS-BKG-003
Misc Info	0
Instrument Name	GCMS5
Vial Number	17
Sample Multiplier	0.96154
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

ARC1972.D
BG1-WS-BKG-003
10/2/2013 14:16
PAH-2012.M
1.039998336

#	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	13.83	190957	91.2862	106.0387
9)+10)	C1-Naphthalenes	16.26	7012	3.3521	3.8938
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	17.66	4610	2.6530	3.0817
23)	Acenaphthylene	19.13	3069	1.4616	1.6978
24)	Acenaphthene	19.74	4467	3.5485	4.1220
25)	Dibenzofuran	20.34	5037	2.7024	3.1391
26)	Fluorene	21.50	8040	5.2345	6.0804
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	25.56	8056	4.6975	5.4566
42)	Anthracene	24.96	4887	2.1489	2.4962
41)	Phenanthrene	24.79	52043	20.7554	24.1096
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.69	12328	4.9166	5.7111
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	24.37	3278	1.4336	1.6652
35)+36)+37)	C1-Dibenzothiophenes	26.19	5566	2.4342	2.8275
38)	C2-Dibenzothiophenes	27.59	7081	3.0967	3.5972
39)	C3-Dibenzothiophenes	29.63	5527	2.4171	2.8077
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.89	54906	21.1596	24.5791
59)	Pyrene	29.68	29353	9.6012	11.1528
62)	C1-Fluoranthenes/Pyrenes	30.84	15021	5.7888	6.7243
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	32.97	7279	2.9566	3.4344
54)	C1-Naphthobenzothiophenes	35.20	12685	5.1525	5.9851
55)	C2-Naphthobenzothiophenes	35.98	25426	10.3277	11.9967
56)	C3-Naphthobenzothiophenes	37.05	37865	15.3802	17.8658
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	33.78	4924	1.9628	2.2800
68)	Chrysene/Triphenylene	33.91	13108	5.0965	5.9202
69)	C1-Chrysenes	35.11	7281	2.8309	3.2884
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	37.31	17880	5.8149	6.7546
78)	Benzo(k,j)fluoranthene	37.41	3315	1.2529	1.4553
79)	Benzo(a)fluoranthene	37.67	1027	0.3881	0.4509
80)	Benzo(e)pyrene	38.28	9697	3.2778	3.8075
81)	Benzo(a)pyrene	38.48	5322	1.9450	2.2594
89)	Perylene	38.80	2046	0.7288	0.8466
82)	Indeno(1,2,3-c,d)pyrene	43.24	8558	2.9349	3.4092
83)	Dibenzo(a,h)anthracene	43.27	2460	1.0820	1.2569
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	44.61	10532	4.1002	4.7628

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.09	2628	1.9273	2.2388
10)	1-Methylnaphthalene	16.43	4384	3.3000	3.8333
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	25.87	1853	1.0440	1.2127
36)	2/3-Methyldibenzothiophene	26.18	1419	0.7995	0.9287
37)	1-Methyldibenzothiophene	26.52	2294	1.2924	1.5013
43)	3-Methylphenanthrene	26.46	3238	1.7903	2.0796
44)	2-Methylphenanthrene	26.55	4027	2.2266	2.5864
45)	2-Methylanthracene	26.72	420	0.2322	0.2697
46)	4/9-Methylphenanthrene	26.83	2453	1.3563	1.5755
47)	1-Methylphenanthrene	26.91	2190	1.2109	1.4066
48)	3,6-Dimethylphenanthrene	0.00	0	0.0000	0.0000
49)	Retene	0.00	0	0.0000	0.0000
60)	2-Methylfluoranthene	30.44	1366	0.6865	0.7975
61)	Benzo(b)fluorene	31.07	1370	0.7888	0.9163
74)	C29-Hopane	40.75	15776	13.9952	16.2569
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.06	15794	14.0112	16.2755
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	13.77	347228	172.04	71.53
21)	Acenaphthene-d10	19.63	232710	190.37	79.14
32)	Phenanthrene-d10	24.71	450147	207.10	86.09
66)	Chrysene-d12	33.81	565159	200.28	83.30
88)	Perylene-d12	38.71	539151	204.68	85.14
90)	5(b)H-Cholane	34.20	161200	245.16	101.99
	Internal Standards				
1)	Fluorene-d10	21.39	322687	241.39	
31)	Pyrene-d10	29.63	660004	240.99	
73)	Benzo(a)pyrene-d12	38.38	571957	240.70	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1972.D
Acq On : 2 Oct 2013 2:16 pm
Operator : ECM(YMIAO)
Sample : BG1-WS-BKG-003
Misc :
ALS Vial : 17 Sample Multiplier: 0.96154

Quant Time: Oct 08 13:35:06 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.391	176	322687m	251.05		-0.02
31) Pyrene-d10	29.625	212	660004m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	571957m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	347228m	172.04		0.00
21) Acenaphthene-d10	19.625	164	232710m	190.37		0.00
32) Phenanthrene-d10	24.709	188	450147m	207.10		0.00
66) Chrysene-d12	33.810	240	565159m	200.27		0.00
88) Perylene-d12	38.705	264	539151m	204.68		0.00
90) 5(b)H-Cholane	34.199	217	161200m	245.16		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	13.835	128	190957m	91.29		
9) 2-Methylnaphthalene	16.093	142	2628m	1.93		
10) 1-Methylnaphthalene	16.428	142	4384m	3.30		
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	17.658	154	4610m	2.65		
23) Acenaphthylene	19.133	152	3069m	1.46		
24) Acenaphthene	19.737	154	4467m	3.55		
25) Dibenzofuran	20.341	168	5037m	2.70		
26) Fluorene	21.503	166	8040m	5.23		
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	25.557	167	8056m	4.70		
34) Dibenzothiophene	24.370	184	3278m	1.43		
35) 4-Methyldibenzothiophene	25.868	198	1853m	1.04		
36) 2/3-Methyldibenzothiop...	26.178	198	1419m	0.80		
37) 1-Methyldibenzothiophene	26.517	198	2294m	1.29		
38) C2-Dibenzothiophenes	27.591	212	7081m	3.10		
39) C3-Dibenzothiophenes	29.625	226	5527m	2.42		
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.794	178	52043m	20.76		
42) Anthracene	24.964	178	4887m	2.15		
43) 3-Methylphenanthrene	26.461	192	3238m	1.79		

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1972.D
Acq On : 2 Oct 2013 2:16 pm
Operator : ECM(YMIAO)
Sample : BG1-WS-BKG-003
Misc :
ALS Vial : 17 Sample Multiplier: 0.96154

Quant Time: Oct 08 13:35:06 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.546	192	4027m	2.23		
45) 2-Methylanthracene	26.715	192	420m	0.23		
46) 4/9-Methylphenanthrene	26.828	192	2453m	1.36		
47) 1-Methylphenanthrene	26.913	192	2190m	1.21		
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	32.967	234	7279m	2.96		
54) C1-Naphthobenzothiophenes	35.204	248	12685m	5.15		
55) C2-Naphthobenzothiophenes	35.982	262	25426m	10.33		
56) C3-Naphthobenzothiophenes	37.052	276	37865m	15.38		
57) C4-Naphthobenzothiophenes	0.000		0	N.D.	d	
58) Fluoranthene	28.891	202	54906m	21.16		
59) Pyrene	29.682	202	29353m	9.60		
60) 2-Methylfluoranthene	30.445	216	1366m	0.69		
61) Benzo(b)fluorene	31.066	216	1370m	0.79		
62) C1-Fluoranthenes/Pyrenes	30.840	216	15021m	5.79		
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	33.777	228	4924m	1.96		
68) Chrysene/Triphenylene	33.907	228	13108m	5.10		
69) C1-Chrysenes	35.107	242	7281m	2.83		
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	40.754	191	15776m	14.00		
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.062	191	15794m	14.01		
77) Benzo(b)fluoranthene	37.311	252	17880m	5.81		
78) Benzo(k,j)fluoranthene	37.408	252	3315m	1.25		
79) Benzo(a)fluoranthene	37.668	252	1027m	0.39		
80) Benzo(e)pyrene	38.284	252	9697m	3.28		
81) Benzo(a)pyrene	38.478	252	5322m	1.95		
82) Indeno(1,2,3-c,d)pyrene	43.239	276	8558m	2.93		
83) Dibenzo(a,h)anthracene	43.271	278	2460m	1.08		
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	44.612	276	10532m	4.10		
89) Perylene	38.802	252	2046m	0.73		
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.		

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1972.D
Acq On : 2 Oct 2013 2:16 pm
Operator : ECM(YMIAO)
Sample : BG1-WS-BKG-003
Misc :
ALS Vial : 17 Sample Multiplier: 0.96154

Quant Time: Oct 08 13:35:06 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

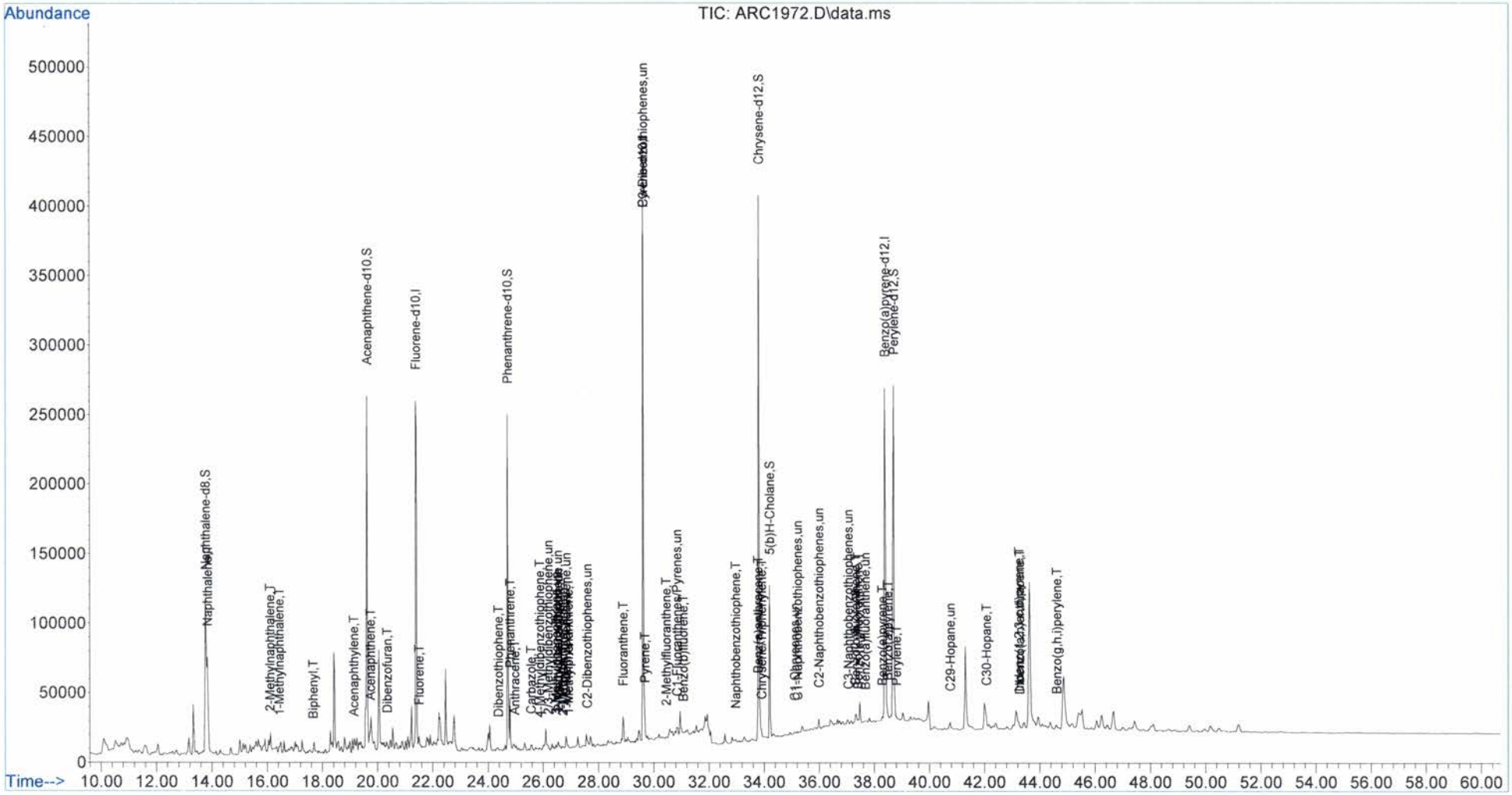
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1972.D
Acq On : 2 Oct 2013 2:16 pm
Operator : ECM(YMIAO)
Sample : BG1-WS-BKG-003
Misc :
ALS Vial : 17 Sample Multiplier: 0.96154

Quant Time: Oct 08 13:35:06 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name ARC1974.D
Data File Path C:\GCMS5\MS50171\
Operator ECM(YMIAO)
Date Acquired 10/2/2013 15:22
Acq. Method File PAH-2012.M
Sample Name BG2-WS-BKG-004
Misc Info 0
Instrument Name GCMS5
Vial Number 18
Sample Multiplier 0.9434
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

ARC1974.D
BG2-WS-BKG-004
10/2/2013 15:22
PAH-2012.M
1.05999576

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
3)	cis/trans Decalin	11.82	27096	75.7835	84.6587
4)	C1-Decalins	12.52	8424	23.5607	26.3199
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	13.84	80330	40.2075	44.9163
9)+10)	C1-Naphthalenes	16.26	9155	4.5823	5.1190
13)	C2-Naphthalenes	18.44	14126	7.0705	7.8985
14)	C3-Naphthalenes	0.00	0	0.0000	0.0000
15)	C4-Naphthalenes	0.00	0	0.0000	0.0000
16)	Benzothiophene	14.04	2806	1.7213	1.9229
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	17.66	5006	3.0164	3.3696
23)	Acenaphthylene	19.13	20579	10.2616	11.4633
24)	Acenaphthene	19.74	11900	9.8977	11.0568
25)	Dibenzofuran	20.32	37046	20.8103	23.2474
26)	Fluorene	21.50	29281	19.9603	22.2979
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	25.56	243740	136.5864	152.5823
42)	Anthracene	24.94	42707	18.0470	20.1605
41)	Phenanthrene	24.79	840871	322.2786	360.0214
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.69	180647	69.2362	77.3445
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	24.37	54012	22.7003	25.3588
35)+36)+37)	C1-Dibenzothiophenes	26.19	24273	10.2015	11.3962
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	28.89	2915300	1079.7024	1206.1486
59)	Pyrene	29.68	1874330	589.1854	658.1861
62)	C1-Fluoranthenes/Pyrenes	30.84	544056	201.4951	225.0927
63)	C2-Fluoranthenes/Pyrenes	32.58	627211	232.2915	259.4956
64)	C3-Fluoranthenes/Pyrenes	34.78	219236	81.1955	90.7045
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	32.97	474657	185.2838	206.9827
54)	C1-Naphthobenzothiophenes	34.36	180295	70.3789	78.6211
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	33.78	250629	96.0136	107.2579
68)	Chrysene/Triphenylene	33.87	2014050	752.5615	840.6955
69)	C1-Chrysenes	35.14	352770	131.8147	147.2518
70)	C2-Chrysenes	36.47	168158	62.8333	70.1918
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	37.31	3723270	1135.2970	1268.2540
78)	Benzo(k,j)fluoranthene	37.41	899600	318.7711	356.1030
79)	Benzo(a)fluoranthene	37.67	98766	34.9975	39.0961
80)	Benzo(e)pyrene	38.28	1824690	578.2882	646.0127
81)	Benzo(a)pyrene	38.48	1001870	343.3042	383.5093
89)	Perylene	38.80	203858	68.0849	76.0585
82)	Indeno(1,2,3-c,d)pyrene	43.21	1613300	518.7455	579.4968
83)	Dibenzo(a,h)anthracene	43.27	280963	115.8674	129.4369
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	44.58	1547010	564.6721	630.8020

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.09	3942	3.0269	3.3814
10)	1-Methylnaphthalene	16.43	5213	4.1085	4.5897
11)	2,6-Dimethylnaphthalene	18.22	1705	1.4365	1.6048
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	25.87	7004	3.7922	4.2363
36)	2/3-Methyldibenzothiophene	26.18	9373	5.0749	5.6692
37)	1-Methyldibenzothiophene	26.52	7896	4.2752	4.7758
43)	3-Methylphenanthrene	26.46	40049	21.2803	23.7725
44)	2-Methylphenanthrene	26.55	60814	32.3139	36.0983
45)	2-Methylanthracene	26.69	13498	7.1722	8.0122
46)	4/9-Methylphenanthrene	26.83	35373	18.7956	20.9968
47)	1-Methylphenanthrene	26.91	30913	16.4258	18.3495
48)	3,6-Dimethylphenanthrene	0.00	0	0.0000	0.0000
49)	Retene	0.00	0	0.0000	0.0000
60)	2-Methylfluoranthene	30.44	88318	42.6568	47.6524
61)	Benzo(b)fluorene	31.07	74292	41.1077	45.9219
74)	C29-Hopane	40.75	38341	31.8903	35.6251
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.06	39264	32.6581	36.4827
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	13.77	380348	197.31	83.62
21)	Acenaphthene-d10	19.63	245887	210.61	89.24
32)	Phenanthrene-d10	24.71	477872	211.29	89.52
66)	Chrysene-d12	33.81	635143	216.30	91.70
88)	Perylene-d12	38.71	595079	211.81	89.80
90)	5(b)H-Cholane	34.20	164822	235.03	99.65
	Internal Standards				
1)	Fluorene-d10	21.39	302378	236.84	
31)	Pyrene-d10	29.63	673816	236.44	
73)	Benzo(a)pyrene-d12	38.38	598522	236.16	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1974.D
Acq On : 2 Oct 2013 3:22 pm
Operator : ECM(YMIAO)
Sample : BG2-WS-BKG-004
Misc :
ALS Vial : 18 Sample Multiplier: 0.9434

Quant Time: Oct 08 13:12:19 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.392	176	302378m	251.05		-0.02
31) Pyrene-d10	29.625	212	673816m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	598522m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	380348m	197.31		0.00
21) Acenaphthene-d10	19.625	164	245887m	210.61		0.00
32) Phenanthrene-d10	24.709	188	477872m	211.29		0.00
66) Chrysene-d12	33.810	240	635143m	216.30		0.00
88) Perylene-d12	38.705	264	595079m	211.81		0.00
90) 5(b)H-Cholane	34.199	217	164822m	235.03		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.823	138	27096m	75.78		
4) C1-Decalins	12.516	152	8424m	23.56		
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	13.835	128	80330m	40.21		
9) 2-Methylnaphthalene	16.093	142	3942m	3.03		
10) 1-Methylnaphthalene	16.428	142	5213m	4.11		
11) 2,6-Dimethylnaphthalene	18.217	156	1705m	1.44		
12) 1,6,7-Trimethylnaphtha...	0.000		0	N.D.	d	
13) C2-Naphthalenes	18.440	156	14126m	7.07		
14) C3-Naphthalenes	0.000		0	N.D.	d	
15) C4-Naphthalenes	0.000		0	N.D.	d	
16) Benzothiophene	14.036	134	2806m	1.72		
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	17.658	154	5006m	3.02		
23) Acenaphthylene	19.134	152	20579m	10.26		
24) Acenaphthene	19.737	154	11900m	9.90		
25) Dibenzofuran	20.318	168	37046m	20.81		
26) Fluorene	21.503	166	29281m	19.96		
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	25.557	167	243740m	136.59		
34) Dibenzothiophene	24.370	184	54012m	22.70		
35) 4-Methyldibenzothiophene	25.868	198	7004m	3.79		
36) 2/3-Methyldibenzothiop...	26.179	198	9373m	5.07		
37) 1-Methyldibenzothiophene	26.518	198	7896m	4.28		
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	24.794	178	840871m	322.28		
42) Anthracene	24.935	178	42707m	18.05		
43) 3-Methylphenanthrene	26.461	192	40049m	21.28		

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1974.D
Acq On : 2 Oct 2013 3:22 pm
Operator : ECM(YMIAO)
Sample : BG2-WS-BKG-004
Misc :
ALS Vial : 18 Sample Multiplier: 0.9434

Quant Time: Oct 08 13:12:19 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44)	2-Methylphenanthrene	26.546	192	60814m	32.31		
45)	2-Methylanthracene	26.687	192	13498m	7.17		
46)	4/9-Methylphenanthrene	26.828	192	35373m	18.80		
47)	1-Methylphenanthrene	26.913	192	30913m	16.43		
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	32.967	234	474657m	185.28		
54)	C1-Naphthobenzothiophenes	34.361	248	180295m	70.38		
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	28.891	202	2915296m	1079.70		
59)	Pyrene	29.682	202	1874329m	589.19		
60)	2-Methylfluoranthene	30.445	216	88318m	42.66		
61)	Benzo(b)fluorene	31.066	216	74292m	41.11		
62)	C1-Fluoranthenes/Pyrenes	30.840	216	544056m	201.49		
63)	C2-Fluoranthenes/Pyrenes	32.578	230	627211m	232.29		
64)	C3-Fluoranthenes/Pyrenes	34.782	244	219236m	81.20		
65)	C4-Fluoranthenes/Pyrenes	0.000		0	N.D.	d	
67)	Benz(a)anthracene	33.777	228	250629m	96.01		
68)	Chrysene/Triphenylene	33.875	228	2014050m	752.56		
69)	C1-Chrysenes	35.139	242	352770m	131.81		
70)	C2-Chrysenes	36.468	256	168158m	62.83		
71)	C3-Chrysenes	0.000		0	N.D.	d	
72)	C4-Chrysenes	0.000		0	N.D.	d	
74)	C29-Hopane	40.754	191	38341m	31.89		
75)	18a-Oleanane	0.000		0	N.D.	d	
76)	C30-Hopane	42.062	191	39264m	32.66		
77)	Benzo(b)fluoranthene	37.311	252	3723271m	1135.29		
78)	Benzo(k,j)fluoranthene	37.408	252	899600m	318.77		
79)	Benzo(a)fluoranthene	37.668	252	98766m	35.00		
80)	Benzo(e)pyrene	38.284	252	1824691m	578.29		
81)	Benzo(a)pyrene	38.478	252	1001874m	343.30		
82)	Indeno(1,2,3-c,d)pyrene	43.206	276	1613304m	518.75		
83)	Dibenzo(a,h)anthracene	43.272	278	280963m	115.87		
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	44.580	276	1547010m	564.67		
89)	Perylene	38.803	252	203858m	68.08		
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.		

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1974.D
Acq On : 2 Oct 2013 3:22 pm
Operator : ECM(YMIAO)
Sample : BG2-WS-BKG-004
Misc :
ALS Vial : 18 Sample Multiplier: 0.9434

Quant Time: Oct 08 13:12:19 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

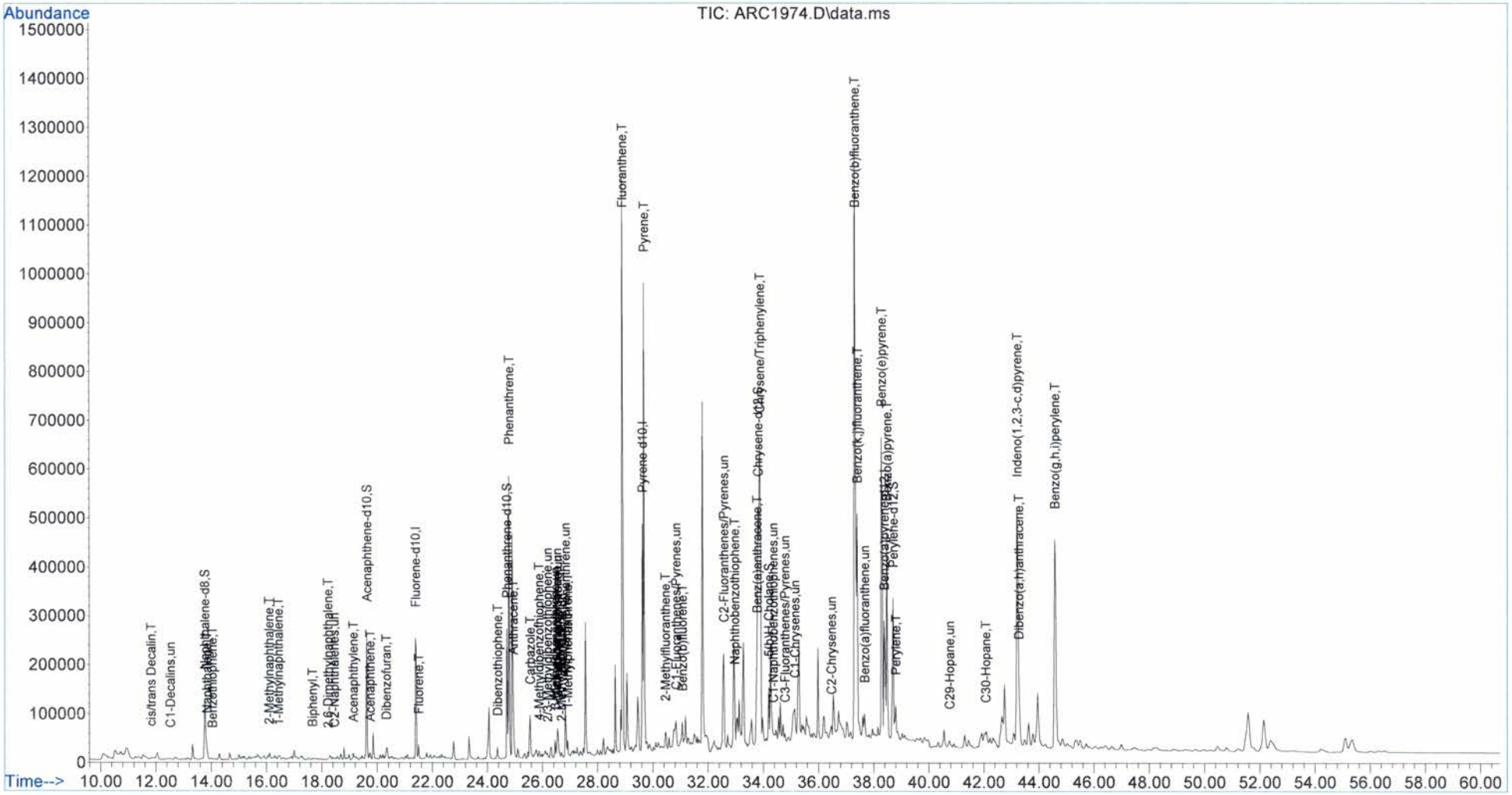
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1974.D
Acq On : 2 Oct 2013 3:22 pm
Operator : ECM(YMIAO)
Sample : BG2-WS-BKG-004
Misc :
ALS Vial : 18 Sample Multiplier: 0.9434

Quant Time: Oct 08 13:12:19 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



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

Data File Name	ARC1980.D
Data File Path	C:\GCMS5\MS50171\
Operator	ECM(YMIAO)
Date Acquired	10/2/2013 16:28
Acq. Method File	PAH-2012.M
Sample Name	BG4-WS-BKG-006
Misc Info	0
Instrument Name	GCMS5
Vial Number	19
Sample Multiplier	1.13636
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

ARC1980.D
BG4-WS-BKG-006
10/2/2013 16:28
PAH-2012.M
0.880002816

#	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	13.84	180101	99.3870	115.6941
9)+10)	C1-Naphthalenes	16.26	3797	2.0953	2.4391
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	17.66	2444	1.6236	1.8900
23)	Acenaphthylene	19.13	1093	0.6009	0.6995
24)	Acenaphthene	19.74	797	0.7309	0.8508
25)	Dibenzofuran	20.34	2209	1.3681	1.5926
26)	Fluorene	21.50	1976	1.4851	1.7288
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	25.56	1834	1.2307	1.4327
42)	Anthracene	0.00	0	0.0000	0.0000
41)	Phenanthrene	24.79	10576	4.8541	5.6506
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.69	6357	2.9177	3.3964
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	26.19	2019	0.0000	0.0000
38)	C2-Dibenzothiophenes	27.62	4118	2.0726	2.4127
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.92	8883	3.9397	4.5861
59)	Pyrene	29.68	10393	3.9123	4.5542
62)	C1-Fluoranthenes/Pyrenes	31.18	6509	2.8868	3.3605
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	33.81	2453	1.1253	1.3100
68)	Chrysene/Triphenylene	33.84	4511	2.0185	2.3497
69)	C1-Chrysenes	35.11	5777	2.5850	3.0091
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	37.31	4344	1.5589	1.8146
78)	Benzo(k,j)fluoranthene	37.41	712	0.2969	0.3456
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	38.28	3536	1.3189	1.5353
81)	Benzo(a)pyrene	38.48	1293	0.5214	0.6070
89)	Perylene	0.00	0	0.0000	0.0000
82)	Indeno(1,2,3-c,d)pyrene	43.24	3343	1.2651	1.4726
83)	Dibenzo(a,h)anthracene	43.27	938	0.4552	0.5299
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	44.61	4383	1.8828	2.1918

#	Compound Name	Ret Time (minute)	Target Response (area)	Concentration	Su. Corrected Concentration
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	16.09	2139	1.8108	2.1079
10)	1-Methylnaphthalene	16.43	1658	1.4407	1.6771
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	25.87	609	0.3949	0.4597
36)	2/3-Methyldibenzothiophene	26.18	642	0.4163	0.4846
37)	1-Methyldibenzothiophene	26.52	768	0.4980	0.5797
43)	3-Methylphenanthrene	26.46	1542	0.9812	1.1422
44)	2-Methylphenanthrene	26.55	1904	1.2115	1.4103
45)	2-Methylanthracene	26.72	190	0.1209	0.1407
46)	4/9-Methylphenanthrene	26.83	1387	0.8826	1.0274
47)	1-Methylphenanthrene	26.91	1334	0.8488	0.9881
48)	3,6-Dimethylphenanthrene	0.00	0	0.0000	0.0000
49)	Retene	0.00	0	0.0000	0.0000
60)	2-Methylfluoranthene	30.44	524	0.3031	0.3528
61)	Benzo(b)fluorene	31.07	639	0.4234	0.4929
74)	C29-Hopane	40.75	5672	5.5522	6.4632
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.06	7313	7.1586	8.3331
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	13.77	406697	232.61	81.84
21)	Acenaphthene-d10	19.63	248150	234.34	82.43
32)	Phenanthrene-d10	24.71	461275	244.24	85.90
66)	Chrysene-d12	33.81	598297	244.00	85.88
88)	Perylene-d12	38.71	580891	243.34	85.64
90)	5(b)H-Cholane	34.20	164330	275.78	97.07
	Internal Standards				
1)	Fluorene-d10	21.39	330359	285.28	
31)	Pyrene-d10	29.63	677759	284.80	
73)	Benzo(a)pyrene-d12	38.38	612582	284.46	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1980.D
Acq On : 2 Oct 2013 4:28 pm
Operator : ECM(YMIAO)
Sample : BG4-WS-BKG-006
Misc :
ALS Vial : 19 Sample Multiplier: 1.13636

Quant Time: Oct 08 13:48:57 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.392	176	330359m	251.05		-0.02
31) Pyrene-d10	29.625	212	677759m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	612582m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	406697m	232.61		0.00
21) Acenaphthene-d10	19.625	164	248150m	234.34		0.00
32) Phenanthrene-d10	24.709	188	461275m	244.24		0.00
66) Chrysene-d12	33.810	240	598297m	244.00		0.00
88) Perylene-d12	38.705	264	580891m	243.34		0.00
90) 5(b)H-Cholane	34.199	217	164330m	275.78		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	13.835	128	180101m	99.39		
9) 2-Methylnaphthalene	16.093	142	2139m	1.81		
10) 1-Methylnaphthalene	16.428	142	1658m	1.44		
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	17.658	154	2444m	1.62		
23) Acenaphthylene	19.134	152	1093m	0.60		
24) Acenaphthene	19.737	154	797m	0.73		
25) Dibenzofuran	20.341	168	2209m	1.37		
26) Fluorene	21.503	166	1976m	1.49		
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	25.557	167	1834m	1.23		
34) Dibenzothiophene	0.000		0	N.D.	d	
35) 4-Methyldibenzothiophene	25.868	198	609m	0.39		
36) 2/3-Methyldibenzothiop...	26.179	198	642m	0.42		
37) 1-Methyldibenzothiophene	26.518	198	768m	0.50		
38) C2-Dibenzothiophenes	27.619	212	4118m	2.07		
39) C3-Dibenzothiophenes	0.000		0	N.D.	d	
40) C4-Dibenzothiophenes	0.000		0	N.D.	d	
41) Phenanthrene	24.794	178	10576m	4.85		
42) Anthracene	0.000		0	N.D.	d	
43) 3-Methylphenanthrene	26.461	192	1542m	0.98		

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1980.D
Acq On : 2 Oct 2013 4:28 pm
Operator : ECM(YMIAO)
Sample : BG4-WS-BKG-006
Misc :
ALS Vial : 19 Sample Multiplier: 1.13636

Quant Time: Oct 08 13:48:57 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 2-Methylphenanthrene	26.546	192	1904m	1.21		
45) 2-Methylanthracene	26.715	192	190m	0.12		
46) 4/9-Methylphenanthrene	26.828	192	1387m	0.88		
47) 1-Methylphenanthrene	26.913	192	1334m	0.85		
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	28.919	202	8883m	3.94		
59) Pyrene	29.682	202	10393m	3.91		
60) 2-Methylfluoranthene	30.445	216	524m	0.30		
61) Benzo(b)fluorene	31.066	216	639m	0.42		
62) C1-Fluoranthenes/Pyrenes	31.179	216	6509m	2.89		
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	2453m	1.13		
68) Chrysene/Triphenylene	33.842	228	4511m	2.02		
69) C1-Chrysenes	35.107	242	5777m	2.58		
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	40.754	191	5672m	5.55		
75) 18a-Oleanane	0.000		0	N.D.	d	
76) C30-Hopane	42.062	191	7313m	7.16		
77) Benzo(b)fluoranthene	37.311	252	4344m	1.56		
78) Benzo(k,j)fluoranthene	37.408	252	712m	0.30		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.284	252	3536m	1.32		
81) Benzo(a)pyrene	38.478	252	1293m	0.52		
82) Indeno(1,2,3-c,d)pyrene	43.239	276	3343m	1.27		
83) Dibenzo(a,h)anthracene	43.272	278	938m	0.46		
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	44.612	276	4383m	1.88		
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 : C:\msdchem\2\data\MS50171\
Data File : ARC1980.D
Acq On : 2 Oct 2013 4:28 pm
Operator : ECM(YMIAO)
Sample : BG4-WS-BKG-006
Misc :
ALS Vial : 19 Sample Multiplier: 1.13636

Quant Time: Oct 08 13:48:57 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

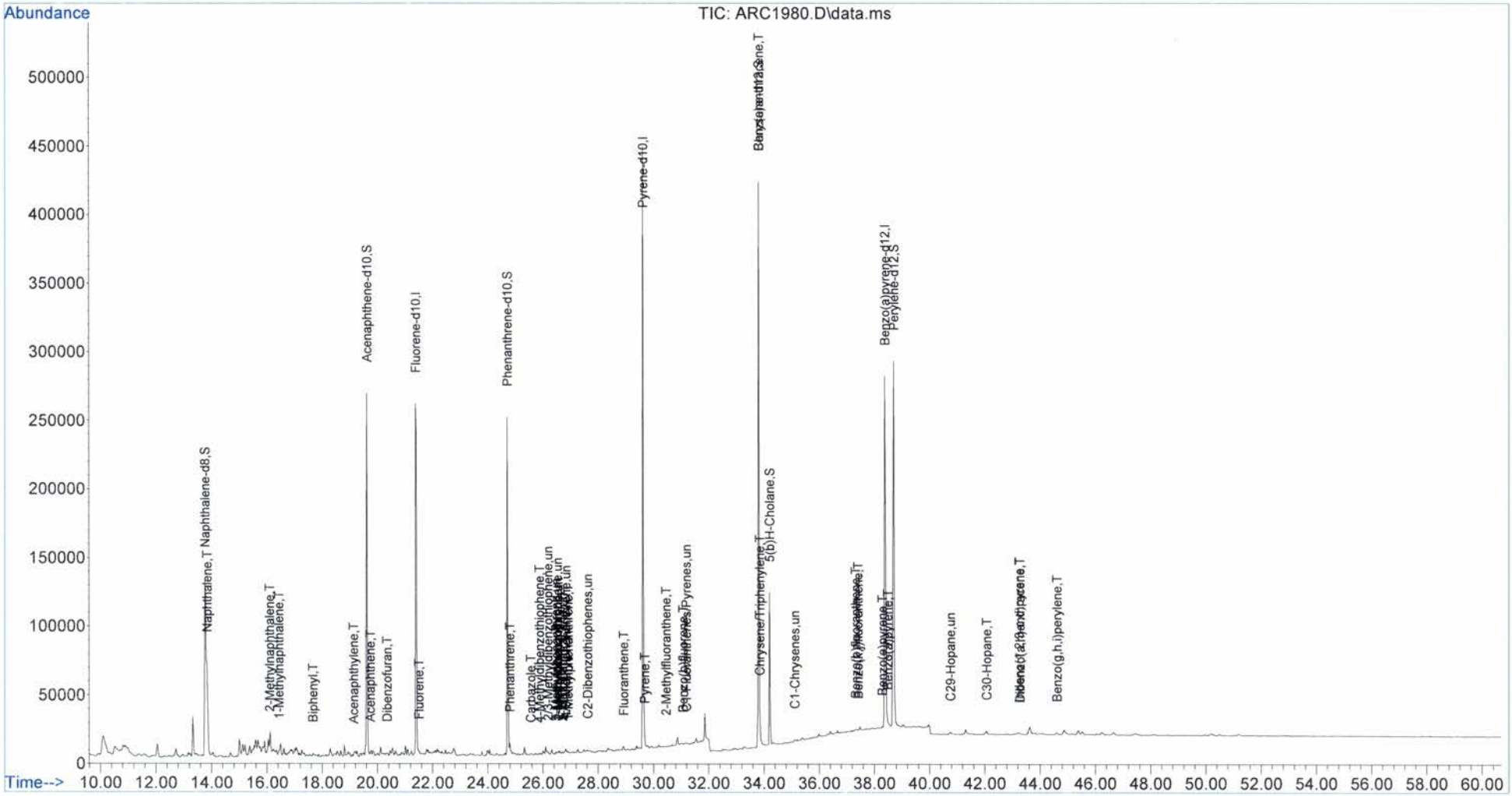
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\data\MS50171\
Data File : ARC1980.D
Acq On : 2 Oct 2013 4:28 pm
Operator : ECM(YMIAO)
Sample : BG4-WS-BKG-006
Misc :
ALS Vial : 19 Sample Multiplier: 1.13636

Quant Time: Oct 08 13:48:57 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



Polycyclic Aromatic Hydrocarbon
Initial Calibration Data
and
Initial Calibration Verification Data

PAH ICAL
AR 50171.M

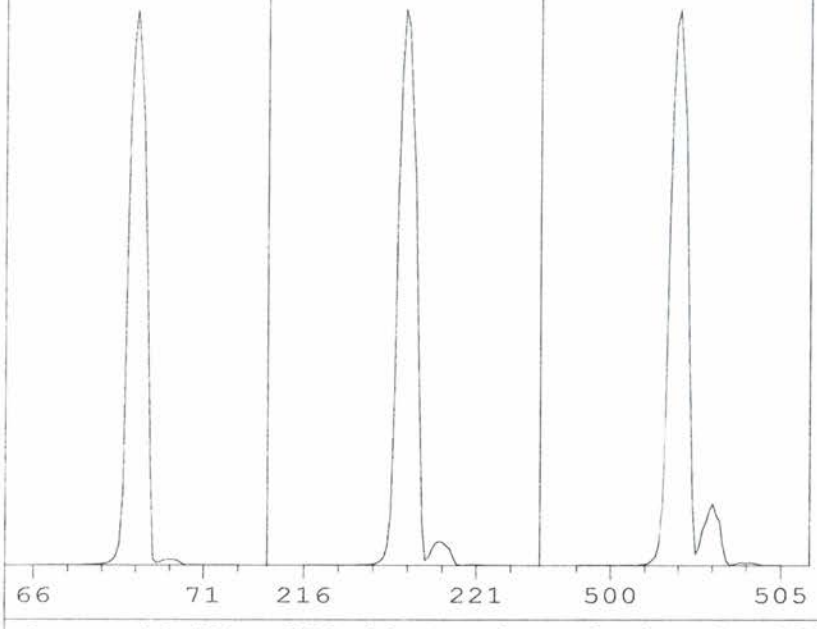
GC/MS 5
(PAH-2012)

Autotune

Tue Oct 01 16:48:51 2013
C:\MSDCHEM\1\5975\atune.u

Instrument: GCMS5
US83141113

Mass	69.00	Mass	218.90	Mass	502.00
Ab	440599	Ab	375602	Ab	25666
Pw50	0.61	Pw50	0.60	Pw50	0.59

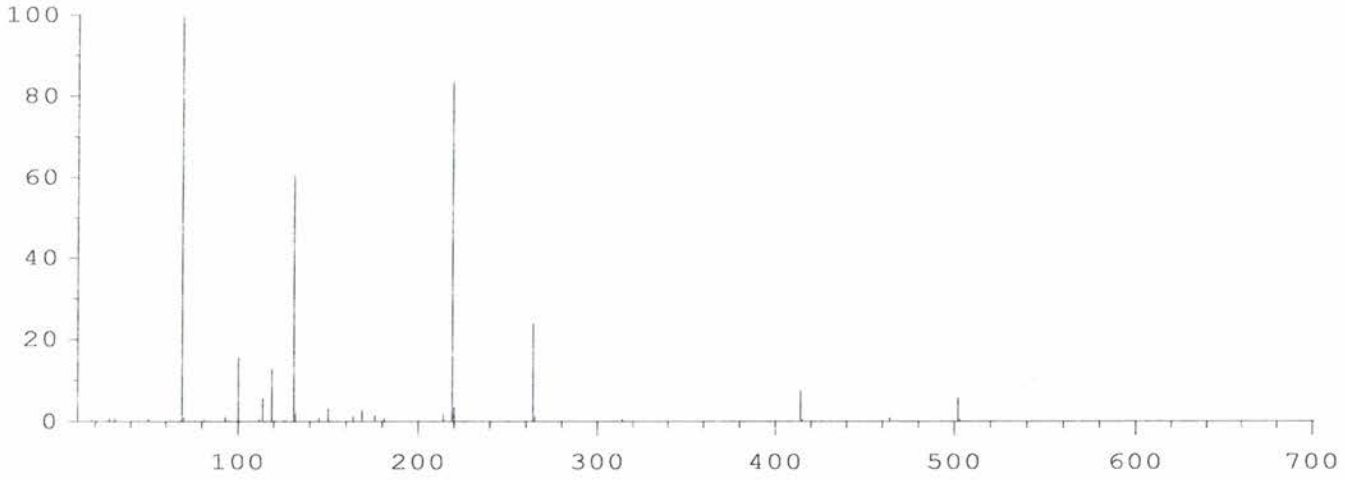


Ion Pol	Pos	MassGain	-608
		MassOffs	-39
Emission	34.6	AmuGain	1986
EIEnrgy	69.9	AmuOffs	122.31
Filament	1	Wid219	-0.010
		DC Pol	Neg
Repeller	25.93		
IonFcus	90.2	HEDEnab	On
EntLens	28.5	EMVolts	1565
EntOffs	17.57		
		Samples	8
PFTBA	Open	Averages	3
		Stepsize	0.10

Temperatures and Pressures:

MS Source	290	Turbo Speed	100
MS Quad	180	HiVac	0.00e+00

Scan: 10.00 - 701.00 Samples: 8 Thresh: 100 Step: 0.10
109 peaks Base: 69.00 Abundance: 421184



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	421184	100.00	70.00	4861	1.15
218.90	352704	83.74	220.00	15128	4.29
502.00	24272	5.76	503.00	2465	10.16

Air/Water Check: H2O~0.47% N2~0.78% O2~0.30% CO2~0.05% N2/H2O~166.06%

Column(1) Flow: 1.29 Column(2): 0 ml/min. Interface Temp: 290

Ramp Criteria:

Ion Focus Maximum	90	volts using ion	502;	EM Gain	66062
Repeller Maximum	35	volts using ion	219;	Gain Factor	0.66

MassGain Values(Samples): -606(3) -603(2) -588(1) -565(0) -478(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

MS50171

Response Factor Report GCMS5

Method Path : C:\GCMS5\MS50171\
Method File : AR50171.M
Title : PAH Calibration Table-2013A
Last Update : Thu Oct 03 20:27:47 2013
Response Via : Initial Calibration

Calibration Files
1 =MS50171B.D 2 =MS50171C.D 3 =MS50171D.D 4 =MS50171E.D
5 =MS50171F.D 6 =MS50171G.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorene-d10	----------ISTD----------							
2)	S	Naphthalene-d8	1.441	1.501	1.535	1.515	1.557	1.511	1.510	2.59
3)	T	cis/trans Decalin	0.265	0.292	0.284	0.280	0.286	0.274	0.280	3.46
4)	un	C1-Decalins	0.265	0.292	0.284	0.280	0.286	0.274	0.280	3.46
5)	un	C2-Decalins	0.265	0.292	0.284	0.280	0.286	0.274	0.280	3.46
6)	un	C3-Decalins	0.265	0.292	0.284	0.280	0.286	0.274	0.280	3.46
7)	un	C4-Decalins	0.265	0.292	0.284	0.280	0.286	0.274	0.280	3.46
8)	T	Naphthalene	1.437	1.610	1.586	1.574	1.617	1.565	1.565	4.21
9)	T	2-Methylnaphth...	0.964	0.998	1.017	1.026	1.060	1.054	1.020	3.51
10)	T	1-Methylnaphth...	0.949	1.009	1.004	0.998	1.015	0.989	0.994	2.40
11)	T	2,6-Dimethylna...	0.864	0.900	0.926	0.947	0.973	0.968	0.930	4.53
12)	T	1,6,7-Trimethy...	0.915	0.890	0.903	0.913	0.943	0.939	0.917	2.24
13)	un	C2-Naphthalenes	1.437	1.610	1.586	1.574	1.617	1.565	1.565	4.21
14)	un	C3-Naphthalenes	1.437	1.610	1.586	1.574	1.617	1.565	1.565	4.21
15)	un	C4-Naphthalenes	1.437	1.610	1.586	1.574	1.617	1.565	1.565	4.21
16)	T	Benzothiophene	1.218	1.280	1.289	1.287	1.318	1.269	1.277	2.58
17)	un	C1-Benzothioph...	1.218	1.280	1.289	1.287	1.318	1.269	1.277	2.58
18)	un	C2-Benzothioph...	1.218	1.280	1.289	1.287	1.318	1.269	1.277	2.58
19)	un	C3-Benzothioph...	1.218	1.280	1.289	1.287	1.318	1.269	1.277	2.58
20)	un	C4-Benzothioph...	1.218	1.280	1.289	1.287	1.318	1.269	1.277	2.58
21)	S	Acenaphthene-d10	0.897	0.901	0.908	0.919	0.936	0.926	0.914	1.63
22)	T	Biphenyl	1.235	1.231	1.305	1.320	1.363	1.345	1.300	4.25
23)	T	Acenaphthylene	1.545	1.528	1.522	1.561	1.620	1.650	1.571	3.32
24)	T	Acenaphthene	0.896	0.931	0.941	0.950	0.970	0.962	0.942	2.81
25)	T	Dibenzofuran	1.276	1.353	1.407	1.421	1.465	1.445	1.394	4.99
26)	T	Fluorene	1.156	1.123	1.130	1.138	1.174	1.174	1.149	1.93
27)	T	1-Methylfluorene	0.682	0.660	0.699	0.703	0.738	0.725	0.701	4.03
28)	un	C1-Fluorenes	1.156	1.123	1.130	1.138	1.174	1.174	1.149	1.93
29)	un	C2-Fluorenes	1.156	1.123	1.130	1.138	1.174	1.174	1.149	1.93
30)	un	C3-Fluorenes	1.156	1.123	1.130	1.138	1.174	1.174	1.149	1.93
31)	I	Pyrene-d10	----------ISTD----------							
32)	S	Phenanthrene-d10	0.745	0.760	0.794	0.825	0.834	0.804	0.794	4.43
33)	T	Carbazole	0.574	0.579	0.594	0.626	0.654	0.730	0.626	9.41
34)	T	Dibenzothiophene	0.793	0.808	0.825	0.838	0.851	0.894	0.835	4.26
35)	T	4-Methyldibenz...	0.597	0.620	0.652	0.674	0.688	0.658	0.648	5.25
36)	un	2/3-Methyldibe...	0.597	0.620	0.652	0.674	0.688	0.658	0.648	5.25
37)	un	1-Methyldibenz...	0.597	0.620	0.652	0.674	0.688	0.658	0.648	5.25
38)	un	C2-Dibenzothio...	0.793	0.808	0.825	0.838	0.851	0.894	0.835	4.26
39)	un	C3-Dibenzothio...	0.793	0.808	0.825	0.838	0.851	0.894	0.835	4.26
40)	un	C4-Dibenzothio...	0.793	0.808	0.825	0.838	0.851	0.894	0.835	4.26
41)	T	Phenanthrene	0.843	0.885	0.918	0.939	0.956	0.951	0.916	4.79
42)	T	Anthracene	0.750	0.767	0.811	0.864	0.901	0.888	0.830	7.68
43)	un	3-Methylphenan...	0.615	0.627	0.653	0.683	0.697	0.687	0.660	5.12
44)	un	2-Methylphenan...	0.615	0.627	0.653	0.683	0.697	0.687	0.660	5.12
45)	un	2-Methylanthra...	0.615	0.627	0.653	0.683	0.697	0.687	0.660	5.12
46)	un	4/9-Methylphen...	0.615	0.627	0.653	0.683	0.697	0.687	0.660	5.12
47)	T	1-Methylphenan...	0.615	0.627	0.653	0.683	0.697	0.687	0.660	5.12
48)	T	3,6-Dimethylph...	0.557	0.552	0.571	0.599	0.627	0.660	0.594	7.23
49)	T	Retene	0.295	0.293	0.306	0.326	0.341	0.337	0.316	6.73
50)	un	C2-Phenanthren...	0.843	0.885	0.918	0.939	0.956	0.951	0.916	4.79
51)	un	C3-Phenanthren...	0.843	0.885	0.918	0.939	0.956	0.951	0.916	4.79
52)	un	C4-Phenanthren...	0.843	0.885	0.918	0.939	0.956	0.951	0.916	4.79
53)	T	Naphthobenzoth...	0.866	0.821	0.849	0.882	0.916	1.061	0.899	9.50
54)	un	C1-Naphthobenz...	0.866	0.821	0.849	0.882	0.916	1.061	0.899	9.50
55)	un	C2-Naphthobenz...	0.866	0.821	0.849	0.882	0.916	1.061	0.899	9.50
56)	un	C3-Naphthobenz...	0.866	0.821	0.849	0.882	0.916	1.061	0.899	9.50

Method Path : C:\GCMS5\MS50171\
Method File : AR50171.M
Title : PAH Calibration Table-2013A

57)	un	C4-Naphthobenz...	0.866	0.821	0.849	0.882	0.916	1.061	0.899	9.50
58)	T	Fluoranthene	0.887	0.889	0.926	0.960	0.994	1.029	0.947	6.06
59)	T	Pyrene	1.099	1.086	1.114	1.141	1.155	1.104	1.116	2.38
60)	T	2-Methylfluora...	0.672	0.675	0.697	0.734	0.777	0.804	0.727	7.56
61)	T	Benzo(b)fluorene	0.569	0.563	0.597	0.627	0.668	0.780	0.634	12.83
62)	un	C1-Fluoranthen...	0.887	0.889	0.926	0.960	0.994	1.029	0.947	6.06
63)	un	C2-Fluoranthen...	0.887	0.889	0.926	0.960	0.994	1.029	0.947	6.06
64)	un	C3-Fluoranthen...	0.887	0.889	0.926	0.960	0.994	1.029	0.947	6.06
65)	un	C4-Fluoranthen...	0.887	0.889	0.926	0.960	0.994	1.029	0.947	6.06
66)	S	Chrysene-d12	0.926	0.964	1.019	1.088	1.141	1.044	1.030	7.65
67)	T	Benz(a)anthracene	0.863	0.811	0.854	0.895	0.943	1.130	0.916	12.40
68)	T	Chrysene/Triph...	0.856	0.858	0.877	0.933	0.987	1.123	0.939	10.99
69)	un	C1-Chrysenes	0.856	0.858	0.877	0.933	0.987	1.123	0.939	10.99
70)	un	C2-Chrysenes	0.856	0.858	0.877	0.933	0.987	1.123	0.939	10.99
71)	un	C3-Chrysenes	0.856	0.858	0.877	0.933	0.987	1.123	0.939	10.99
72)	un	C4-Chrysenes	0.856	0.858	0.877	0.933	0.987	1.123	0.939	10.99
73)	I	Benzo(a)pyrene-d12	----------ISTD----------							
74)	un	C29-Hopane	0.478	0.489	0.481	0.473	0.468	0.457	0.474	2.35
75)	un	18a-Oleanane	0.478	0.489	0.481	0.473	0.468	0.457	0.474	2.35
76)	T	C30-Hopane	0.478	0.489	0.481	0.473	0.468	0.457	0.474	2.35
77)	T	Benzo(b)fluora...	1.349	1.344	1.352	1.215	1.243	1.261	1.294	4.75
78)	T	Benzo(k,j)fluo...	1.052	0.984	0.981	1.210	1.263	1.191	1.114	11.06
79)	un	Benzo(a)fluora...	1.052	0.984	0.981	1.210	1.263	1.191	1.114	11.06
80)	T	Benzo(e)pyrene	1.268	1.235	1.214	1.252	1.239	1.262	1.245	1.58
81)	T	Benzo(a)pyrene	1.115	1.109	1.125	1.188	1.199	1.173	1.151	3.45
82)	T	Indeno(1,2,3-c...	1.160	1.157	1.180	1.234	1.284	1.347	1.227	6.23
83)	T	Dibenzo(a,h)an...	0.875	0.883	0.915	0.973	1.013	1.083	0.957	8.50
84)	un	C1-Dibenzo(a,h...	0.875	0.883	0.915	0.973	1.013	1.083	0.957	8.50
85)	un	C2-Dibenzo(a,h...	0.875	0.883	0.915	0.973	1.013	1.083	0.957	8.50
86)	un	C3-Dibenzo(a,h...	0.875	0.883	0.915	0.973	1.013	1.083	0.957	8.50
87)	T	Benzo(g,h,i)pe...	1.045	1.059	1.062	1.089	1.109	1.122	1.081	2.84
88)	S	Perylene-d12	1.181	1.067	1.072	1.108	1.121	1.103	1.109	3.73
89)	T	Perylene	1.205	1.143	1.141	1.172	1.216	1.212	1.181	2.89
90)	S	5(b)H-Cholane	0.302	0.273	0.270	0.280	0.281	0.254	0.277	5.71
91)	un	C20-TAS	1.776	1.604	1.582	1.610	1.613	1.538	1.620	5.00
92)	un	C21-TAS	1.776	1.604	1.582	1.610	1.613	1.538	1.620	5.00
93)	un	C26(20S)-TAS	1.776	1.604	1.582	1.610	1.613	1.538	1.620	5.00
94)	T	C26(20R)/C27(2...	1.776	1.604	1.582	1.610	1.613	1.538	1.620	5.00
95)	un	C28(20S)-TAS	1.776	1.604	1.582	1.610	1.613	1.538	1.620	5.00
96)	un	C27(20R)-TAS	1.776	1.604	1.582	1.610	1.613	1.538	1.620	5.00
97)	un	C28(20R)-TAS	1.776	1.604	1.582	1.610	1.613	1.538	1.620	5.00

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50171\
Data File : MS50171B.D
Acq On : 1 Oct 2013 9:42 pm
Operator : ECM(YMIAO)
Sample : AR-WKC1-020-031
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 03 20:25:24 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 09:18:45 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	377037m	251.05		0.00
31) Pyrene-d10	29.625	212	763225m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	661452m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.790	136	43305m	19.29		0.02
21) Acenaphthene-d10	19.625	164	26968m	19.65		0.00
32) Phenanthrene-d10	24.709	188	45415m	18.79		0.00
66) Chrysene-d12	33.810	240	56415m	17.89		0.00
88) Perylene-d12	38.705	264	62417m	21.84		0.00
90) 5(b)H-Cholane	34.199	217	15973m	21.78		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	7861m	27.87		
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	13.835	128	43155m	18.13		
9) 2-Methylnaphthalene	16.093	142	28986m	18.98		
10) 1-Methylnaphthalene	16.428	142	28473m	19.25		
11) 2,6-Dimethylnaphthalene	18.194	156	25949m	18.49		
12) 1,6,7-Trimethylnaphtha...	21.034	170	27491m	20.05		
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	14.014	134	36367m	18.89		
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	17.658	154	36763m	18.50		
23) Acenaphthylene	19.133	152	46032m	19.50		
24) Acenaphthene	19.737	154	26967m	19.00		
25) Dibenzofuran	20.341	168	38130m	17.90		
26) Fluorene	21.503	166	34777m	20.23		
27) 1-Methylfluorene	23.466	180	20631m	19.45		
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	25.557	167	34663m	17.74		
34) Dibenzothiophene	24.370	184	47644m	18.72		
35) 4-Methyldibenzothiophene	25.868	198	36663m	18.58		
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	24.794	178	50902m	18.51		
42) Anthracene	24.964	178	45820m	18.52		
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\MS50171\
Data File : MS50171B.D
Acq On : 1 Oct 2013 9:42 pm
Operator : ECM(YMIAO)
Sample : AR-WKC1-020-031
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 03 20:25:24 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 09:18:45 2013
Response via : Initial Calibration

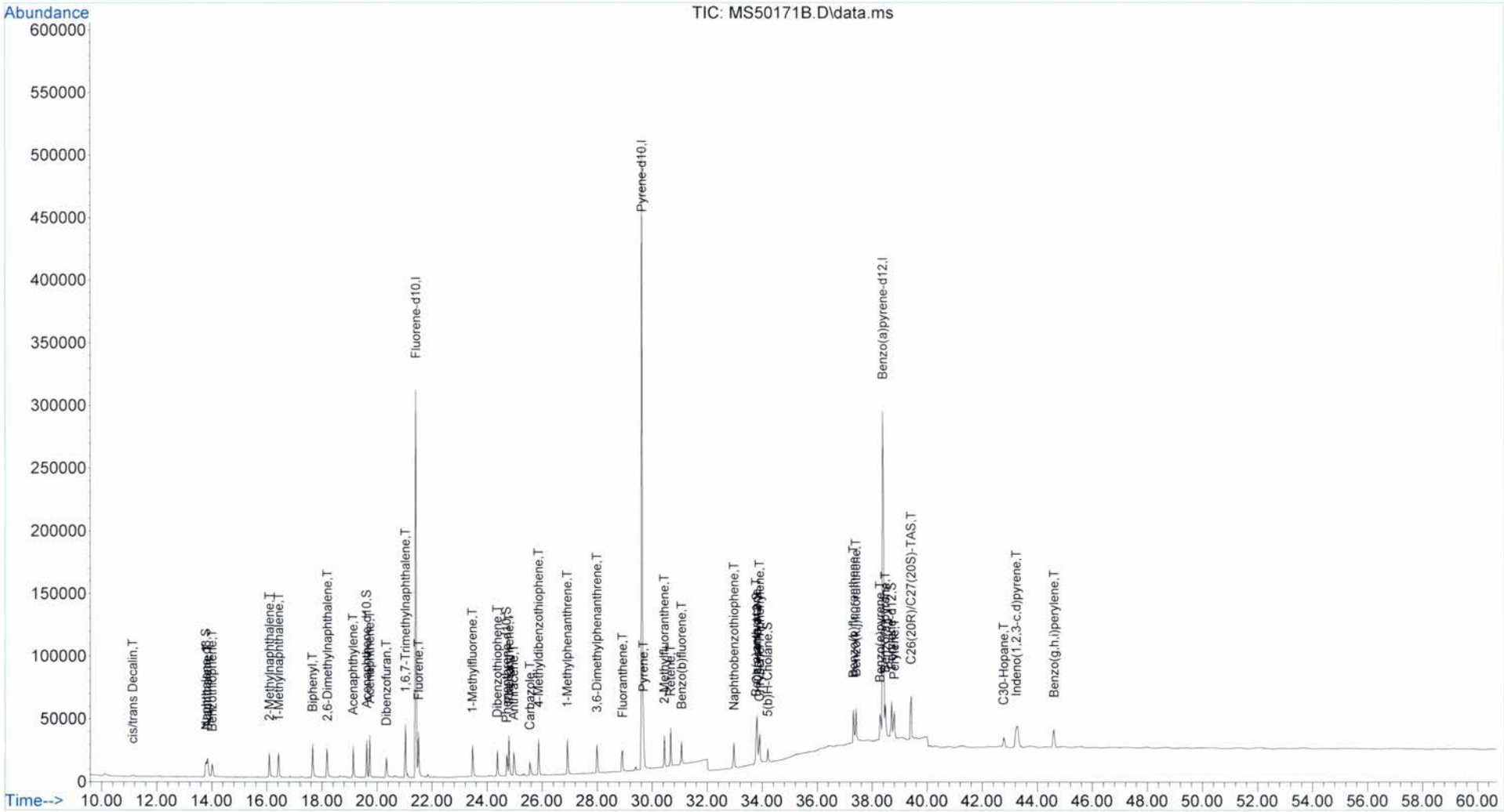
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46)	4/9-Methylphenanthrene	0.000		0	N.D.	d	
47)	1-Methylphenanthrene	26.913	192	37075m	18.38		
48)	3,6-Dimethylphenanthrene	27.987	206	33980m	18.74		
49)	Retene	30.671	234	16038m	16.57		
50)	C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51)	C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52)	C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53)	Naphthobenzothiophene	32.967	234	53048m	19.28		
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	28.919	202	54093m	18.65		
59)	Pyrene	29.682	202	66920m	19.64		
60)	2-Methylfluoranthene	30.444	216	41205m	18.70		
61)	Benzo(b)fluorene	31.066	216	34975m	17.95		
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	33.777	228	52465m	19.53		
68)	Chrysene/Triphenylene	33.907	228	51827m	18.91		
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	42.781	191	25239m	19.87		
77)	Benzo(b)fluoranthene	37.311	252	71439m	26.27		
78)	Benzo(k,j)fluoranthene	37.408	252	55372m	20.24		
79)	Benzo(a)fluoranthene	0.000		0	N.D.	d	
80)	Benzo(e)pyrene	38.284	252	66742m	20.80		
81)	Benzo(a)pyrene	38.478	252	58782m	19.76		
82)	Indeno(1,2,3-c,d)pyrene	43.239	276	60280m	18.55		
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	44.612	276	54731m	19.08		
89)	Perylene	38.802	252	63725m	20.62		
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	39.418	231	93844m	21.92		
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\MS50171\
Data File : MS50171B.D
Acq On : 1 Oct 2013 9:42 pm
Operator : ECM(YMIAO)
Sample : AR-WKC1-020-031
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 03 20:25:24 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 09:18:45 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50171\
Data File : MS50171C.D
Acq On : 1 Oct 2013 10:49 pm
Operator : ECM(YMIAO)
Sample : AR-WKC2-100-031
Misc :
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Oct 03 20:25:43 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 11:21:03 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	346850m	251.05		0.00
31) Pyrene-d10	29.625	212	672359m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	615208m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	207475m	100.08		-0.02
21) Acenaphthene-d10	19.625	164	124569m	98.69		0.00
32) Phenanthrene-d10	24.709	188	204072m	95.93		0.00
66) Chrysene-d12	33.810	240	258635m	93.21		0.00
88) Perylene-d12	38.705	264	262156m	96.38		0.00
90) 5(b)H-Cholane	34.199	217	67174m	98.40		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	39867m	140.73		
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	13.835	128	222460m	102.83		
9) 2-Methylnaphthalene	16.093	142	138065m	97.97		
10) 1-Methylnaphthalene	16.428	142	139204m	102.31		
11) 2,6-Dimethylnaphthalene	18.172	156	124332m	96.57		
12) 1,6,7-Trimethylnaphtha...	21.034	170	122989m	97.34		
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	14.014	134	175814m	99.58		
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	17.658	154	168602m	92.58		
23) Acenaphthylene	19.134	152	209453m	96.27		
24) Acenaphthene	19.737	154	128894m	99.23		
25) Dibenzofuran	20.341	168	185943m	95.55		
26) Fluorene	21.503	166	155490m	97.86		
27) 1-Methylfluorene	23.466	180	91854m	94.08		
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	25.557	167	154053m	90.13		
34) Dibenzothiophene	24.370	184	213858m	95.29		
35) 4-Methyldibenzothiophene	25.868	198	167628m	96.34		
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	24.794	178	235339m	96.58		
42) Anthracene	24.964	178	206413m	93.41		
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\MS50171\
Data File : MS50171C.D
Acq On : 1 Oct 2013 10:49 pm
Operator : ECM(YMIAO)
Sample : AR-WKC2-100-031
Misc :
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Oct 03 20:25:43 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 11:21:03 2013
Response via : Initial Calibration

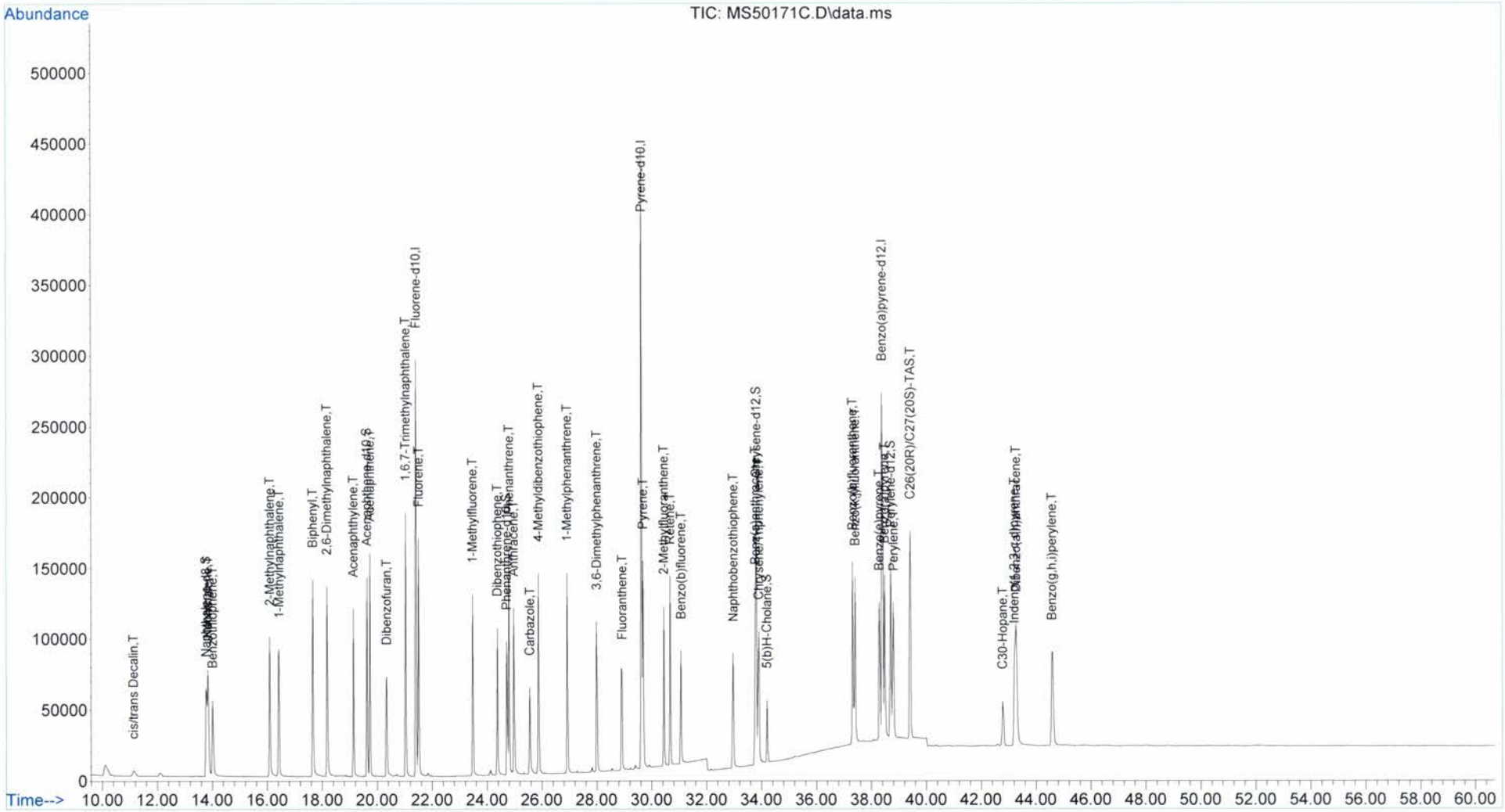
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.913	192	166345m	93.70		
48) 3,6-Dimethylphenanthrene	27.987	206	148150m	92.84		
49) Retene	30.671	234	70127m	82.57		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
53) Naphthobenzothiophene	32.967	234	221575m	91.29		
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	28.919	202	238650m	93.65		
59) Pyrene	29.682	202	291235m	97.20		
60) 2-Methylfluoranthene	30.445	216	182406m	93.95		
61) Benzo(b)fluorene	31.066	216	152522m	89.14		
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	33.777	228	217127m	90.47		
68) Chrysene/Triphenylene	33.907	228	228867m	93.48		
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	42.781	191	120295m	103.46		
77) Benzo(b)fluoranthene	37.311	252	331006m	124.07		
78) Benzo(k,j)fluoranthene	37.408	252	240941m	94.16		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.284	252	302285m	100.35		
81) Benzo(a)pyrene	38.478	252	272081m	97.32		
82) Indeno(1,2,3-c,d)pyrene	43.206	276	279586m	92.09		
83) Dibenzo(a,h)anthracene	43.272	278	215092m	90.39		
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	44.580	276	257817m	96.61		
89) Perylene	38.803	252	281256m	96.84		
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	39.419	231	394214m	98.42		
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\MS50171\
Data File : MS50171C.D
Acq On : 1 Oct 2013 10:49 pm
Operator : ECM(YMIAO)
Sample : AR-WKC2-100-031
Misc :
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Oct 03 20:25:43 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 11:21:03 2013
Response via : Initial Calibration



Data Path : C:\GCMS5\MS50171\
Data File : MS50171D.D
Acq On : 1 Oct 2013 11:55 pm
Operator : ECM(YMIAO)
Sample : AR-WKC3-250-031
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Oct 02 12:27:11 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 12:09:58 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	347880m	251.05		0.00
31) Pyrene-d10	29.625	212	673305m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	626341m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	531938m	256.28		0.00
21) Acenaphthene-d10	19.625	164	314863m	248.58		0.00
32) Phenanthrene-d10	24.709	188	533421m	250.54		0.00
66) Chrysene-d12	33.810	240	684679m	246.04		0.00
88) Perylene-d12	38.705	264	670625m	246.41		0.00
90) 5(b)H-Cholane	34.199	217	168676m	242.31		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	97366m	336.59		
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	13.835	128	549491m	249.79		
9) 2-Methylnaphthalene	16.093	142	352829m	250.11		
10) 1-Methylnaphthalene	16.406	142	347306m	253.19		
11) 2,6-Dimethylnaphthalene	18.172	156	320844m	247.95		
12) 1,6,7-Trimethylnaphtha...	21.034	170	312654m	246.75		
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	14.014	134	443897m	249.72		
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	17.658	154	448093m	246.36		
23) Acenaphthylene	19.134	152	522880m	240.07		
24) Acenaphthene	19.737	154	326516m	249.14		
25) Dibenzofuran	20.318	168	484866m	247.49		
26) Fluorene	21.503	166	392185m	246.92		
27) 1-Methylfluorene	23.466	180	244068m	249.79		
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	25.557	167	395374m	230.77		
34) Dibenzothiophene	24.370	184	546209m	243.48		
35) 4-Methyldibenzothiophene	25.868	198	441506m	253.57		
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	24.794	178	611290m	251.46		
42) Anthracene	24.964	178	546576m	249.60		
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\MS50171\
Data File : MS50171D.D
Acq On : 1 Oct 2013 11:55 pm
Operator : ECM(YMIAO)
Sample : AR-WKC3-250-031
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Oct 02 12:27:11 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 12:09:58 2013
Response via : Initial Calibration

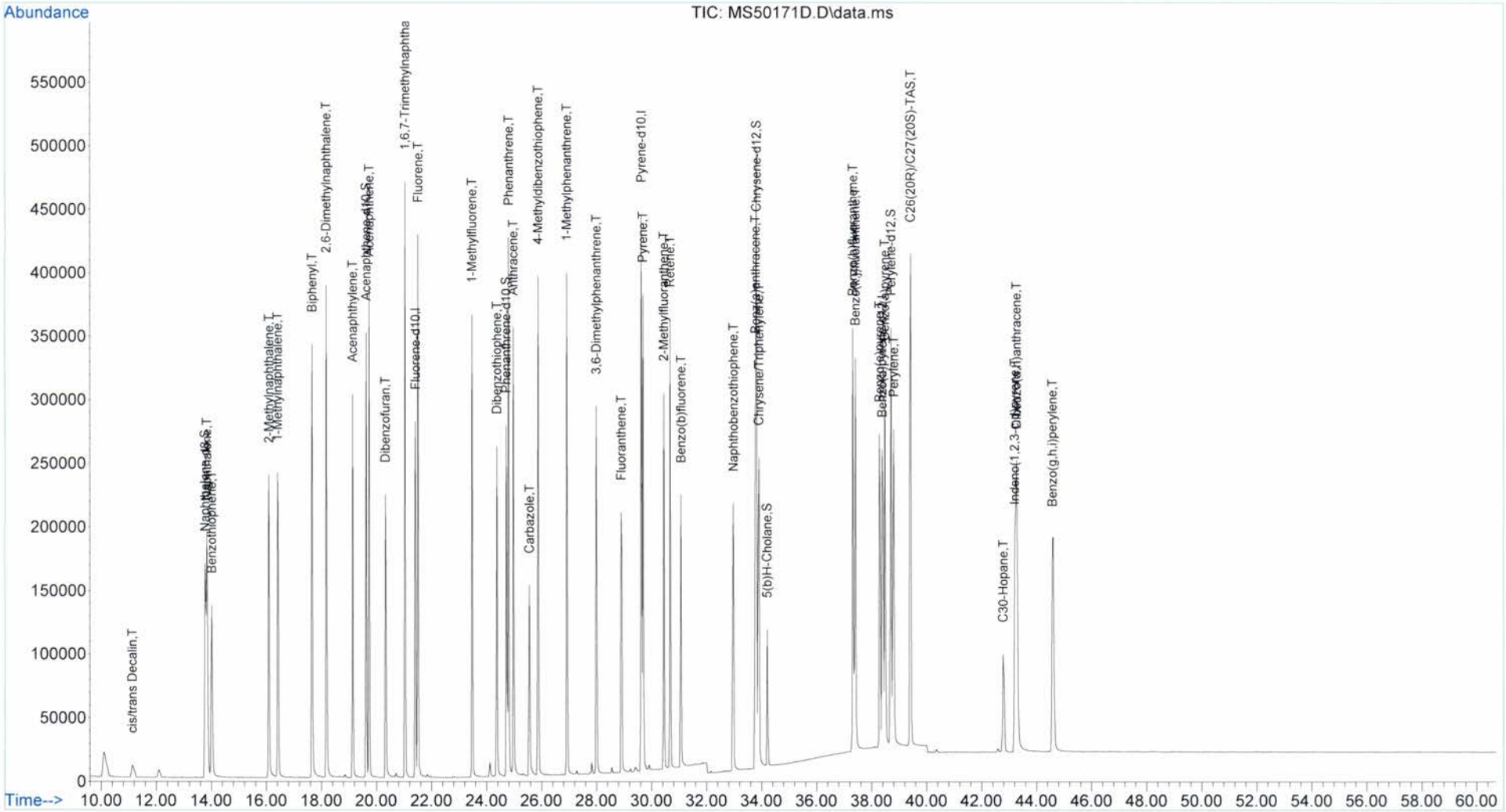
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.913	192	433866m	243.90		
48) 3,6-Dimethylphenanthrene	27.987	206	383834m	239.99		
49) Retene	30.671	234	183924m	215.41		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53) Naphthobenzothiophene	32.967	234	573476m	236.48		
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	28.891	202	622576m	243.36		
59) Pyrene	29.682	202	747927m	248.95		
60) 2-Methylfluoranthene	30.445	216	471239m	242.05		
61) Benzo(b)fluorene	31.066	216	404563m	235.75		
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	33.777	228	572180m	239.77		
68) Chrysene/Triphenylene	33.907	228	585703m	240.03		
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	42.781	191	300859m	248.65		
77) Benzo(b)fluoranthene	37.311	252	847464m	311.21		
78) Benzo(k,j)fluoranthene	37.408	252	610931m	236.24		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.284	252	756654m	247.05		
81) Benzo(a)pyrene	38.478	252	702252m	248.18		
82) Indeno(1,2,3-c,d)pyrene	43.206	276	725751m	235.84		
83) Dibenzo(a,h)anthracene	43.272	278	567040m	235.37		
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	44.580	276	658209m	242.35		
89) Perylene	38.803	252	714212m	243.20		
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	39.419	231	989809m	243.80		
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\MS50171\
Data File : MS50171D.D
Acq On : 1 Oct 2013 11:55 pm
Operator : ECM(YMIAO)
Sample : AR-WKC3-250-031
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Oct 02 12:27:11 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 12:09:58 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50171\
Data File : MS50171E.D
Acq On : 2 Oct 2013 1:01 am
Operator : ECM(YMIAO)
Sample : AR-WKC4-500-031
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 03 20:27:01 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 12:27:20 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	346976m	251.05		0.00
31) Pyrene-d10	29.625	212	667866m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	630064m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	1047329m	504.61		0.00
21) Acenaphthene-d10	19.625	164	635306m	502.54		0.00
32) Phenanthrene-d10	24.709	188	1099856m	520.55		0.00
66) Chrysene-d12	33.810	240	1449526m	525.47		0.00
88) Perylene-d12	38.705	264	1394055m	508.43		0.00
90) 5(b)H-Cholane	34.199	217	352210m	502.96		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	191653m	617.70		
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	13.835	128	1087802m	496.21		
9) 2-Methylnaphthalene	16.093	142	710010m	504.48		
10) 1-Methylnaphthalene	16.406	142	688879m	502.55		
11) 2,6-Dimethylnaphthalene	18.172	156	654510m	507.56		
12) 1,6,7-Trimethylnaphtha...	21.034	170	631023m	499.28		
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	14.014	134	883748m	498.73		
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	17.658	154	904143m	499.73		
23) Acenaphthylene	19.134	152	1069886m	492.84		
24) Acenaphthene	19.737	154	657900m	503.27		
25) Dibenzofuran	20.318	168	977176m	501.21		
26) Fluorene	21.503	166	787716m	497.63		
27) 1-Methylfluorene	23.466	180	489236m	502.25		
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	25.557	167	826611m	488.54		
34) Dibenzothiophene	24.370	184	1100685m	494.69		
35) 4-Methyldibenzothiophene	25.868	198	905989m	524.80		
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	24.794	178	1240209m	512.77		
42) Anthracene	24.964	178	1154409m	530.78		
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\MS50171\
Data File : MS50171E.D
Acq On : 2 Oct 2013 1:01 am
Operator : ECM(YMIAO)
Sample : AR-WKC4-500-031
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 03 20:27:01 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 12:27:20 2013
Response via : Initial Calibration

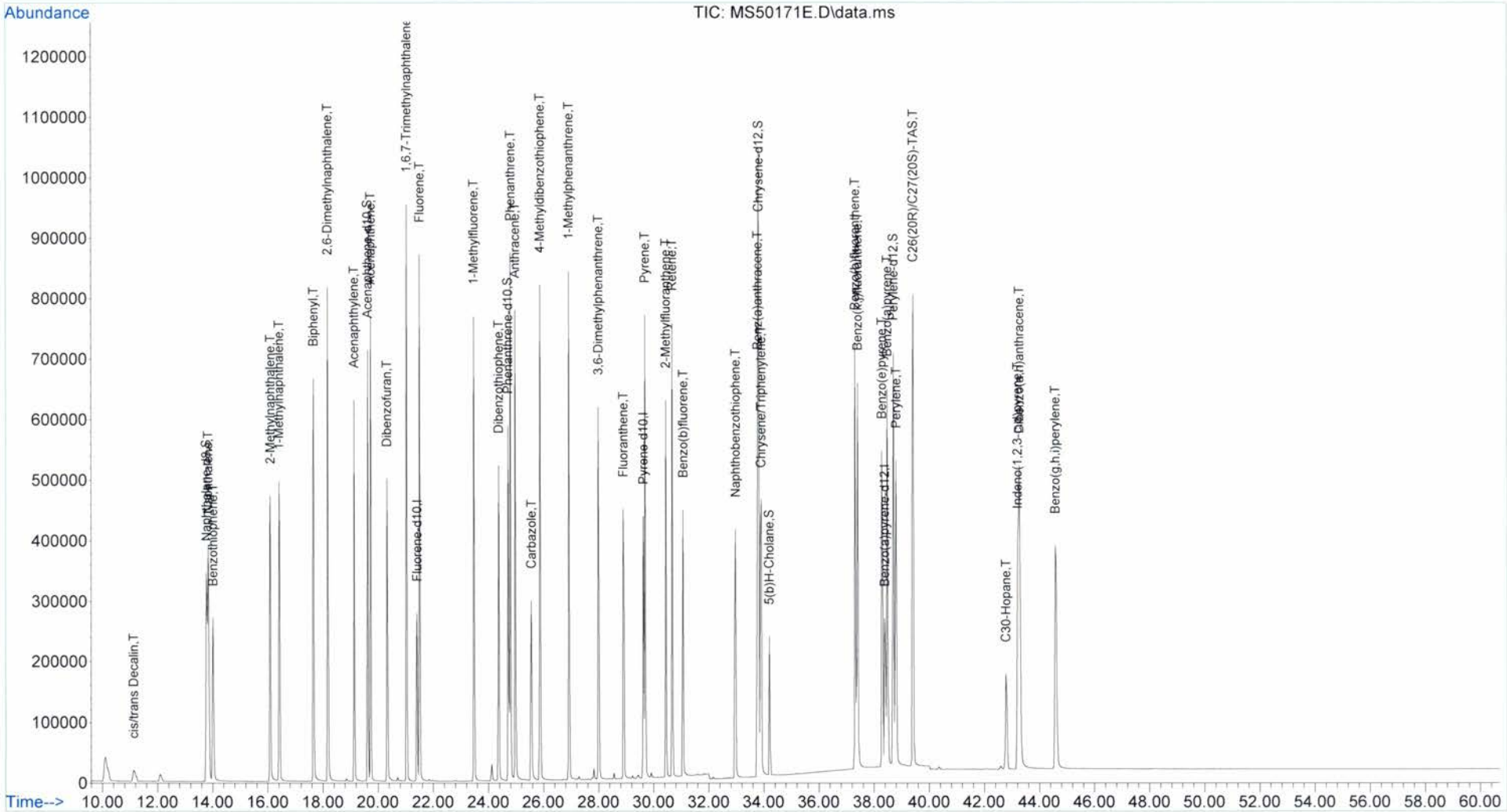
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.913	192	899538m	509.89		
48) 3,6-Dimethylphenanthrene	27.987	206	798375m	503.48		
49) Retene	30.671	234	388530m	458.43		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53) Naphthobenzothiophene	32.967	234	1182609m	492.05		
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	28.891	202	1280469m	504.57		
59) Pyrene	29.682	202	1519974m	510.00		
60) 2-Methylfluoranthene	30.445	216	984878m	509.47		
61) Benzo(b)fluorene	31.066	216	843155m	495.52		
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	33.777	228	1190524m	500.04		
68) Chrysene/Triphenylene	33.907	228	1236124m	509.27		
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	42.781	191	595822m	487.93		
77) Benzo(b)fluoranthene	37.311	252	1531699m	532.01		
78) Benzo(k,j)fluoranthene	37.408	252	1516949m	587.33		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.284	252	1569182m	507.41		
81) Benzo(a)pyrene	38.478	252	1492394m	523.37		
82) Indeno(1,2,3-c,d)pyrene	43.206	276	1526456m	493.42		
83) Dibenzo(a,h)anthracene	43.272	278	1213008m	501.23		
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	44.579	276	1358356m	496.99		
89) Perylene	38.803	252	1476883m	500.31		
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	39.419	231	2026490m	496.44		
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\MS50171\
Data File : MS50171E.D
Acq On : 2 Oct 2013 1:01 am
Operator : ECM(YMIAO)
Sample : AR-WKC4-500-031
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 03 20:27:01 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Wed Oct 02 12:27:20 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50171\
Data File : MS50171F.D
Acq On : 2 Oct 2013 2:07 am
Operator : ECM(YMIAO)
Sample : AR-WKC5-1000-031
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 03 20:27:20 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 19:11:34 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	356552m	251.05		0.00
31) Pyrene-d10	29.625	212	698217m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	681373m	250.32		0.00
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	2211935m	1041.72		0.00
21) Acenaphthene-d10	19.625	164	1329506m	1024.81		0.00
32) Phenanthrene-d10	24.709	188	2324975m	1050.35		0.00
66) Chrysene-d12	33.810	240	3178177m	1103.05		0.00
88) Perylene-d12	38.705	264	3052436m	1036.68		0.00
90) 5(b)H-Cholane	34.199	217	764777m	1013.03		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	401436m	1387.47		
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	13.835	128	2296007m	1022.35		
9) 2-Methylnaphthalene	16.093	142	1507378m	1044.31		
10) 1-Methylnaphthalene	16.406	142	1440635m	1029.21		
11) 2,6-Dimethylnaphthalene	18.172	156	1381277m	1041.45		
12) 1,6,7-Trimethylnaphtha...	21.034	170	1338982m	1032.43		
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	14.014	134	1860072m	1022.37		
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	17.658	154	1917851m	1023.07		
23) Acenaphthylene	19.134	152	2282077m	1024.09		
24) Acenaphthene	19.737	154	1380562m	1028.83		
25) Dibenzofuran	20.318	168	2069892m	1031.13		
26) Fluorene	21.503	166	1670877m	1029.86		
27) 1-Methylfluorene	23.466	180	1055664m	1055.72		
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	25.557	167	1804822m	1012.86		
34) Dibenzothiophene	24.370	184	2336537m	1004.30		
35) 4-Methyldibenzothiophene	25.868	198	1932132m	1070.56		
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	24.794	178	2640098m	1048.14		
42) Anthracene	24.964	178	2518860m	1111.46		
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\MS50171\
Data File : MS50171F.D
Acq On : 2 Oct 2013 2:07 am
Operator : ECM(YMIAO)
Sample : AR-WKC5-1000-031
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 03 20:27:20 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 19:11:34 2013
Response via : Initial Calibration

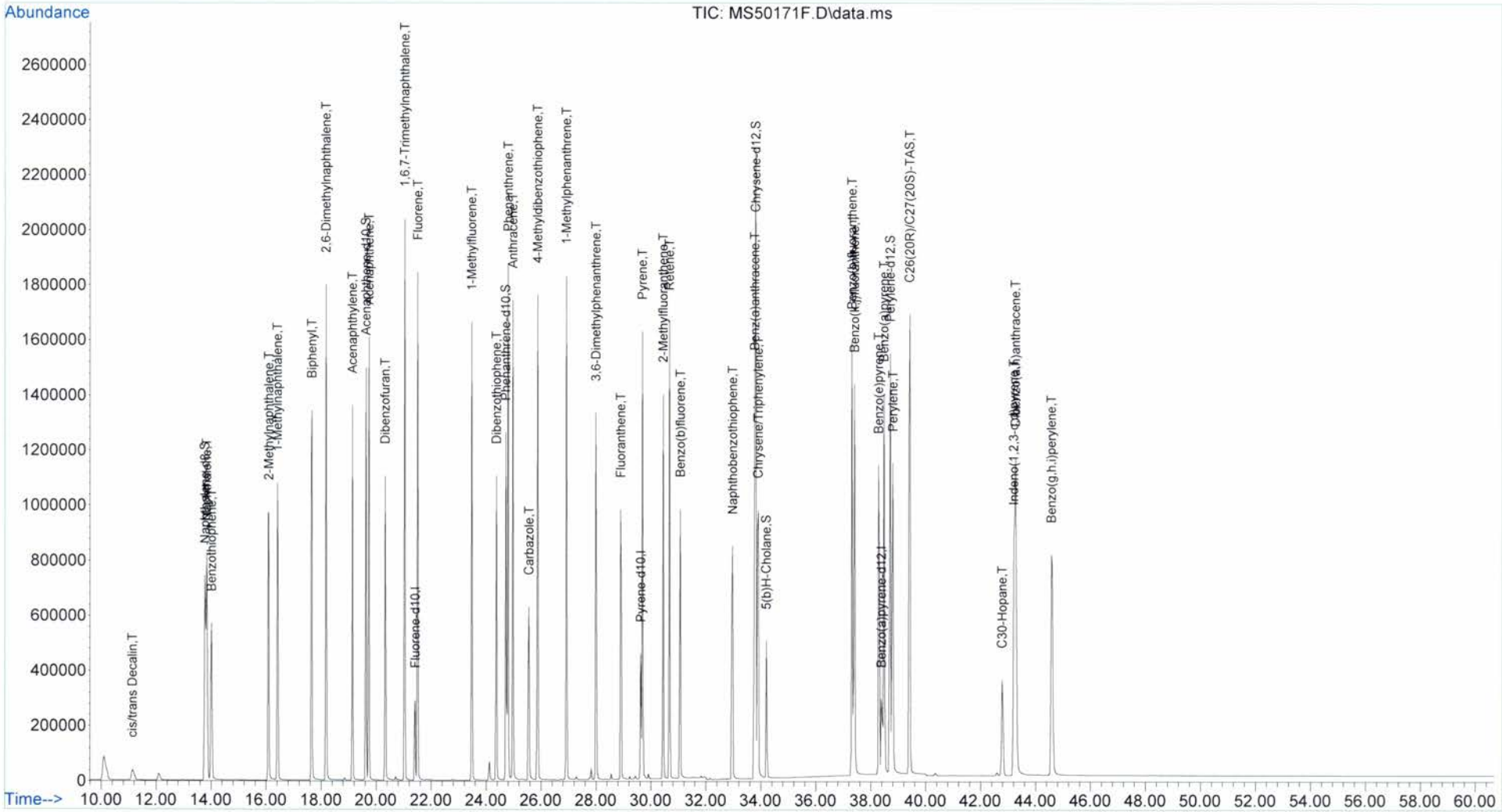
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.913	192	1919254m	1040.78		
48) 3,6-Dimethylphenanthrene	27.987	206	1749270m	1054.26		
49) Retene	30.671	234	848670m	958.60		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53) Naphthobenzothiophene	32.967	234	2567137m	1022.14		
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	28.891	202	2771235m	1045.14		
59) Pyrene	29.682	202	3218198m	1031.97		
60) 2-Methylfluoranthene	30.445	216	2180098m	1081.28		
61) Benzo(b)fluorene	31.066	216	1878428m	1055.80		
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	33.777	228	2622384m	1062.19		
68) Chrysene/Triphenylene	33.907	228	2732452m	1083.73		
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	42.781	191	1272824m	973.99		
77) Benzo(b)fluoranthene	37.311	252	3390977m	1175.15		
78) Benzo(k,j)fluoranthene	37.408	252	3423920m	1181.63		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.284	252	3358190m	1012.01		
81) Benzo(a)pyrene	38.478	252	3255988m	1057.56		
82) Indeno(1,2,3-c,d)pyrene	43.206	276	3434360m	1027.16		
83) Dibenzo(a,h)anthracene	43.272	278	2731349m	1042.12		
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	44.580	276	2992163m	1013.36		
89) Perylene	38.803	252	3311846m	1041.54		
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	39.419	231	4390229m	995.76		
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\MS50171\
Data File : MS50171F.D
Acq On : 2 Oct 2013 2:07 am
Operator : ECM(YMIAO)
Sample : AR-WKC5-1000-031
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 03 20:27:20 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 19:11:34 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\GCMS5\MS50171\
Data File : MS50171G.D
Acq On : 2 Oct 2013 3:13 am
Operator : ECM(YMIAO)
Sample : AR-WKC6-5000-031
Misc :
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 03 20:27:40 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 19:40:16 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	385014m	251.05		0.00
31) Pyrene-d10	29.625	212	756967m	250.63		0.00
73) Benzo(a)pyrene-d12	38.414	264	773049m	250.32		0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	11590769m	5051.29		0.00
21) Acenaphthene-d10	19.625	164	7104326m	5070.28		0.00
32) Phenanthrene-d10	24.709	188	12154793m	5060.30		0.00
66) Chrysene-d12	33.810	240	15775157m	5054.92		0.00
88) Perylene-d12	38.705	264	17030245m	5109.60		0.00
90) 5(b)H-Cholane	34.199	217	3924573m	4588.28		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	2074230m	6155.88		
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	13.835	128	12003177m	4949.60		
9) 2-Methylnaphthalene	16.071	142	8088678m	5192.87		
10) 1-Methylnaphthalene	16.406	142	7573899m	5005.72		
11) 2,6-Dimethylnaphthalene	18.172	156	7424333m	5186.83		
12) 1,6,7-Trimethylnaphtha...	21.034	170	7203259m	5141.18		
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	13.992	134	9674654m	4924.37		
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	17.658	154	10219535m	5049.84		
23) Acenaphthylene	19.134	152	12547683m	5215.60		
24) Acenaphthene	19.737	154	7393692m	5098.55		
25) Dibenzofuran	20.318	168	11025513m	5094.25		
26) Fluorene	21.503	166	9019085m	5147.55		
27) 1-Methylfluorene	23.466	180	5599677m	5196.06		
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	25.557	167	10918088m	5667.34		
34) Dibenzothiophene	24.370	184	13316901m	5278.57		
35) 4-Methyldibenzothiophene	25.868	198	10014223m	5118.23		
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	24.794	178	14228274m	5202.20		
42) Anthracene	24.964	178	13457098m	5468.62		
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\MS50171\
Data File : MS50171G.D
Acq On : 2 Oct 2013 3:13 am
Operator : ECM(YMIAO)
Sample : AR-WKC6-5000-031
Misc :
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 03 20:27:40 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 19:40:16 2013
Response via : Initial Calibration

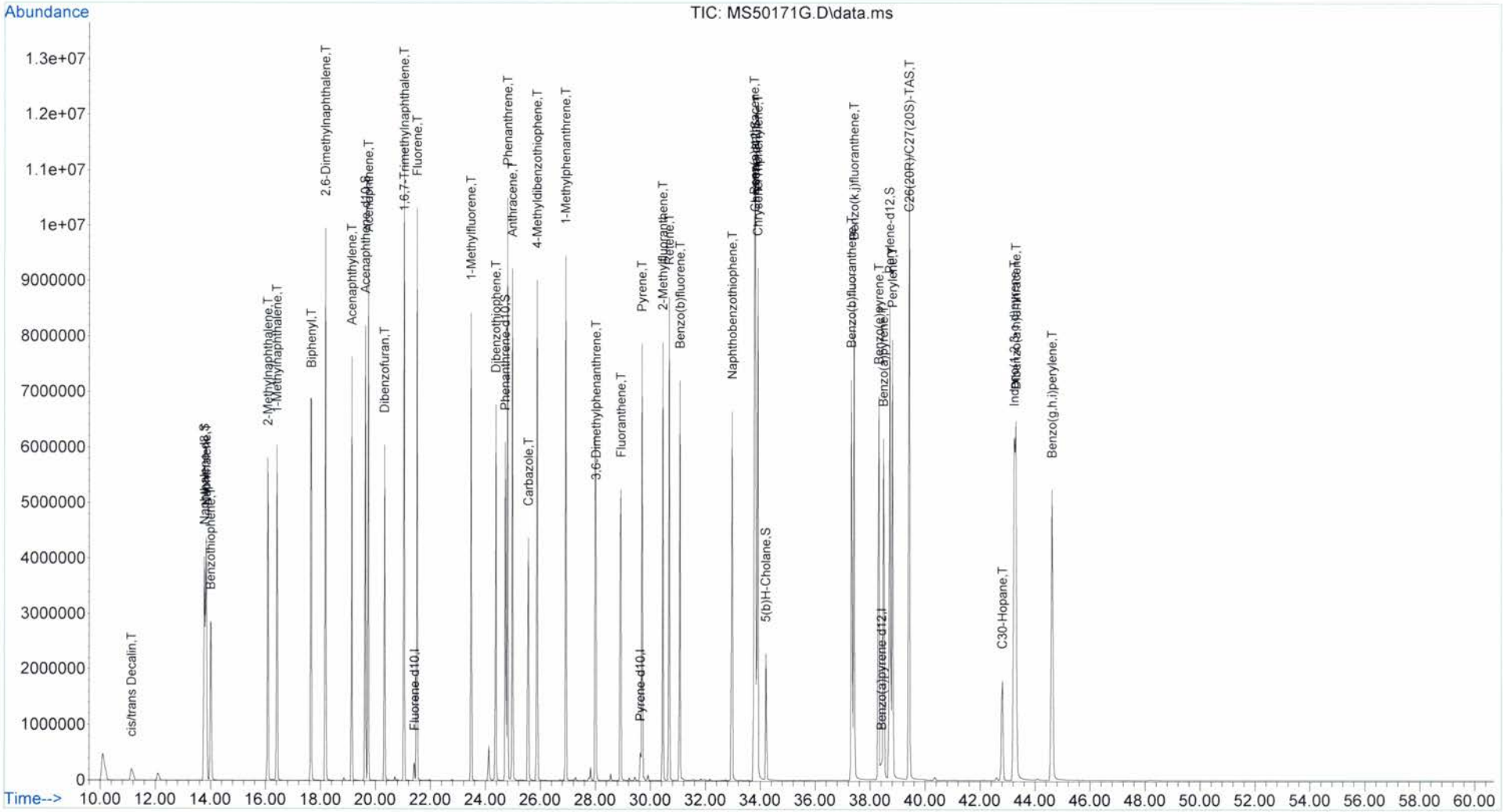
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.913	192	10267053m	5140.19		
48) 3,6-Dimethylphenanthrene	28.015	206	9985426m	5549.60		
49) Retene	30.671	234	4548127m	4737.70		
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
52) C4-Phenanthrenes/Anthr...	0.000		0	N.D.		
53) Naphthobenzothiophene	32.967	234	16115268m	5927.22		
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	28.919	202	15554140m	5414.58		
59) Pyrene	29.682	202	16668840m	4928.63		
60) 2-Methylfluoranthene	30.445	216	12221708m	5588.42		
61) Benzo(b)fluorene	31.066	216	11884631m	6168.88		
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	33.777	228	17023427m	6334.86		
68) Chrysene/Triphenylene	33.907	228	16854237m	6124.85		
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	42.814	191	7059386m	4775.14		
77) Benzo(b)fluoranthene	37.311	252	19505660m	5782.54		
78) Benzo(k,j)fluoranthene	37.409	252	18316112m	5397.06		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.316	252	19407778m	5141.93		
81) Benzo(a)pyrene	38.478	252	18080227m	5166.57		
82) Indeno(1,2,3-c,d)pyrene	43.239	276	20448953m	5396.91		
83) Dibenzo(a,h)anthracene	43.304	278	16564530m	5587.44		
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	44.612	276	17169293m	5126.81		
89) Perylene	38.803	252	18733136m	5190.59		
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	39.419	231	23740740m	4755.95		
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\MS50171\
Data File : MS50171G.D
Acq On : 2 Oct 2013 3:13 am
Operator : ECM(YMIAO)
Sample : AR-WKC6-5000-031
Misc :
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 03 20:27:40 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 19:40:16 2013
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171I.D
Acq On : 2 Oct 2013 5:26 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-005
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 03 20:47:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	89	0.00
2	S	Naphthalene-d8	1.510	1.613	-6.8	93	0.00
3	T	cis/trans Decalin	0.280	0.306	-9.3	96	0.00
4	un	C1-Decalins	0.280	0.000	100.0#	0#	-12.45#
5	un	C2-Decalins	0.280	0.000	100.0#	0#	-13.07#
6	un	C3-Decalins	0.280	0.000	100.0#	0#	-16.09#
7	un	C4-Decalins	0.280	0.000	100.0#	0#	-18.82#
8	T	Naphthalene	1.565	1.678	-7.2	94	0.00
9	T	2-Methylnaphthalene	1.020	1.118	-9.6	97	0.02
10	T	1-Methylnaphthalene	0.994	1.094	-10.1	97	0.00
11	T	2,6-Dimethylnaphthalene	0.930	0.977	-5.1	94	0.00
12	T	1,6,7-Trimethylnaphthalene	0.917	0.982	-7.1	96	0.00
13	un	C2-Naphthalenes	1.565	0.000	100.0#	0#	-18.55#
14	un	C3-Naphthalenes	1.565	0.000	100.0#	0#	-20.01#
15	un	C4-Naphthalenes	1.565	0.000	100.0#	0#	-22.26#
16	T	Benzothiophene	1.277	1.388	-8.7	95	0.02
17	un	C1-Benzothiophenes	1.277	0.000	100.0#	0#	-15.44#
18	un	C2-Benzothiophenes	1.277	0.000	100.0#	0#	-18.35#
19	un	C3-Benzothiophenes	1.277	0.000	100.0#	0#	-20.27#
20	un	C4-Benzothiophenes	1.277	0.000	100.0#	0#	-21.57#
21	S	Acenaphthene-d10	0.914	0.960	-5.0	94	0.00
22	T	Biphenyl	1.300	1.375	-5.8	93	0.00
23	T	Acenaphthylene	1.571	1.570	0.1	91	0.00
24	T	Acenaphthene	0.942	1.003	-6.5	95	0.00
25	T	Dibenzofuran	1.394	1.508	-8.2	95	0.00
26	T	Fluorene	1.149	1.173	-2.1	92	0.00
27	T	1-Methylfluorene	0.701	0.000	100.0#	0#	-23.47#
28	un	C1-Fluorenes	1.149	0.000	100.0#	0#	-23.47#
29	un	C2-Fluorenes	1.149	0.000	100.0#	0#	-25.87#
30	un	C3-Fluorenes	1.149	0.000	100.0#	0#	-27.28#
31	I	Pyrene-d10	1.000	1.000	0.0	88	0.00
32	S	Phenanthrene-d10	0.794	0.845	-6.4	93	0.00
33	T	Carbazole	0.626	0.604	3.5	89	0.00
34	T	Dibenzothiophene	0.835	0.870	-4.2	92	0.00
35	T	4-Methyldibenzothiophene	0.648	0.000	100.0#	0#	-25.87#
36	un	2/3-Methyldibenzothiophene	0.648	0.000	100.0#	0#	-26.15#
37	un	1-Methyldibenzothiophene	0.648	0.000	100.0#	0#	-26.52#
38	un	C2-Dibenzothiophenes	0.835	0.000	100.0#	0#	-27.82#
39	un	C3-Dibenzothiophenes	0.835	0.000	100.0#	0#	-28.78#
40	un	C4-Dibenzothiophenes	0.835	0.000	100.0#	0#	-30.44#
41	T	Phenanthrene	0.916	0.967	-5.6	92	0.00
42	T	Anthracene	0.830	0.855	-3.0	92	0.00
43	un	3-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
44	un	2-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
45	un	2-Methylanthracene	0.660	0.000	100.0#	0#	-26.91#
46	un	4/9-Methylphenanthrene	0.660	0.000	100.0#	0#	-26.91#
47	T	1-Methylphenanthrene	0.660	0.691	-4.7	93	0.00
48	T	3,6-Dimethylphenanthrene	0.594	0.000	100.0#	0#	-28.01#
49	T	Retene	0.316	0.000	100.0#	0#	-30.67#

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171I.D
Acq On : 2 Oct 2013 5:26 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-005
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 03 20:47:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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	0.916	0.000	100.0#	0#	-28.55#
51	un	C3-Phenanthrenes/Anthracene	0.916	0.000	100.0#	0#	-29.79#
52	un	C4-Phenanthrenes/Anthracene	0.916	0.000	100.0#	0#	-32.06#
53	T	Naphthobenzothiophene	0.899	0.000	100.0#	0#	-32.97#
54	un	C1-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-34.23#
55	un	C2-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-36.50#
56	un	C3-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-37.73#
57	un	C4-Naphthobenzothiophenes	0.899	0.000	100.0#	0#	-37.70#
58	T	Fluoranthene	0.947	0.974	-2.9	92	-0.03
59	T	Pyrene	1.116	1.189	-6.5	94	0.00
60	T	2-Methylfluoranthene	0.727	0.000	100.0#	0#	-30.44#
61	T	Benzo(b)fluorene	0.634	0.000	100.0#	0#	-31.07#
62	un	C1-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-31.49#
63	un	C2-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-32.16#
64	un	C3-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-33.81#
65	un	C4-Fluoranthenes/Pyrenes	0.947	0.000	100.0#	0#	-35.79#
66	S	Chrysene-d12	1.030	1.077	-4.6	93	0.00
67	T	Benz(a)anthracene	0.916	0.903	1.4	93	0.00
68	T	Chrysene/Triphenylene	0.939	0.946	-0.7	94	0.00
69	un	C1-Chrysenes	0.939	0.000	100.0#	0#	-35.82#
70	un	C2-Chrysenes	0.939	0.000	100.0#	0#	-36.24#
71	un	C3-Chrysenes	0.939	0.000	100.0#	0#	-38.12#
72	un	C4-Chrysenes	0.939	0.000	100.0#	0#	-39.45#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	83	-0.03
74	un	C29-Hopane	0.474	0.000	100.0#	0#	-41.05#
75	un	18a-Oleanane	0.474	0.000	100.0#	0#	-42.06#
76	T	C30-Hopane	0.474	0.000	100.0#	0#	-42.81#
77	T	Benzo(b)fluoranthene	1.294	1.346	-4.0	83	0.00
78	T	Benzo(k,j)fluoranthene	1.114	1.305	-17.1	111	0.00
79	un	Benzo(a)fluoranthene	1.114	0.000	100.0#	0#	-37.31#
80	T	Benzo(e)pyrene	1.245	1.345	-8.0	92	-0.03
81	T	Benzo(a)pyrene	1.151	1.224	-6.3	91	0.00
82	T	Indeno(1,2,3-c,d)pyrene	1.227	1.330	-8.4	94	-0.03
83	T	Dibenzo(a,h)anthracene	0.957	1.046	-9.3	95	-0.03
84	un	C1-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-49.12#
85	un	C2-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-50.50#
86	un	C3-Dibenzo(a,h)anthracenes	0.957	0.000	100.0#	0#	-49.78#
87	T	Benzo(g,h,i)perylene	1.081	1.183	-9.4	93	-0.03
88	S	Perylene-d12	1.109	1.145	-3.2	89	0.00
89	T	Perylene	1.181	1.205	-2.0	88	0.00
90	S	5(b)H-Cholane	0.277	0.292	-5.4	91	0.00
91	un	C20-TAS	1.620	0.000	100.0#	0#	-33.81#
92	un	C21-TAS	1.620	0.000	100.0#	0#	-34.23#
93	un	C26(20S)-TAS	1.620	0.000	100.0#	0#	-38.71#
94	T	C26(20R)/C27(20S)-TAS	1.620	0.000	100.0#	0#	-39.42#
95	un	C28(20S)-TAS	1.620	0.000	100.0#	0#	-40.69#
96	un	C27(20R)-TAS	1.620	0.000	100.0#	0#	-40.69#
97	un	C28(20R)-TAS	1.620	0.000	100.0#	0#	-41.60#

Evaluate Continuing Calibration Report

Data Path : C:\GCMS5\MS50171\
Data File : MS50171I.D
Acq On : 2 Oct 2013 5:26 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-005
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 03 20:47:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 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\MS50171\
Data File : MS50171I.D
Acq On : 2 Oct 2013 5:26 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-005
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 03 20:47:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorene-d10	21.414	176	308413m	251.05		0.00
31) Pyrene-d10	29.625	212	589791m	250.63		0.00
73) Benzo(a)pyrene-d12	38.381	264	522778m	250.32		-0.03
System Monitoring Compounds						
2) Naphthalene-d8	13.768	136	495678m	267.24		0.00
21) Acenaphthene-d10	19.625	164	295007m	262.60		0.00
32) Phenanthrene-d10	24.709	188	497559m	266.41		0.00
66) Chrysene-d12	33.810	240	633759m	261.37		0.00
88) Perylene-d12	38.705	264	597876m	258.26		0.00
90) 5(b)H-Cholane	34.199	217	152681m	264.21		0.00
Target Compounds						Qvalue
3) cis/trans Decalin	11.130	138	93044m	270.45		
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	13.835	128	515378m	268.09		
9) 2-Methylnaphthalene	16.093	142	343655m	274.24		
10) 1-Methylnaphthalene	16.406	142	335573m	274.86		
11) 2,6-Dimethylnaphthalene	18.172	156	300153m	262.82		
12) 1,6,7-Trimethylnaphtha...	21.034	170	301533m	267.60		
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	14.014	134	423693m	270.12		
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	17.658	154	418473m	262.05		
23) Acenaphthylene	19.133	152	478225m	247.82		
24) Acenaphthene	19.737	154	308668m	266.81		
25) Dibenzofuran	20.318	168	460757m	268.99		
26) Fluorene	21.503	166	360842m	255.63		
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	25.557	167	352047m	238.91		
34) Dibenzothiophene	24.370	184	504468m	256.76		
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	24.794	178	563920m	261.74		
42) Anthracene	24.963	178	504368m	258.11		
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\MS50171\
Data File : MS50171I.D
Acq On : 2 Oct 2013 5:26 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-005
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 03 20:47:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration

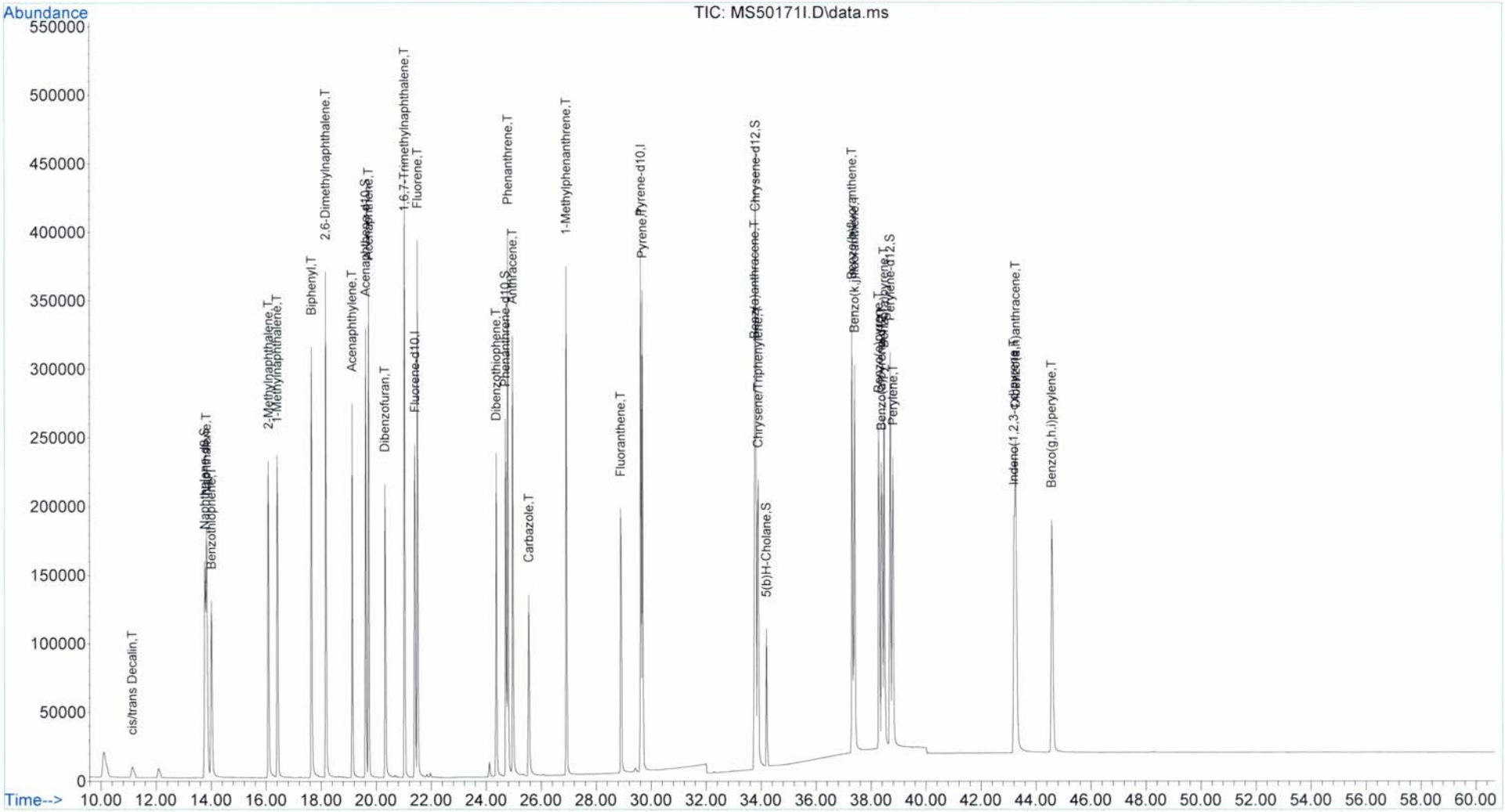
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 4/9-Methylphenanthrene	0.000		0	N.D.	d	
47) 1-Methylphenanthrene	26.913	192	402281m	258.86		
48) 3,6-Dimethylphenanthrene	0.000		0	N.D.	d	
49) Retene	0.000		0	N.D.	d	
50) C2-Phenanthrenes/Anthr...	0.000		0	N.D.	d	
51) C3-Phenanthrenes/Anthr...	0.000		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	28.891	202	573602m	257.26		
59) Pyrene	29.682	202	699506m	266.28		
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	33.777	228	530195m	245.97		
68) Chrysene/Triphenylene	33.907	228	553049m	250.26		
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	37.311	252	704148m	260.56		
78) Benzo(k,j)fluoranthene	37.408	252	678644m	291.84		
79) Benzo(a)fluoranthene	0.000		0	N.D.	d	
80) Benzo(e)pyrene	38.284	252	699630m	269.09		
81) Benzo(a)pyrene	38.478	252	637724m	265.20		
82) Indeno(1,2,3-c,d)pyrene	43.206	276	682668m	266.39		
83) Dibenzo(a,h)anthracene	43.271	278	541006m	270.76		
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	44.579	276	611935m	271.07		
89) Perylene	38.802	252	629792m	255.26		
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\MS50171\
Data File : MS50171I.D
Acq On : 2 Oct 2013 5:26 am
Operator : ECM(YMIAO)
Sample : AR-WKICV-250-005
Misc :
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 03 20:47:09 2013
Quant Method : C:\GCMS5\MS50171\AR50171.M
Quant Title : PAH Calibration Table-2013A
QLast Update : Thu Oct 03 20:27:47 2013
Response via : Initial Calibration



PAH Mass Discrimination Ratio

B&B Laboratories
Project J13034
Report 13-3131

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
MS50171B.D	AR-WKC1-020-031	19.1	18.5	1.03	
MS50171C.D	AR-WKC2-100-031	96.6	96.6	1.00	
MS50171D.D	AR-WKC3-250-031	242	251	0.96	
MS50171E.D	AR-WKC4-500-031	497	513	0.97	
MS50171F.D	AR-WKC5-1000-031	1013	1048	0.97	
MS50171G.D	AR-WKC6-5000-031	5127	5202	0.99	
MS50171I.D	AR-WKICV-250-005	271	262	1.04	
MS50171J.D	AR-WKCC-250-039	247	252	0.98	
MS50171L.D	AR-WKCC-250-039	233	243	0.96	

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

PAH Internal Standard Area Data

B&B Laboratories
Project J13034
Report 13-3131

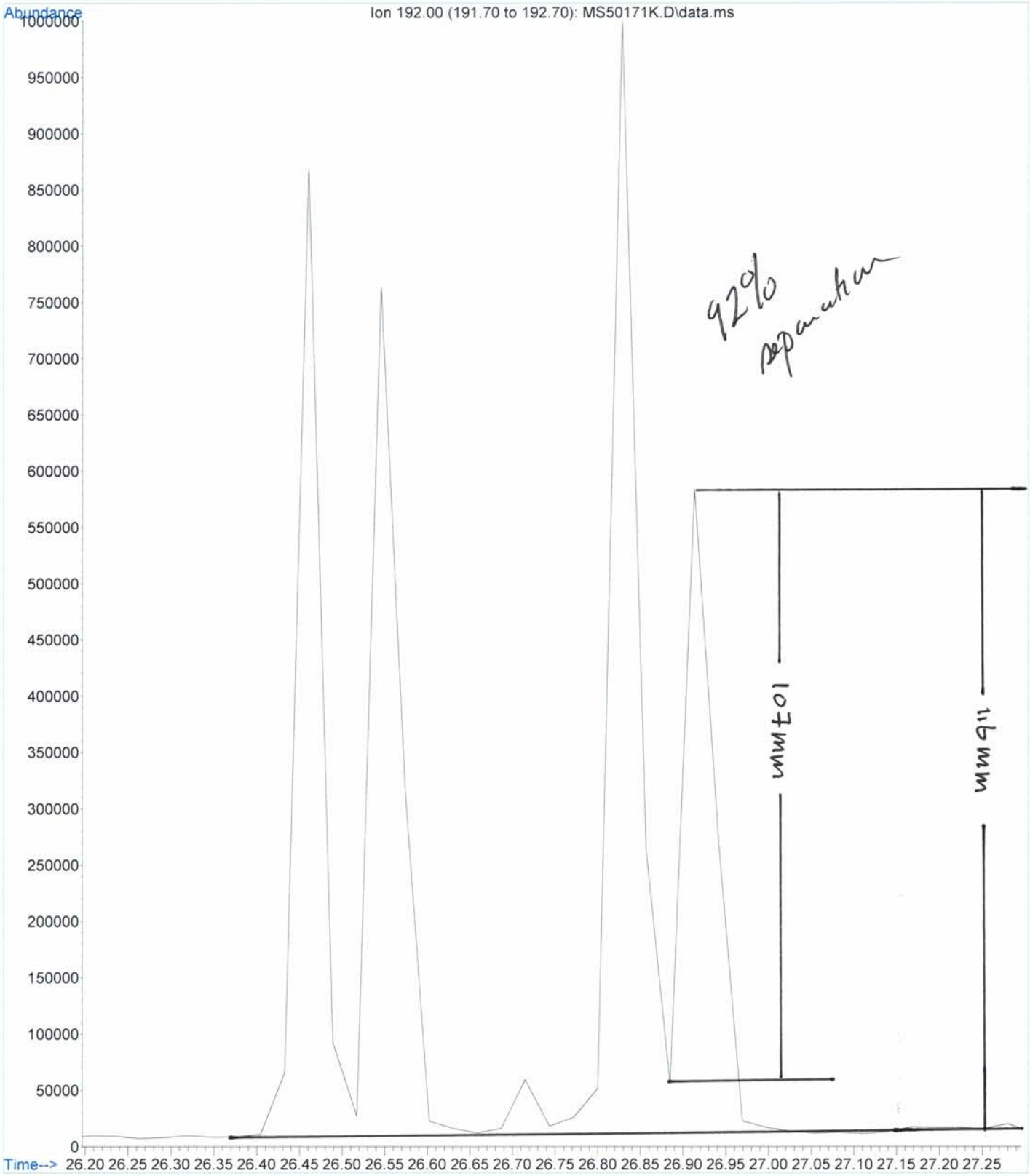
Arcadis - Mayflower AR
Polycyclic Aromatic Hydrocarbon Data
The Area of the Internal Standards in the Associated Calibration Standard

Client Project #B0086003.1302

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)
MS50171D.D	**AR-WKC3-250-031**	**347880**	**173940**	**695760**	**673305**	**336653**	**1346610**	**626341**	**313171**	**1252682**
MS50171I.D	**AR-WKICV-250-005**	**308413**			**589791**			**522778**		
MS50171J.D	**AR-WKCC-250-039**	**315501**	**157751**	**631002**	**604048**	**302024**	**1208096**	**548531**	**274266**	**1097062**
ENV3122B.D	Blank Spike	336348			691359			620624		
ENV3122C.D	Blank Spike Dupl.	293418			595079			534103		
ENV3122D.D	MS (BG2-WS-BKG-004 MS/MSD)	317088			668223			596601		
ENV3122E.D	MSD (BG2-WS-BKG-004 MS/MSD)	336259			704754			609871		
ARC1972.D	BG1-WS-BKG-003	322687			660004			571957		
ARC1974.D	BG2-WS-BKG-004	302378			673816			598522		
ARC1980.D	BG4-WS-BKG-006	330359			677759			612582		
MS50171L.D	**AR-WKCC-250-039**	**320611**	**160306**	**641222**	**631815**	**315908**	**1263630**	**567701**	**283851**	**1135402**

SRM-2779 Reference Oil
PAH
Resolution Check

```
File        :C:\GCMS5\MS50171\MS50171K.D
Operator    : ECM(YMIAO)
Acquired    :  2 Oct 2013    7:38 am using AcqMethod PAH-2012.M
Instrument  :   GCMS5
Sample Name: AR-WKCC-250-039
Misc Info   :
Vial Number: 11
```



Supporting Documents

Shipping, Sample Receiving, and Project Initiation Documents

B&B LABORATORIES RECEIVING/INTEGRITY REPORT

Job: J13034 Date Received: 9/24/13 SDG#: 13092402

Sender: Arcadis- Mayflower AR

1. Number of Shipping Containers: 1 Arcadis: Ryan Lewis

Comments: large blue cooler

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

Airbill Number: 8504 2325 2230 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: N/A

5. General Sample Conditions:
Frozen (Cool) Unrefrigerated
Dry Ice Blue Ice (Ice) Temperature/Comments: 3.5°C / temp blank 2.7°C

6. List of Broken Containers:

None

7. Number of Samples Expected: 1 Cooler Number of Samples Received: 10 ea)
1L waters

8. Problems/Discrepancies:

None

9. Resolutions:

N/A

10. Checked in by: Amanda Brewster Date: 9/24/13

large blue cooler

sdg 13092402
Cooler 1 of 1

wet ice
thermometer 6
temp: 3.5°C
temp blank: 2.7°C

RUSH OR SHORT HOLD TIME ENCLOSED

eurofins | Lancaster Laboratories

485473
CUSTODY SEAL
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2300

DATE: 9-23-13
SIGNATURE:

FedEx Express. US Airbill

85042325223O

0200

FedEx Retrieval Copy

1 From

2 Your Internal Billing Reference

3 To

College Station

8504 2325 2230

467

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: XOM

Project ID: Mayflower Pipeline Incident

B&B Contact: Amanda Brewster

Sampler Signature: Ryan Lewis

Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	Analyses: BAH 8270 SIM	Other Instructions	Comments
								Sdg 13092402 Cooler 1 of 1 (1)	
BG1-WS-BKG-003	9-20-13	1500	surface water	—	1 liter amber	2	X		
BG2-WS-BKG-004	9-20-13	1530	"	—	"	2	X		
BG2-WS-BKG-004 MS/MSD	9-20-13	1530	"	—	"	4	X		MS/MSD
BG4-WS-BKG-006	9-20-13	1600	"	—	"	2	X		

Total # of Containers: 10

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name: Ryan Lewis	ARCADIS	9-23-13	1600	Printed Name: Amanda Brewster	B&B Labs	9/24/13	11:00
Signature: Ryan Lewis				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

Amanda Brewster

From: Amanda Brewster <amandabrewster@tdi-bi.com>
Sent: Tuesday, September 24, 2013 10:47 AM
To: 'Mott, Lyndi'; 'Parmelee, Rhiannon'; Lewis, Ryan (Ryan.Lewis@arcadis-us.com)
Cc: Juan Ramirez (juanramirez@tdi-bi.com); 'Donell Frank'; 'tommcdonald@tdi-bi.com' (tommcdonald@tdi-bi.com)
Subject: Samples Received 9/24/13
Attachments: COC 9-24-13.pdf

Lyndi/Parmelee/Ryan,

We received your samples this morning in good condition.
The internal temperature of the cooler was 3.5ºC and the temperature blank was 2.7ºC.
A PDF of the COC is attached for your records.

Parmelee, please let Juan know how you would like to proceed with these samples.

Regards,
Amanda

From: Mott, Lyndi [mailto:Lyndi.Mott@arcadis-us.com]
Sent: Tuesday, September 24, 2013 8:21 AM
To: Parmelee, Rhiannon
Cc: 'Amanda J. Brewster' (amandabrewster@tdi-bi.com)
Subject: RE: Rain Event Sampling Cooler Shipped

Rhiannon – I recommend you discuss the rain event samples with Juan Ramirez or Donell Frank. The phone number is the same for all of them.

Lyndi

From: Parmelee, Rhiannon
Sent: Monday, September 23, 2013 5:47 PM
To: 'Amanda J. Brewster' (amandabrewster@tdi-bi.com)
Cc: Mott, Lyndi
Subject: RE: Rain Event Sampling Cooler Shipped

Amanda – I do need to chat with you about this, but I had the guys send the samples anyhow.

From: Lewis, Ryan
Sent: Monday, September 23, 2013 4:34 PM
To: amandabrewster@tdi-bi.com
Cc: Parmelee, Rhiannon; Drost, Dave; Van Aller, Hans; Mott, Lyndi; Chandler, Jennifer
Subject: Rain Event Sampling Cooler Shipped

Hello Amanda,

One cooler was shipped today from the XOM-Mayflower Site under tracking # 8504-2325-2230. Feel free to contact Rhiannon at 303-471-3904 (Rhiannon.Parmelee@arcadis-us.com) or myself at 503-863-9060 if you have any questions.

Thanks,
Ryan B Lewis | Geologist 1 | ryan.lewis@arcadis-us.com

ARCADIS U.S., Inc. | 111 SW Columbia Street, Suite 670 | Portland, OR 97201
T: 503 220 8201 ext. 1101 | M: 503 863 9060
www.arcadis-us.com

ARCADIS, Imagine the result

Report 13-3131

B&B LABORATORIES SAMPLE INITIATION FORM-ENV

Job #: J13034
SDG: 13092402
Client: Arcadis-Mayflower AR
Initiation Date: 9/25/13
received 9/24/13

Number of Samples: 5
Matrix: waters
Due Date: 45 days: 11/09/13
Comments: collected 9/20/13
extract by 9/26/13

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 ARC1578	
☒ Matrix Spike Duplicate ARC1577		☐ Duplicate _____	

SEE BACK FOR SPECIFIC STANDARDS TO USE

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

Comments:

Sample Custodian Signature: amanda Brewster Date: 9/25/13
Laboratory Manager Signature: _____ Date: 9/25/13

Log #	Job #	CLIENT NAME	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG	Cooler #	Sent by:	Container	Project #
64908	J13034	Arcadis - Mayflower AR	ARC1972	BG1-WS-BKG-003	09/20/13	09/24/13	PAH	WATER	1 of 2	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64909	J13034	Arcadis - Mayflower AR	ARC1973	BG1-WS-BKG-003	09/20/13	09/24/13	HOLD	WATER	2 of 2	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64910	J13034	Arcadis - Mayflower AR	ARC1974	BG2-WS-BKG-004	09/20/13	09/24/13	PAH	WATER	1 of 2	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64911	J13034	Arcadis - Mayflower AR	ARC1975	BG2-WS-BKG-004	09/20/13	09/24/13	HOLD	WATER	2 of 2	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64912	J13034	Arcadis - Mayflower AR	ARC1976	BG2-WS-BKG-004 MS/MSD	09/20/13	09/24/13	PAH	WATER	1 of 4, MS	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64913	J13034	Arcadis - Mayflower AR	ARC1977	BG2-WS-BKG-004 MS/MSD	09/20/13	09/24/13	PAH	WATER	2 of 4, MSD	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64914	J13034	Arcadis - Mayflower AR	ARC1978	BG2-WS-BKG-004 MS/MSD	09/20/13	09/24/13	HOLD	WATER	3 of 4	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64915	J13034	Arcadis - Mayflower AR	ARC1979	BG2-WS-BKG-004 MS/MSD	09/20/13	09/24/13	HOLD	WATER	4 of 4	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64916	J13034	Arcadis - Mayflower AR	ARC1980	BG4-WS-BKG-006	09/20/13	09/24/13	PAH	WATER	1 of 2	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302
64917	J13034	Arcadis - Mayflower AR	ARC1981	BG4-WS-BKG-006	09/20/13	09/24/13	HOLD	WATER	2 of 2	13092402	Cooler 1	Arcadis: Ryan Lewis	1L amber glass BR bottle	B0086003.1302

Amanda Brewster

From: Parmelee, Rhiannon <Rhiannon.Parmelee@arcadis-us.com>
Sent: Tuesday, September 24, 2013 5:24 PM
To: juanramirez@tdi-bi.com
Cc: 'Amanda J. Brewster'; Donell Frank; 'Tom Mc Donald'; Mott, Lyndi
Subject: RE: VM

Juan –

As we just discussed please analyze these samples for the full PAH list, similar to sample "WS-025DA(middepth)081513" that was included in Report 13-3109.

From: juanramirez@tdi-bi.com [mailto:juanramirez@tdi-bi.com]
Sent: Tuesday, September 24, 2013 4:00 PM
To: Parmelee, Rhiannon
Cc: 'Amanda J. Brewster'; Donell Frank; 'Tom Mc Donald'
Subject: RE: VM

Hello Rhiannon,

We are on a holding pattern with these waters until we hear from you. We have till Thursday to meet extraction holding times.

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: Parmelee, Rhiannon [mailto:Rhiannon.Parmelee@arcadis-us.com]
Sent: Tuesday, September 24, 2013 10:49 AM
To: Juan Ramirez (juanramirez@tdi-bi.com)
Subject: VM

Juan – I will follow up with you later today, it was a one-time event. I am trying to get more direction from our senior guys first.

Rhiannon Parmelee, P.E. | Project Environmental Engineer, Sediments and Waterfront | rhiannon.parmelee@arcadis-us.com

ARCADIS U.S., Inc. | 630 Plaza Drive, Suite 100 | Highlands Ranch, CO 80129
T: 303 471 3904 | M: 206 914 9625
www.arcadis-us.com

ARCADIS, Imagine the result

Professional Registration/PE-WA
Please consider the environment before printing this email.

Laboratory Bench Sheet Logs

B&B LABORATORIES ENVIRONMENTAL EXTRACTION LOG

MATRIX: ☐ OTHER ☒ WATER ☐ SEDIMENT ☐ TISSUE

Job #: J13034 SDG #: 13092402

Client: Arcadis-Mayflower AR

Analysis: ☒ PAH ☐ PESTS ☐ PCB ☐ ALI

Other :

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-2500-004
Pest/PCB: —
Aliphatic: —
Other: —

Spike: 100 µL
PAH: AR-WKSK-1000-026
Pest/PCB: —
Aliphatic: —
Other: —

GC Int Std: 100 µL
PAH: AR-WAIS-2500-003
Pest/PCB: —
Aliphatic: —
Other: —

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

General Comments:
Report 13-3131

	Added	Witness
Surrogate:	9/26/13 HA	9-26-13
Spike:	9/26/13 HA	9-26-13
Internal:	9/27/13	9-27-13

	Sample Name	Client ID	Wet Wt. (g or Ø)	Dry Wt. %	Dry Wt. (g)	Extraction Comments	Internal Chain of Custody
1	ENV3122A	Procedural Blank	1.00				Extraction Prep
2	ENV3122B	Blank Spike	1.00				Date: 9-26-13 / Date: 9-26-13
3	ENV3122C	Blank Spike Duplicate	1.00				Initials: / Initials:
4	ENV3122D	Matrix Spike (ARC1976)	0.93				Extraction
5	ENV3122E	Matrix Spike Dup (ARC1977)	1.05				Date: 9-26-13 / Date: 9-26-13
6	ARC1972	BG1-WS-BKG-003	1.04				Initials: / Initials:
7	ARC1974	BG2-WS-BKG-004	1.06				Concentration
8	ARC1980	BG4-WS-BKG-006	0.88				Date: 9-26-13 / Date: 9-26-13
9							Initials: / Initials:
10							Short Columns
11							Date: 9-27-13 / Date: 9-27-13
12							Initials: / Initials:

ENV 3122

B&B LABORATORIES ENVIRONMENTAL EXTRACTION LOG

	Sample Name	Client ID	Wet Wt. (g or L)	Dry Wt. %	Dry Wt. (g)	Extraction Comments
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

9/26/13 OK

Internal Chain of Custody

Concentration Short Columns	
Date: 9-27-13	Date: 9-27-13
Initials: ES	Initials: ES
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: 9-27-13	Initials: ES

Dry Weight Page

—

Lipid/EOM Page

EOM1049

Clean-up/Separation/Other Columns

—

Lot Numbers

DCM: 52314
Hexane: —
Hydromatrix: 210190-AU
Water: DJ063-C
Silica: BCBJ9493V
Alumina: VA26EBEMS
Sodium Sulfate: VIIH
Pentane: —
Copper: —
Hydrochloric Acid: 522G2
SPE Columns: —
Other: —

Sample Storage Box #

J13034-5

HPLC Storage Box #

—

QC Review

Date	Initials
9/30/13	~~BA~~

Copied to Folders

9/30/13 ~~BA~~

MATRIX: OTHER / SEDIMENT / (WATER)

Job #: J13034 SDG #: 13092402

Client: Arcadis- Mayflower AR

General comments:

Lab Manager Date/Int: 9/30/13 [illegible]

Transferred by Date/Int: 9/27/13 CK From ENV Pg: ENV3122 From DRY Pg: —

Date/Int: 9-27-13 EM Bal. Cal. ✓

Date/Int: 9/27/13 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	ENV3122A	Procedural Blank	1.00		3	30.163	30.163	0.000	0		
2	ENV3122B	Blank Spike	1.00		3	29.773	29.784	0.011	330		
3	ENV3122C	Blank Spike Dup	1.00		3	29.551	29.561	0.010	300		
4	ENV3122D	Matrix Spike (ARC1976)	0.93		3	30.281	30.305	0.024	774		
5	ENV3122E	Matrix Spike Dup (ARC1977)	1.05		3	29.995	30.023	0.028	800		
6	ARC1972	BG1-WS-BKG-003	1.04		3	29.637	29.685	0.048	1385		
7	ARC1974	BG2-WS-BKG-004	1.06		3	30.173	30.206	0.033	934		
8	ARC1980	BG4-WS-BKG-006	0.88		3	29.761	29.778	0.017	580		
9											
10											
11											
12											

EOM 1049

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											
14											
15											
16											
17											
18											
19											
20											
21											
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	29.647	29.647	~~29.647~~ 0.000 OK
EOM Standard	30.114	40.148	10.034

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

Date/Int:	RPD
Sample:	
Duplicate:	

EOM- WKLC-10-004

EOM 1049

Last Page