Microbac

Laboratory Report Number: L17081498

Shane Lowe
CH2MHILL, Inc
CH2MHILL
Richmond Heights, MO 63117

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Michelle Taylor – Client Services Specialist
(740) 373-4071
Michelle.Taylor@microbac.com

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on September 18 2017

Leslie Bucina – Managing Director

State of Origin: NY
Accrediting Authority: Department of Health ID:10861
QAPP: WATERLOO

Microbac

Lab Report #: L17081498
Lab Project #: 2736.061
Project Name: DOW WATERLOO GW
Lab Contact: Michelle Taylor

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
Sample ID: MW20-082517. 1 of 3 voa vials received broken. BRG	Please proceed. MRT
Sample ID: TB-082517. Both voa vials received w/headspace >6mm. BRG	Please proceed. MRT

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00115017	H	0.0		1001891784210004575000787533922679	X
0019158	H	1.0		1001891784210004575000787533823227	X
001-000859	H	0.0		1001891784210004575000787533875603	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	No
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	No

Microbac

Lab Report #: L17081498
Lab Project #: 2736.061
Project Name: DOW WATERLOO GW
Lab Contact: Michelle Taylor

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
MW07-082517	L17081498-01	08/25/2017 10:34	08/29/2017 10:51
MW07-082517	L17081498-02	08/25/2017 10:34	08/29/2017 10:51
MW06-082517	L17081498-03	08/25/2017 13:54	08/29/2017 10:51
MW06-082517	L17081498-04	08/25/2017 13:54	08/29/2017 10:51
MW06-082517-MS	L17081498-05	08/25/2017 13:54	08/29/2017 10:51
MW06-082517-MSD	L17081498-06	08/25/2017 13:54	08/29/2017 10:51
MW10-082517	L17081498-07	08/25/2017 10:20	08/29/2017 10:51
MW10-082517	L17081498-08	08/25/2017 10:20	08/29/2017 10:51
MW20-082517	L17081498-09	08/25/2017 14:10	08/29/2017 10:51
MW20-082517	L17081498-10	08/25/2017 14:10	08/29/2017 10:51
TB-082517	L17081498-11	08/25/2017 08:00	08/29/2017 10:51
FB-082517	L17081498-12	08/25/2017 12:40	08/29/2017 10:51

Login Number: L17081498
Department: Semivolatiles
Analyst: Mary Schilling

METHOD

Preparation 3510C/1311

Analysis SW-846 8270C

HOLDING TIMES

Sample Preparation: Samples 01, 03, 05-07 and 09 were re-extracted out of hold. All other holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Benzoic Acid, 2,4-Dinitrophenol. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: 4-Nitrophenol, Benzoic Acid. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Recoveries out of range were observed for the following analytes: 1,4-Dioxane failed low in the LCS/LCSD, 2,4-Dinitrophenol exceeded % RPD criteria only. Please see the applicable QC report for a detailed presentation of the failures. Samples 01, 03, 05-07 and 09 were re-extracted due to the LCS not being spiked for 1,1-biphenyl. The re-extract LCS/LCSD yielded acceptable recoveries for 1,1-biphenyl; both extractions were reported.

Sample #	Analyte	Date	Result	Lower	Upper	Type

WG627757-02	1,4-Dioxane	2017-08-31 10:44:00	32.0	50	150	Recovery
WG628510-02	1,4-Dioxane	2017-09-12 17:21:00	27.0	50	150	Recovery
WG628510-03	1,4-Dioxane	2017-09-12 17:51:00	26.0	50	150	Recovery
WG628510-03	2,4-Dinitrophenol	2017-09-12 17:51:00	36.7		30	RPD

Matrix Spikes: Recoveries out of range were observed for the following analyte: 1,4-Dioxane failed low in the MS/MSD. Please see the applicable QC report for a detailed presentation of the failures.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L17081498-05	1,4-Dioxane	2017-08-31 13:27:00	36.1	50	150	Recovery
L17081498-06	1,4-Dioxane	2017-08-31 14:01:00	43.9	50	150	Recovery

SAMPLES

Samples: All acceptance criteria were met. The extracts were library searched using the NIST library and the top twenty TICs found were reported. Requested acid compounds listed as TICs in the Waterloo QAPP may not have been detected due to unknown extraction efficiency and chromatographic performance.

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peakcompletely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low areacounts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene andbenzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data

contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 129402
Approved By: Mary Schilling

Login Number: L17081498
Department: Semivolatiles
Analyst: Lacey Hendershot

METHOD

Preparation 3510C

Analysis SW-846 8270 SIM

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: There were no MS/MSD results associated with this sample delivery group, due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac recommends site specific MS/MSD samples to avoid possible data qualification.

SAMPLES

Samples: All acceptance criteria were met.

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peakcompletely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low areacounts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene andbenzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

Narrative ID: 129010
Approved By: Mary Schilling

Login Number: L17081498
Department: Metals
Analyst: Kerri Buck

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG628174 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 128977
Approved By: Kim Rhodes

Login Number: L17081498
Department: Metals
Analyst: Ji Hu

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG628140 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 128949
Approved By: Kerri Buck

Certificate of Analysis

Sample #: L17081498-01 | **PrePrep Method:** N/A | **Instrument:** HPMS9
Client ID: MW07-082517 | **Prep Method:** 5030B/5030C/5035A | **Prep Date:** N/A
Matrix: Water | **Analytical Method:** 8260B | **Cal Date:** 08/14/2017 14:15
Workgroup #: WG627829 | **Analyst:** JDS | **Run Date:** 08/30/2017 19:23
Collect Date: 08/25/2017 10:34 | **Dilution:** 1 | **File ID:** 9M982281
Sample Tag: 01 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
unknown		9.57		0.000	0.000

Sample #: L17081498-01 | **PrePrep Method:** N/A | **Instrument:** HPMS9
Client ID: MW07-082517 | **Prep Method:** 5030B/5030C/5035A | **Prep Date:** N/A
Matrix: Water | **Analytical Method:** 8260B | **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 | **Analyst:** JDS | **Run Date:** 09/06/2017 18:46
Collect Date: 08/25/2017 10:34 | **Dilution:** 1 | **File ID:** 9M982378
Sample Tag: 02 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
No Searchable Peaks				0.000	0.000

Sample #: L17081498-01 | **PrePrep Method:** N/A | **Instrument:** HPMS9
Client ID: MW07-082517 | **Prep Method:** 5030B/5030C/5035A | **Prep Date:** N/A
Matrix: Water | **Analytical Method:** 8260C | **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 | **Analyst:** JDS | **Run Date:** 09/06/2017 18:46
Collect Date: 08/25/2017 10:34 | **Dilution:** 1 | **File ID:** 9M982378
Sample Tag: 02 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	3.20	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Certificate of Analysis

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	106	80	120	
Dibromofluoromethane	100	86	118	
p-Bromofluorobenzene	109	86	115	
Toluene-d8	104	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-01
Client ID: MW07-082517
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 10:34
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 12:22
File ID: 12M64170

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.3	2.66
1,3,5-Trinitrobenzene	99-35-4		U	5.32	2.66
1,3-Dinitrobenzene	99-65-0		U	5.32	2.66
1,4-Dioxane	123-91-1		U	10.6	5.32
2,4,5-Trichlorophenol	95-95-4		U	5.32	2.66
2,4,6-Trichlorophenol	88-06-2		U	5.32	2.66
2,4-Dichlorophenol	120-83-2		U	5.32	2.66
2,4-Dimethylphenol	105-67-9		U	5.32	2.66
2,4-Dinitrophenol	51-28-5		U	26.6	13.3
2,4-Dinitrotoluene	121-14-2		U	5.32	2.66
2,6-Dinitrotoluene	606-20-2		U	5.32	2.66
2-Chloronaphthalene	91-58-7		U	5.32	2.66
2-Chlorophenol	95-57-8		U	5.32	2.66
2-Methylnaphthalene	91-57-6		U	5.32	2.66
2-Methylphenol	95-48-7		U	5.32	2.66
2-Nitroaniline	88-74-4		U	26.6	13.3
2-Nitrophenol	88-75-5		U	5.32	2.66
3-Nitroaniline	99-09-2		U	26.6	13.3
3,3'-Dichlorobenzidine	91-94-1		U	5.32	2.66
3-,4-Methylphenol	65794-96-9		U	5.32	2.66
4-Bromophenyl-phenylether	101-55-3		U	5.32	2.66
4-Chloroaniline	106-47-8		U	5.32	2.66
4-Nitrophenol	100-02-7		U	26.6	13.3
Acenaphthene	83-32-9		U	5.32	2.66
Acenaphthylene	208-96-8		U	5.32	2.66

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Anthracene	120-12-7		U	5.32	2.66
Benzo(a)anthracene	56-55-3		U	5.32	2.66
Benzo(a)pyrene	50-32-8		U	5.32	2.66
Benzo(b)fluoranthene	205-99-2		U	5.32	2.66
Benzo(g,h,i)Perylene	191-24-2		U	5.32	2.66
Benzo(k)fluoranthene	207-08-9		U	5.32	2.66
Benzoic acid	65-85-0		U	21.3	10.6
Benzyl alcohol	100-51-6		U	5.32	2.66
Bis(2-Chloroethyl)ether	111-44-4		U	5.32	2.66
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.32	2.66
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.32	2.66
Butylbenzylphthalate	85-68-7		U	5.32	2.66
Carbazole	86-74-8		U	21.3	2.66
Chrysene	218-01-9		U	5.32	2.66
Di-N-Butylphthalate	84-74-2		U	5.32	2.66
Di-n-octylphthalate	117-84-0		U	5.32	2.66
Dibenzo(a,h)Anthracene	53-70-3		U	5.32	2.66
Dibenzofuran	132-64-9		U	5.32	2.66
Diethylphthalate	84-66-2		U	5.32	2.66
Dimethylphthalate	131-11-3		U	5.32	2.66
Fluoranthene	206-44-0		U	5.32	2.66
Fluorene	86-73-7		U	5.32	2.66
Hexachlorobenzene	118-74-1		U	5.32	2.66
Hexachlorobutadiene	87-68-3		U	5.32	2.66
Hexachlorocyclopentadiene	77-47-4		U	5.32	2.66
Hexachloroethane	67-72-1		U	5.32	2.66
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.32	2.66
Isophorone	78-59-1		U	5.32	2.66
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.32	2.66
Naphthalene	91-20-3		U	5.32	2.66
Nitrobenzene	98-95-3		U	5.32	2.66
Pentachlorophenol	87-86-5		U	26.6	13.3
Phenanthrene	85-01-8		U	5.32	2.66
Phenol	108-95-2		U	5.32	2.66
Pyrene	129-00-0		U	5.32	2.66

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	114	10	123	
2-Fluorobiphenyl	89.0	43	116	
2-Fluorophenol	49.0	21	100	

Nitrobenzene-d5	76.8	35	114	
p-Terphenyl-d14	90.0	33	141	
Phenol-d5	33.6	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-01 **PrePrep Method:** N/A **Instrument:** HPMS12
Client ID: MW07-082517 **Prep Method:** 3510C **Prep Date:** 08/30/2017 12:10
Matrix: Water **Analytical Method:** 8270D **Cal Date:** 08/03/2017 13:41
Workgroup #: WG627873 **Analyst:** SCB **Run Date:** 08/31/2017 12:22
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** 12M64170
Sample Tag: 01 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
n-Hexadecanoic acid		8.66		0.000	0.000
Octadecanoic acid		12.8		0.000	0.000
Hentriacontane		7.15		0.000	0.000
Hexadecane, 2,6,10,14-tetramethyl-		12.3		0.000	0.000
UNKNOWN		4.46		0.000	0.000
Pentacosane		18.4		0.000	0.000
Tetratetracontane		22.2		0.000	0.000
Eicosane		20.6		0.000	0.000
Tetratetracontane		13.7		0.000	0.000
Tetratriacontane		7.50		0.000	0.000
Tetrapentacontane		6.54		0.000	0.000

Sample #: L17081498-01 **PrePrep Method:** N/A **Instrument:** HPMS19
Client ID: MW07-082517 **Prep Method:** 3510C **Prep Date:** 09/06/2017 15:00
Matrix: Water **Analytical Method:** 8270D **Cal Date:** 08/15/2017 20:30
Workgroup #: WG628781 **Analyst:** SCB **Run Date:** 09/13/2017 15:58
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** 19M000544
Sample Tag: RE **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	22.7	2.84
1,3,5-Trinitrobenzene	99-35-4		U	5.68	2.84
1,3-Dinitrobenzene	99-65-0		U	5.68	2.84
1,4-Dioxane	123-91-1		U	11.4	5.68
2,4,5-Trichlorophenol	95-95-4		U	5.68	2.84
2,4,6-Trichlorophenol	88-06-2		U	5.68	2.84
2,4-Dichlorophenol	120-83-2		U	5.68	2.84
2,4-Dimethylphenol	105-67-9		U	5.68	2.84

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
2,4-Dinitrophenol	51-28-5		U	28.4	14.2
2,4-Dinitrotoluene	121-14-2		U	5.68	2.84
2,6-Dinitrotoluene	606-20-2		U	5.68	2.84
2-Chloronaphthalene	91-58-7		U	5.68	2.84
2-Chlorophenol	95-57-8		U	5.68	2.84
2-Methylnaphthalene	91-57-6		U	5.68	2.84
2-Methylphenol	95-48-7		U	5.68	2.84
2-Nitroaniline	88-74-4		U	28.4	14.2
2-Nitrophenol	88-75-5		U	5.68	2.84
3-Nitroaniline	99-09-2		U	28.4	14.2
3,3'-Dichlorobenzidine	91-94-1		U	5.68	2.84
3-,4-Methylphenol	65794-96-9		U	5.68	2.84
4-Bromophenyl-phenylether	101-55-3		U	5.68	2.84
4-Chloroaniline	106-47-8		U	5.68	2.84
4-Nitrophenol	100-02-7		U	28.4	14.2
Acenaphthene	83-32-9		U	5.68	2.84
Acenaphthylene	208-96-8		U	5.68	2.84
Anthracene	120-12-7		U	5.68	2.84
Benzo(a)anthracene	56-55-3		U	5.68	2.84
Benzo(a)pyrene	50-32-8		U	5.68	2.84
Benzo(b)fluoranthene	205-99-2		U	5.68	2.84
Benzo(g,h,i)Perylene	191-24-2		U	5.68	2.84
Benzo(k)fluoranthene	207-08-9		U	5.68	2.84
Benzoic acid	65-85-0		U	22.7	11.4
Benzyl alcohol	100-51-6		U	5.68	2.84
Bis(2-Chloroethyl)ether	111-44-4		U	5.68	2.84
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.68	2.84
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.68	2.84
Butylbenzylphthalate	85-68-7		U	5.68	2.84
Carbazole	86-74-8		U	22.7	2.84
Chrysene	218-01-9		U	5.68	2.84
Di-N-Butylphthalate	84-74-2		U	5.68	2.84
Di-n-octylphthalate	117-84-0		U	5.68	2.84
Dibenzo(a,h)Anthracene	53-70-3		U	5.68	2.84
Dibenzofuran	132-64-9		U	5.68	2.84
Diethylphthalate	84-66-2		U	5.68	2.84
Dimethylphthalate	131-11-3		U	5.68	2.84
Fluoranthene	206-44-0		U	5.68	2.84
Fluorene	86-73-7		U	5.68	2.84

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Hexachlorobenzene	118-74-1		U	5.68	2.84
Hexachlorobutadiene	87-68-3		U	5.68	2.84
Hexachlorocyclopentadiene	77-47-4		U	5.68	2.84
Hexachloroethane	67-72-1		U	5.68	2.84
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.68	2.84
Isophorone	78-59-1		U	5.68	2.84
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.68	2.84
Naphthalene	91-20-3		U	5.68	2.84
Nitrobenzene	98-95-3		U	5.68	2.84
Pentachlorophenol	87-86-5		U	28.4	14.2
Phenanthrene	85-01-8		U	5.68	2.84
Phenol	108-95-2		U	5.68	2.84
Pyrene	129-00-0		U	5.68	2.84

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	81.6	10	123	
2-Fluorobiphenyl	57.4	43	116	
2-Fluorophenol	33.2	21	100	
Nitrobenzene-d5	58.7	35	114	
p-Terphenyl-d14	91.7	33	141	
Phenol-d5	23.5	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-01
Client ID: MW07-082517
Matrix: Water
Workgroup #: WG628159
Collect Date: 08/25/2017 10:34
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D_SIM
Analyst: LJH/SCB
Dilution: 1
Units: ug/L

Instrument: HPMS15
Prep Date: 08/31/2017 16:00
Cal Date: 09/02/2017 12:13
Run Date: 09/02/2017 17:22
File ID: 15M21962

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	0.0510	0.0255
Acenaphthene	83-32-9		U	0.0510	0.0255
Acenaphthylene	208-96-8		U	0.0510	0.0255
Anthracene	120-12-7		U	0.0510	0.0255
Benzo(a)anthracene	56-55-3		U	0.0510	0.0255
Benzo(a)pyrene	50-32-8		U	0.0510	0.0255
Benzo(b)fluoranthene	205-99-2		U	0.0510	0.0255
Benzo(g,h,i)perylene	191-24-2		U	0.0510	0.0255
Benzo(k)fluoranthene	207-08-9		U	0.0510	0.0255
Chrysene	218-01-9		U	0.0510	0.0255

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Dibenzo(a,h)anthracene	53-70-3		U	0.0510	0.0255
Fluoranthene	206-44-0		U	0.0510	0.0255
Fluorene	86-73-7		U	0.0510	0.0255
Indeno(1,2,3-cd)pyrene	193-39-5		U	0.0510	0.0255
Naphthalene	91-20-3	0.0414	J	0.0510	0.0255
Phenanthrene	85-01-8		U	0.0510	0.0255
Pyrene	129-00-0		U	0.0510	0.0255

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2-Fluorobiphenyl	78.4	43	116	
Nitrobenzene-d5	84.2	35	114	
p-Terphenyl-d14	95.2	33	141	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-01 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW07-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:05
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** T4.090117.170541
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5	0.145	J	0.200	0.100
Calcium, Total	7440-70-2	96.7		0.500	0.250
Iron, Total	7439-89-6	0.152		0.100	0.0500
Magnesium, Total	7439-95-4	14.7		0.500	0.250
Manganese, Total	7439-96-5	0.254		0.0100	0.00500
Potassium, Total	7440-09-7	4.28		1.00	0.500
Sodium, Total	7440-23-5	262		0.500	0.250

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #: L17081498-01 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW07-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:18
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** NI.090117.131831
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00238		0.00100	0.000500

Certificate of Analysis

Sample #: L17081498-02 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW07-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:09
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** T4.090117.170922
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6		U	0.100	0.0500
Manganese, Dissolved	7439-96-5	0.296		0.0100	0.00500

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-02 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW07-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:21
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** NI.090117.132136
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00191		0.00100	0.000500

Sample #: L17081498-03 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: MW06-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260B **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 **Analyst:** JDS **Run Date:** 09/06/2017 19:15
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** 9M982379
Sample Tag: 02 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
No Searchable Peaks				0.000	0.000

Sample #: L17081498-03 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: MW06-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260B **Cal Date:** 08/14/2017 14:15
Workgroup #: WG627829 **Analyst:** JDS **Run Date:** 08/30/2017 18:52
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** 9M982280
Sample Tag: 01 **Units:** ug/L

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Sulfur dioxide		17.4		0.000	0.000

Sample #: L17081498-03 | **PrePrep Method:** N/A | **Instrument:** HPMS9
Client ID: MW06-082517 | **Prep Method:** 5030B/5030C/5035A | **Prep Date:** N/A
Matrix: Water | **Analytical Method:** 8260C | **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 | **Analyst:** JDS | **Run Date:** 09/06/2017 19:15
Collect Date: 08/25/2017 13:54 | **Dilution:** 1 | **File ID:** 9M982379
Sample Tag: 02 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	2.52	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	108	80	120	
Dibromofluoromethane	103	86	118	
p-Bromofluorobenzene	112	86	115	
Toluene-d8	107	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03
Client ID: MW06-082517
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 13:54
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 12:54
File ID: 12M64171

Analyte	CAS #	Result	Qual	RL	MDL
Benzenesulfonamide, N-butyl-		4.80		0.000	0.000
n-Hexadecanoic acid		6.72		0.000	0.000

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
UNKNOWN		10.1		0.000	0.000
UNKNOWN2		5.35		0.000	0.000
Tetratriacontane		7.66		0.000	0.000
Octacosane		10.9		0.000	0.000
UNKNOWN3		4.37		0.000	0.000
Octacosane		16.3		0.000	0.000
Eicosane		20.2		0.000	0.000
Octacosane		18.5		0.000	0.000
Tetratriacontane		12.5		0.000	0.000
Tetratetracontane		6.95		0.000	0.000
UNKNOWN4		6.48		0.000	0.000

Sample #: L17081498-03
Client ID: MW06-082517
Matrix: Water
Workgroup #: WG628781
Collect Date: 08/25/2017 13:54
Sample Tag: RE

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS19
Prep Date: 09/06/2017 15:00
Cal Date: 08/15/2017 20:30
Run Date: 09/13/2017 16:28
File ID: 19M000545

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.3	2.66
1,3,5-Trinitrobenzene	99-35-4		U	5.32	2.66
1,3-Dinitrobenzene	99-65-0		U	5.32	2.66
1,4-Dioxane	123-91-1		U	10.6	5.32
2,4,5-Trichlorophenol	95-95-4		U	5.32	2.66
2,4,6-Trichlorophenol	88-06-2		U	5.32	2.66
2,4-Dichlorophenol	120-83-2		U	5.32	2.66
2,4-Dimethylphenol	105-67-9		U	5.32	2.66
2,4-Dinitrophenol	51-28-5		U	26.6	13.3
2,4-Dinitrotoluene	121-14-2		U	5.32	2.66
2,6-Dinitrotoluene	606-20-2		U	5.32	2.66
2-Chloronaphthalene	91-58-7		U	5.32	2.66
2-Chlorophenol	95-57-8		U	5.32	2.66
2-Methylnaphthalene	91-57-6		U	5.32	2.66
2-Methylphenol	95-48-7		U	5.32	2.66
2-Nitroaniline	88-74-4		U	26.6	13.3
2-Nitrophenol	88-75-5		U	5.32	2.66
3-Nitroaniline	99-09-2		U	26.6	13.3
3,3'-Dichlorobenzidine	91-94-1		U	5.32	2.66
3-,4-Methylphenol	65794-96-9		U	5.32	2.66

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
4-Bromophenyl-phenylether	101-55-3		U	5.32	2.66
4-Chloroaniline	106-47-8		U	5.32	2.66
4-Nitrophenol	100-02-7		U	26.6	13.3
Acenaphthene	83-32-9		U	5.32	2.66
Acenaphthylene	208-96-8		U	5.32	2.66
Anthracene	120-12-7		U	5.32	2.66
Benzo(a)anthracene	56-55-3		U	5.32	2.66
Benzo(a)pyrene	50-32-8		U	5.32	2.66
Benzo(b)fluoranthene	205-99-2		U	5.32	2.66
Benzo(g,h,i)Perylene	191-24-2		U	5.32	2.66
Benzo(k)fluoranthene	207-08-9		U	5.32	2.66
Benzoic acid	65-85-0		U	21.3	10.6
Benzyl alcohol	100-51-6		U	5.32	2.66
Bis(2-Chloroethyl)ether	111-44-4		U	5.32	2.66
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.32	2.66
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.32	2.66
Butylbenzylphthalate	85-68-7		U	5.32	2.66
Carbazole	86-74-8		U	21.3	2.66
Chrysene	218-01-9		U	5.32	2.66
Di-N-Butylphthalate	84-74-2		U	5.32	2.66
Di-n-octylphthalate	117-84-0		U	5.32	2.66
Dibenzo(a,h)Anthracene	53-70-3		U	5.32	2.66
Dibenzofuran	132-64-9		U	5.32	2.66
Diethylphthalate	84-66-2		U	5.32	2.66
Dimethylphthalate	131-11-3		U	5.32	2.66
Fluoranthene	206-44-0		U	5.32	2.66
Fluorene	86-73-7		U	5.32	2.66
Hexachlorobenzene	118-74-1		U	5.32	2.66
Hexachlorobutadiene	87-68-3		U	5.32	2.66
Hexachlorocyclopentadiene	77-47-4		U	5.32	2.66
Hexachloroethane	67-72-1		U	5.32	2.66
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.32	2.66
Isophorone	78-59-1		U	5.32	2.66
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.32	2.66
Naphthalene	91-20-3		U	5.32	2.66
Nitrobenzene	98-95-3		U	5.32	2.66
Pentachlorophenol	87-86-5		U	26.6	13.3
Phenanthrene	85-01-8		U	5.32	2.66
Phenol	108-95-2		U	5.32	2.66

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Pyrene	129-00-0		U	5.32	2.66

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	89.2	10	123	
2-Fluorobiphenyl	67.0	43	116	
2-Fluorophenol	37.1	21	100	
Nitrobenzene-d5	70.6	35	114	
p-Terphenyl-d14	93.5	33	141	
Phenol-d5	25.5	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03
Client ID: MW06-082517
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 13:54
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 12:54
File ID: 12M64171

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.1	2.63
1,3,5-Trinitrobenzene	99-35-4		U	5.26	2.63
1,3-Dinitrobenzene	99-65-0		U	5.26	2.63
1,4-Dioxane	123-91-1		U	10.5	5.26
2,4,5-Trichlorophenol	95-95-4		U	5.26	2.63
2,4,6-Trichlorophenol	88-06-2		U	5.26	2.63
2,4-Dichlorophenol	120-83-2		U	5.26	2.63
2,4-Dimethylphenol	105-67-9		U	5.26	2.63
2,4-Dinitrophenol	51-28-5		U	26.3	13.2
2,4-Dinitrotoluene	121-14-2		U	5.26	2.63
2,6-Dinitrotoluene	606-20-2		U	5.26	2.63
2-Chloronaphthalene	91-58-7		U	5.26	2.63
2-Chlorophenol	95-57-8		U	5.26	2.63
2-Methylnaphthalene	91-57-6		U	5.26	2.63
2-Methylphenol	95-48-7		U	5.26	2.63
2-Nitroaniline	88-74-4		U	26.3	13.2
2-Nitrophenol	88-75-5		U	5.26	2.63
3-Nitroaniline	99-09-2		U	26.3	13.2
3,3'-Dichlorobenzidine	91-94-1		U	5.26	2.63
3-,4-Methylphenol	65794-96-9		U	5.26	2.63
4-Bromophenyl-phenylether	101-55-3		U	5.26	2.63
4-Chloroaniline	106-47-8		U	5.26	2.63

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
4-Nitrophenol	100-02-7		U	26.3	13.2
Acenaphthene	83-32-9		U	5.26	2.63
Acenaphthylene	208-96-8		U	5.26	2.63
Anthracene	120-12-7		U	5.26	2.63
Benzo(a)anthracene	56-55-3		U	5.26	2.63
Benzo(a)pyrene	50-32-8		U	5.26	2.63
Benzo(b)fluoranthene	205-99-2		U	5.26	2.63
Benzo(g,h,i)Perylene	191-24-2		U	5.26	2.63
Benzo(k)fluoranthene	207-08-9		U	5.26	2.63
Benzoic acid	65-85-0		U	21.1	10.5
Benzyl alcohol	100-51-6		U	5.26	2.63
Bis(2-Chloroethyl)ether	111-44-4		U	5.26	2.63
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.26	2.63
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.26	2.63
Butylbenzylphthalate	85-68-7		U	5.26	2.63
Carbazole	86-74-8		U	21.1	2.63
Chrysene	218-01-9		U	5.26	2.63
Di-N-Butylphthalate	84-74-2		U	5.26	2.63
Di-n-octylphthalate	117-84-0		U	5.26	2.63
Dibenzo(a,h)Anthracene	53-70-3		U	5.26	2.63
Dibenzofuran	132-64-9		U	5.26	2.63
Diethylphthalate	84-66-2		U	5.26	2.63
Dimethylphthalate	131-11-3		U	5.26	2.63
Fluoranthene	206-44-0		U	5.26	2.63
Fluorene	86-73-7		U	5.26	2.63
Hexachlorobenzene	118-74-1		U	5.26	2.63
Hexachlorobutadiene	87-68-3		U	5.26	2.63
Hexachlorocyclopentadiene	77-47-4		U	5.26	2.63
Hexachloroethane	67-72-1		U	5.26	2.63
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.26	2.63
Isophorone	78-59-1		U	5.26	2.63
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.26	2.63
Naphthalene	91-20-3		U	5.26	2.63
Nitrobenzene	98-95-3		U	5.26	2.63
Pentachlorophenol	87-86-5		U	26.3	13.2
Phenanthrene	85-01-8		U	5.26	2.63
Phenol	108-95-2		U	5.26	2.63
Pyrene	129-00-0		U	5.26	2.63

Surrogate	Recovery	Lower Limit	Upper Limit	Q

Certificate of Analysis

2,4,6-Tribromophenol	116	10	123	
2-Fluorobiphenyl	93.1	43	116	
2-Fluorophenol	49.1	21	100	
Nitrobenzene-d5	91.6	35	114	
p-Terphenyl-d14	97.7	33	141	
Phenol-d5	34.7	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03
Client ID: MW06-082517
Matrix: Water
Workgroup #: WG628159
Collect Date: 08/25/2017 13:54
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D_SIM
Analyst: LJH/SCB
Dilution: 1
Units: ug/L

Instrument: HPMS15
Prep Date: 08/31/2017 16:00
Cal Date: 09/02/2017 12:13
Run Date: 09/02/2017 15:58
File ID: 15M21959

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	0.0521	0.0260
Acenaphthene	83-32-9		U	0.0521	0.0260
Acenaphthylene	208-96-8		U	0.0521	0.0260
Anthracene	120-12-7		U	0.0521	0.0260
Benzo(a)anthracene	56-55-3		U	0.0521	0.0260
Benzo(a)pyrene	50-32-8		U	0.0521	0.0260
Benzo(b)fluoranthene	205-99-2		U	0.0521	0.0260
Benzo(g,h,i)perylene	191-24-2		U	0.0521	0.0260
Benzo(k)fluoranthene	207-08-9		U	0.0521	0.0260
Chrysene	218-01-9		U	0.0521	0.0260
Dibenzo(a,h)anthracene	53-70-3		U	0.0521	0.0260
Fluoranthene	206-44-0		U	0.0521	0.0260
Fluorene	86-73-7		U	0.0521	0.0260
Indeno(1,2,3-cd)pyrene	193-39-5		U	0.0521	0.0260
Naphthalene	91-20-3		U	0.0521	0.0260
Phenanthrene	85-01-8		U	0.0521	0.0260
Pyrene	129-00-0		U	0.0521	0.0260

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2-Fluorobiphenyl	77.6	43	116	
Nitrobenzene-d5	81.0	35	114	
p-Terphenyl-d14	96.7	33	141	

U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #: L17081498-03 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW06-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:13
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** T4.090117.171302
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	114		0.500	0.250
Iron, Total	7439-89-6		U	0.100	0.0500
Magnesium, Total	7439-95-4	25.8		0.500	0.250
Manganese, Total	7439-96-5	0.0658		0.0100	0.00500
Potassium, Total	7440-09-7	1.77		1.00	0.500
Sodium, Total	7440-23-5	43.6		0.500	0.250

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW06-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:24
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** NI.090117.132442
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.000929	J	0.00100	0.000500

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #: L17081498-04 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW06-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:16
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** T4.090117.171644
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5	0.217		0.200	0.100
Iron, Dissolved	7439-89-6		U	0.100	0.0500
Manganese, Dissolved	7439-96-5	0.0258		0.0100	0.00500

U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #: L17081498-04 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW06-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:27
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** NI.090117.132747
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.000985	J	0.00100	0.000500

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #: L17081498-05 **PrePrep Method:** N/A **Instrument:** HPMS19
Client ID: MW06-082517-MS **Prep Method:** 3510C **Prep Date:** 09/06/2017 15:00
Matrix: Water **Analytical Method:** 8270D **Cal Date:** 08/15/2017 20:30
Workgroup #: WG628781 **Analyst:** SCB **Run Date:** 09/13/2017 16:58
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** 19M000546
Sample Tag: RE **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4	36.7		22.0	2.75
1,3,5-Trinitrobenzene	99-35-4	10.1		5.49	2.75
1,3-Dinitrobenzene	99-65-0	50.8		5.49	2.75
1,4-Dioxane	123-91-1	14.1		11.0	5.49
2,4,5-Trichlorophenol	95-95-4	43.2		5.49	2.75
2,4,6-Trichlorophenol	88-06-2	39.6		5.49	2.75
2,4-Dichlorophenol	120-83-2	36.3		5.49	2.75
2,4-Dimethylphenol	105-67-9	36.8		5.49	2.75
2,4-Dinitrophenol	51-28-5	48.3		27.5	13.7
2,4-Dinitrotoluene	121-14-2	54.7		5.49	2.75
2,6-Dinitrotoluene	606-20-2	48.4		5.49	2.75
2-Chloronaphthalene	91-58-7	31.8		5.49	2.75
2-Chlorophenol	95-57-8	29.7		5.49	2.75
2-Methylnaphthalene	91-57-6	29.8		5.49	2.75
2-Methylphenol	95-48-7	29.3		5.49	2.75
2-Nitroaniline	88-74-4	46.5		27.5	13.7
2-Nitrophenol	88-75-5	34.6		5.49	2.75
3-Nitroaniline	99-09-2	48.6		27.5	13.7
3,3'-Dichlorobenzidine	91-94-1	57.7		5.49	2.75
3-,4-Methylphenol	65794-96-9	26.8		5.49	2.75
4-Bromophenyl-phenylether	101-55-3	43.0		5.49	2.75
4-Chloroaniline	106-47-8	32.7		5.49	2.75

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
4-Nitrophenol	100-02-7	25.4	J	27.5	13.7
Acenaphthene	83-32-9	40.5		5.49	2.75
Acenaphthylene	208-96-8	38.1		5.49	2.75
Anthracene	120-12-7	49.6		5.49	2.75
Benzo(a)anthracene	56-55-3	54.7		5.49	2.75
Benzo(a)pyrene	50-32-8	56.5		5.49	2.75
Benzo(b)fluoranthene	205-99-2	57.9		5.49	2.75
Benzo(g,h,i)Perylene	191-24-2	63.4		5.49	2.75
Benzo(k)fluoranthene	207-08-9	53.6		5.49	2.75
Benzoic acid	65-85-0	18.0	J	22.0	11.0
Benzyl alcohol	100-51-6	30.2		5.49	2.75
Bis(2-Chloroethyl)ether	111-44-4	29.4		5.49	2.75
Bis(2-Chloroethoxy)Methane	111-91-1	27.9		5.49	2.75
bis(2-Ethylhexyl)phthalate	117-81-7	59.9		5.49	2.75
Butylbenzylphthalate	85-68-7	60.7		5.49	2.75
Carbazole	86-74-8	55.2		22.0	2.75
Chrysene	218-01-9	57.2		5.49	2.75
Di-N-Butylphthalate	84-74-2	53.7		5.49	2.75
Di-n-octylphthalate	117-84-0	60.9		5.49	2.75
Dibenzo(a,h)Anthracene	53-70-3	56.9		5.49	2.75
Dibenzofuran	132-64-9	40.0		5.49	2.75
Diethylphthalate	84-66-2	47.8		5.49	2.75
Dimethylphthalate	131-11-3	44.6		5.49	2.75
Fluoranthene	206-44-0	53.0		5.49	2.75
Fluorene	86-73-7	44.1		5.49	2.75
Hexachlorobenzene	118-74-1	46.1		5.49	2.75
Hexachlorobutadiene	87-68-3	23.2		5.49	2.75
Hexachlorocyclopentadiene	77-47-4	24.7		5.49	2.75
Hexachloroethane	67-72-1	20.7		5.49	2.75
Indeno(1,2,3-cd)pyrene	193-39-5	59.0		5.49	2.75
Isophorone	78-59-1	35.2		5.49	2.75
Diphenylamine/n-Nitrosodiphenylamine	86-30-6	46.6		5.49	2.75
Naphthalene	91-20-3	28.4		5.49	2.75
Nitrobenzene	98-95-3	30.1		5.49	2.75
Pentachlorophenol	87-86-5	60.3		27.5	13.7
Phenanthrene	85-01-8	50.0		5.49	2.75
Phenol	108-95-2	12.9		5.49	2.75
Pyrene	129-00-0	54.5		5.49	2.75

Surrogate	Recovery	Lower Limit	Upper Limit	Q

Certificate of Analysis

2,4,6-Tribromophenol	101	10	123	
2-Fluorobiphenyl	67.7	43	116	
2-Fluorophenol	33.5	21	100	
Nitrobenzene-d5	62.5	35	114	
p-Terphenyl-d14	95.4	33	141	
Phenol-d5	23.8	10	94	

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #: L17081498-05
Client ID: MW06-082517-MS
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 13:54
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 13:27
File ID: 12M64172

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.3	2.66
1,3,5-Trinitrobenzene	99-35-4	10.5		5.32	2.66
1,3-Dinitrobenzene	99-65-0	49.8		5.32	2.66
1,4-Dioxane	123-91-1	19.2		10.6	5.32
2,4,5-Trichlorophenol	95-95-4	53.8		5.32	2.66
2,4,6-Trichlorophenol	88-06-2	52.6		5.32	2.66
2,4-Dichlorophenol	120-83-2	48.5		5.32	2.66
2,4-Dimethylphenol	105-67-9	49.6		5.32	2.66
2,4-Dinitrophenol	51-28-5	27.9		26.6	13.3
2,4-Dinitrotoluene	121-14-2	54.5		5.32	2.66
2,6-Dinitrotoluene	606-20-2	54.9		5.32	2.66
2-Chloronaphthalene	91-58-7	41.4		5.32	2.66
2-Chlorophenol	95-57-8	36.7		5.32	2.66
2-Methylnaphthalene	91-57-6	37.7		5.32	2.66
2-Methylphenol	95-48-7	40.7		5.32	2.66
2-Nitroaniline	88-74-4	59.9		26.6	13.3
2-Nitrophenol	88-75-5	43.0		5.32	2.66
3-Nitroaniline	99-09-2	51.0		26.6	13.3
3,3'-Dichlorobenzidine	91-94-1	60.8		5.32	2.66
3-,4-Methylphenol	65794-96-9	38.3		5.32	2.66
4-Bromophenyl-phenylether	101-55-3	50.9		5.32	2.66
4-Chloroaniline	106-47-8	50.0		5.32	2.66
4-Nitrophenol	100-02-7	28.1		26.6	13.3
Acenaphthene	83-32-9	48.8		5.32	2.66
Acenaphthylene	208-96-8	50.4		5.32	2.66

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Anthracene	120-12-7	52.1		5.32	2.66
Benzo(a)anthracene	56-55-3	57.0		5.32	2.66
Benzo(a)pyrene	50-32-8	56.2		5.32	2.66
Benzo(b)fluoranthene	205-99-2	50.2		5.32	2.66
Benzo(g,h,i)Perylene	191-24-2	59.0		5.32	2.66
Benzo(k)fluoranthene	207-08-9	57.3		5.32	2.66
Benzoic acid	65-85-0	24.3		21.3	10.6
Benzyl alcohol	100-51-6	43.6		5.32	2.66
Bis(2-Chloroethyl)ether	111-44-4	41.9		5.32	2.66
Bis(2-Chloroethoxy)Methane	111-91-1	37.3		5.32	2.66
bis(2-Ethylhexyl)phthalate	117-81-7	56.2		5.32	2.66
Butylbenzylphthalate	85-68-7	53.4		5.32	2.66
Carbazole	86-74-8	56.6		21.3	2.66
Chrysene	218-01-9	60.7		5.32	2.66
Di-N-Butylphthalate	84-74-2	53.5		5.32	2.66
Di-n-octylphthalate	117-84-0	52.7		5.32	2.66
Dibenzo(a,h)Anthracene	53-70-3	33.4		5.32	2.66
Dibenzofuran	132-64-9	48.4		5.32	2.66
Diethylphthalate	84-66-2	55.3		5.32	2.66
Dimethylphthalate	131-11-3	53.4		5.32	2.66
Fluoranthene	206-44-0	56.2		5.32	2.66
Fluorene	86-73-7	52.0		5.32	2.66
Hexachlorobenzene	118-74-1	61.3		5.32	2.66
Hexachlorobutadiene	87-68-3	33.5		5.32	2.66
Hexachlorocyclopentadiene	77-47-4	24.2		5.32	2.66
Hexachloroethane	67-72-1	26.8		5.32	2.66
Indeno(1,2,3-cd)pyrene	193-39-5	53.2		5.32	2.66
Isophorone	78-59-1	55.1		5.32	2.66
Diphenylamine/n-Nitrosodiphenylamine	86-30-6	51.6		5.32	2.66
Naphthalene	91-20-3	34.1		5.32	2.66
Nitrobenzene	98-95-3	43.2		5.32	2.66
Pentachlorophenol	87-86-5	61.5		26.6	13.3
Phenanthrene	85-01-8	54.0		5.32	2.66
Phenol	108-95-2	19.2		5.32	2.66
Pyrene	129-00-0	53.0		5.32	2.66

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	117	10	123	
2-Fluorobiphenyl	94.9	43	116	
2-Fluorophenol	48.6	21	100	

Certificate of Analysis

Nitrobenzene-d5	90.9	35	114	
p-Terphenyl-d14	92.1	33	141	
Phenol-d5	34.7	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-06
Client ID: MW06-082517-MSD
Matrix: Water
Workgroup #: WG628781
Collect Date: 08/25/2017 13:54
Sample Tag: RE

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS19
Prep Date: 09/06/2017 15:00
Cal Date: 08/15/2017 20:30
Run Date: 09/13/2017 17:28
File ID: 19M000547

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4	36.6		21.5	2.69
1,3,5-Trinitrobenzene	99-35-4	10.4		5.38	2.69
1,3-Dinitrobenzene	99-65-0	52.2		5.38	2.69
1,4-Dioxane	123-91-1	15.0		10.8	5.38
2,4,5-Trichlorophenol	95-95-4	43.5		5.38	2.69
2,4,6-Trichlorophenol	88-06-2	39.1		5.38	2.69
2,4-Dichlorophenol	120-83-2	36.9		5.38	2.69
2,4-Dimethylphenol	105-67-9	39.9		5.38	2.69
2,4-Dinitrophenol	51-28-5	48.3		26.9	13.4
2,4-Dinitrotoluene	121-14-2	55.1		5.38	2.69
2,6-Dinitrotoluene	606-20-2	49.4		5.38	2.69
2-Chloronaphthalene	91-58-7	30.8		5.38	2.69
2-Chlorophenol	95-57-8	31.3		5.38	2.69
2-Methylnaphthalene	91-57-6	28.9		5.38	2.69
2-Methylphenol	95-48-7	30.5		5.38	2.69
2-Nitroaniline	88-74-4	47.4		26.9	13.4
2-Nitrophenol	88-75-5	35.3		5.38	2.69
3-Nitroaniline	99-09-2	51.2		26.9	13.4
3,3'-Dichlorobenzidine	91-94-1	59.4		5.38	2.69
3-,4-Methylphenol	65794-96-9	28.0		5.38	2.69
4-Bromophenyl-phenylether	101-55-3	44.6		5.38	2.69
4-Chloroaniline	106-47-8	33.8		5.38	2.69
4-Nitrophenol	100-02-7	26.4	J	26.9	13.4
Acenaphthene	83-32-9	39.5		5.38	2.69
Acenaphthylene	208-96-8	37.2		5.38	2.69
Anthracene	120-12-7	51.0		5.38	2.69
Benzo(a)anthracene	56-55-3	53.9		5.38	2.69
Benzo(a)pyrene	50-32-8	55.5		5.38	2.69

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Benzo(b)fluoranthene	205-99-2	53.6		5.38	2.69
Benzo(g,h,i)Perylene	191-24-2	62.3		5.38	2.69
Benzo(k)fluoranthene	207-08-9	51.0		5.38	2.69
Benzoic acid	65-85-0	13.2	J	21.5	10.8
Benzyl alcohol	100-51-6	31.0		5.38	2.69
Bis(2-Chloroethyl)ether	111-44-4	30.7		5.38	2.69
Bis(2-Chloroethoxy)Methane	111-91-1	28.4		5.38	2.69
bis(2-Ethylhexyl)phthalate	117-81-7	59.1		5.38	2.69
Butylbenzylphthalate	85-68-7	60.1		5.38	2.69
Carbazole	86-74-8	56.1		21.5	2.69
Chrysene	218-01-9	56.0		5.38	2.69
Di-N-Butylphthalate	84-74-2	53.9		5.38	2.69
Di-n-octylphthalate	117-84-0	60.0		5.38	2.69
Dibenzo(a,h)Anthracene	53-70-3	47.9		5.38	2.69
Dibenzofuran	132-64-9	39.2		5.38	2.69
Diethylphthalate	84-66-2	49.0		5.38	2.69
Dimethylphthalate	131-11-3	45.4		5.38	2.69
Fluoranthene	206-44-0	53.4		5.38	2.69
Fluorene	86-73-7	44.2		5.38	2.69
Hexachlorobenzene	118-74-1	47.5		5.38	2.69
Hexachlorobutadiene	87-68-3	20.9		5.38	2.69
Hexachlorocyclopentadiene	77-47-4	23.6		5.38	2.69
Hexachloroethane	67-72-1	19.2		5.38	2.69
Indeno(1,2,3-cd)pyrene	193-39-5	56.5		5.38	2.69
Isophorone	78-59-1	34.6		5.38	2.69
Diphenylamine/n-Nitrosodiphenylamine	86-30-6	48.4		5.38	2.69
Naphthalene	91-20-3	27.9		5.38	2.69
Nitrobenzene	98-95-3	31.0		5.38	2.69
Pentachlorophenol	87-86-5	63.0		26.9	13.4
Phenanthrene	85-01-8	51.4		5.38	2.69
Phenol	108-95-2	14.0		5.38	2.69
Pyrene	129-00-0	53.7		5.38	2.69

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	106	10	123	
2-Fluorobiphenyl	69.0	43	116	
2-Fluorophenol	37.1	21	100	
Nitrobenzene-d5	65.7	35	114	
p-Terphenyl-d14	90.9	33	141	
Phenol-d5	26.1	10	94	

Certificate of Analysis

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #:	L17081498-06	**PrePrep Method:**	N/A	**Instrument:**	HPMS12
Client ID:	MW06-082517-MSD	**Prep Method:**	3510C	**Prep Date:**	08/30/2017 12:10
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/03/2017 13:41
Workgroup #:	WG627873	**Analyst:**	SCB	**Run Date:**	08/31/2017 14:01
Collect Date:	08/25/2017 13:54	**Dilution:**	1	**File ID:**	12M64173
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	22.0	2.75
1,3,5-Trinitrobenzene	99-35-4	11.2		5.49	2.75
1,3-Dinitrobenzene	99-65-0	53.2		5.49	2.75
1,4-Dioxane	123-91-1	24.1		11.0	5.49
2,4,5-Trichlorophenol	95-95-4	57.9		5.49	2.75
2,4,6-Trichlorophenol	88-06-2	57.1		5.49	2.75
2,4-Dichlorophenol	120-83-2	55.8		5.49	2.75
2,4-Dimethylphenol	105-67-9	53.7		5.49	2.75
2,4-Dinitrophenol	51-28-5	30.2		27.5	13.7
2,4-Dinitrotoluene	121-14-2	57.0		5.49	2.75
2,6-Dinitrotoluene	606-20-2	58.0		5.49	2.75
2-Chloronaphthalene	91-58-7	46.8		5.49	2.75
2-Chlorophenol	95-57-8	43.3		5.49	2.75
2-Methylnaphthalene	91-57-6	44.2		5.49	2.75
2-Methylphenol	95-48-7	42.7		5.49	2.75
2-Nitroaniline	88-74-4	51.5		27.5	13.7
2-Nitrophenol	88-75-5	51.4		5.49	2.75
3-Nitroaniline	99-09-2	54.2		27.5	13.7
3,3'-Dichlorobenzidine	91-94-1	67.0		5.49	2.75
3-,4-Methylphenol	65794-96-9	39.6		5.49	2.75
4-Bromophenyl-phenylether	101-55-3	53.6		5.49	2.75
4-Chloroaniline	106-47-8	47.7		5.49	2.75
4-Nitrophenol	100-02-7	23.7	J	27.5	13.7
Acenaphthene	83-32-9	51.7		5.49	2.75
Acenaphthylene	208-96-8	53.1		5.49	2.75
Anthracene	120-12-7	54.4		5.49	2.75
Benzo(a)anthracene	56-55-3	60.5		5.49	2.75
Benzo(a)pyrene	50-32-8	59.9		5.49	2.75
Benzo(b)fluoranthene	205-99-2	54.2		5.49	2.75
Benzo(g,h,i)Perylene	191-24-2	63.0		5.49	2.75
Benzo(k)fluoranthene	207-08-9	59.9		5.49	2.75

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Benzoic acid	65-85-0	34.6		22.0	11.0
Benzyl alcohol	100-51-6	45.8		5.49	2.75
Bis(2-Chloroethyl)ether	111-44-4	40.6		5.49	2.75
Bis(2-Chloroethoxy)Methane	111-91-1	37.4		5.49	2.75
bis(2-Ethylhexyl)phthalate	117-81-7	59.3		5.49	2.75
Butylbenzylphthalate	85-68-7	61.2		5.49	2.75
Carbazole	86-74-8	58.9		22.0	2.75
Chrysene	218-01-9	64.8		5.49	2.75
Di-N-Butylphthalate	84-74-2	54.6		5.49	2.75
Di-n-octylphthalate	117-84-0	56.8		5.49	2.75
Dibenzo(a,h)Anthracene	53-70-3	35.9		5.49	2.75
Dibenzofuran	132-64-9	52.0		5.49	2.75
Diethylphthalate	84-66-2	54.1		5.49	2.75
Dimethylphthalate	131-11-3	55.5		5.49	2.75
Fluoranthene	206-44-0	54.6		5.49	2.75
Fluorene	86-73-7	54.4		5.49	2.75
Hexachlorobenzene	118-74-1	64.2		5.49	2.75
Hexachlorobutadiene	87-68-3	41.7		5.49	2.75
Hexachlorocyclopentadiene	77-47-4	29.1		5.49	2.75
Hexachloroethane	67-72-1	30.4		5.49	2.75
Indeno(1,2,3-cd)pyrene	193-39-5	56.9		5.49	2.75
Isophorone	78-59-1	51.8		5.49	2.75
Diphenylamine/n-Nitrosodiphenylamine	86-30-6	58.7		5.49	2.75
Naphthalene	91-20-3	41.2		5.49	2.75
Nitrobenzene	98-95-3	43.5		5.49	2.75
Pentachlorophenol	87-86-5	64.7		27.5	13.7
Phenanthrene	85-01-8	56.8		5.49	2.75
Phenol	108-95-2	20.3		5.49	2.75
Pyrene	129-00-0	56.6		5.49	2.75

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	123	10	123	
2-Fluorobiphenyl	102	43	116	
2-Fluorophenol	53.3	21	100	
Nitrobenzene-d5	89.3	35	114	
p-Terphenyl-d14	91.6	33	141	
Phenol-d5	35.7	10	94	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: MW10-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260B **Cal Date:** 08/14/2017 14:15
Workgroup #: WG627829 **Analyst:** JDS **Run Date:** 08/30/2017 20:23
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** 9M982283
Sample Tag: 01 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
No Searchable Peaks				0.000	0.000

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: MW10-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260B **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 **Analyst:** JDS **Run Date:** 09/06/2017 19:45
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** 9M982380
Sample Tag: 02 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
unknown		7.15		0.000	0.000

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: MW10-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260C **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 **Analyst:** JDS **Run Date:** 09/06/2017 19:45
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** 9M982380
Sample Tag: 02 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	3.66	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Certificate of Analysis

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	105	80	120	
Dibromofluoromethane	101	86	118	
p-Bromofluorobenzene	110	86	115	
Toluene-d8	105	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** HPMS12
Client ID: MW10-082517 **Prep Method:** 3510C **Prep Date:** 08/30/2017 12:10
Matrix: Water **Analytical Method:** 8270D **Cal Date:** 08/03/2017 13:41
Workgroup #: WG627873 **Analyst:** SCB **Run Date:** 08/31/2017 14:31
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** 12M64174
Sample Tag: 01 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
n-Hexadecanoic acid		6.22		0.000	0.000
UNKNOWN		5.24		0.000	0.000
UNKNOWN2		5.51		0.000	0.000
UNKNOWN3		5.82		0.000	0.000
UNKNOWN4		4.52		0.000	0.000
UNKNOWN5		7.13		0.000	0.000
Hexadecane		7.82		0.000	0.000
Eicosane		11.7		0.000	0.000
Eicosane		14.1		0.000	0.000
Tetratriacontane		13.6		0.000	0.000
Tetratriacontane		9.18		0.000	0.000
UNKNOWN6		5.02		0.000	0.000
UNKNOWN7		5.96		0.000	0.000

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** HPMS19
Client ID: MW10-082517 **Prep Method:** 3510C **Prep Date:** 09/06/2017 15:00
Matrix: Water **Analytical Method:** 8270D **Cal Date:** 08/15/2017 20:30
Workgroup #: WG628781 **Analyst:** SCB **Run Date:** 09/13/2017 17:59
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** 19M000548
Sample Tag: RE **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	20.0	2.50
1,3,5-Trinitrobenzene	99-35-4		U	5.00	2.50
1,3-Dinitrobenzene	99-65-0		U	5.00	2.50

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
1,4-Dioxane	123-91-1		U	10.0	5.00
2,4,5-Trichlorophenol	95-95-4		U	5.00	2.50
2,4,6-Trichlorophenol	88-06-2		U	5.00	2.50
2,4-Dichlorophenol	120-83-2		U	5.00	2.50
2,4-Dimethylphenol	105-67-9		U	5.00	2.50
2,4-Dinitrophenol	51-28-5		U	25.0	12.5
2,4-Dinitrotoluene	121-14-2		U	5.00	2.50
2,6-Dinitrotoluene	606-20-2		U	5.00	2.50
2-Chloronaphthalene	91-58-7		U	5.00	2.50
2-Chlorophenol	95-57-8		U	5.00	2.50
2-Methylnaphthalene	91-57-6		U	5.00	2.50
2-Methylphenol	95-48-7		U	5.00	2.50
2-Nitroaniline	88-74-4		U	25.0	12.5
2-Nitrophenol	88-75-5		U	5.00	2.50
3-Nitroaniline	99-09-2		U	25.0	12.5
3,3'-Dichlorobenzidine	91-94-1		U	5.00	2.50
3-,4-Methylphenol	65794-96-9		U	5.00	2.50
4-Bromophenyl-phenylether	101-55-3		U	5.00	2.50
4-Chloroaniline	106-47-8		U	5.00	2.50
4-Nitrophenol	100-02-7		U	25.0	12.5
Acenaphthene	83-32-9		U	5.00	2.50
Acenaphthylene	208-96-8		U	5.00	2.50
Anthracene	120-12-7		U	5.00	2.50
Benzo(a)anthracene	56-55-3		U	5.00	2.50
Benzo(a)pyrene	50-32-8		U	5.00	2.50
Benzo(b)fluoranthene	205-99-2		U	5.00	2.50
Benzo(g,h,i)Perylene	191-24-2		U	5.00	2.50
Benzo(k)fluoranthene	207-08-9		U	5.00	2.50
Benzoic acid	65-85-0		U	20.0	10.0
Benzyl alcohol	100-51-6		U	5.00	2.50
Bis(2-Chloroethyl)ether	111-44-4		U	5.00	2.50
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.00	2.50
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.00	2.50
Butylbenzylphthalate	85-68-7		U	5.00	2.50
Carbazole	86-74-8		U	20.0	2.50
Chrysene	218-01-9		U	5.00	2.50
Di-N-Butylphthalate	84-74-2		U	5.00	2.50
Di-n-octylphthalate	117-84-0		U	5.00	2.50
Dibenzo(a,h)Anthracene	53-70-3		U	5.00	2.50

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Dibenzofuran	132-64-9		U	5.00	2.50
Diethylphthalate	84-66-2		U	5.00	2.50
Dimethylphthalate	131-11-3		U	5.00	2.50
Fluoranthene	206-44-0		U	5.00	2.50
Fluorene	86-73-7		U	5.00	2.50
Hexachlorobenzene	118-74-1		U	5.00	2.50
Hexachlorobutadiene	87-68-3		U	5.00	2.50
Hexachlorocyclopentadiene	77-47-4		U	5.00	2.50
Hexachloroethane	67-72-1		U	5.00	2.50
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.00	2.50
Isophorone	78-59-1		U	5.00	2.50
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.00	2.50
Naphthalene	91-20-3		U	5.00	2.50
Nitrobenzene	98-95-3		U	5.00	2.50
Pentachlorophenol	87-86-5		U	25.0	12.5
Phenanthrene	85-01-8		U	5.00	2.50
Phenol	108-95-2		U	5.00	2.50
Pyrene	129-00-0		U	5.00	2.50

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	71.3	10	123	
2-Fluorobiphenyl	57.8	43	116	
2-Fluorophenol	33.0	21	100	
Nitrobenzene-d5	59.3	35	114	
p-Terphenyl-d14	83.0	33	141	
Phenol-d5	21.7	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-07
Client ID: MW10-082517
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 10:20
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 14:31
File ID: 12M64174

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	20.0	2.50
1,3,5-Trinitrobenzene	99-35-4		U	5.00	2.50
1,3-Dinitrobenzene	99-65-0		U	5.00	2.50
1,4-Dioxane	123-91-1		U	10.0	5.00
2,4,5-Trichlorophenol	95-95-4		U	5.00	2.50

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
2,4,6-Trichlorophenol	88-06-2		U	5.00	2.50
2,4-Dichlorophenol	120-83-2		U	5.00	2.50
2,4-Dimethylphenol	105-67-9		U	5.00	2.50
2,4-Dinitrophenol	51-28-5		U	25.0	12.5
2,4-Dinitrotoluene	121-14-2		U	5.00	2.50
2,6-Dinitrotoluene	606-20-2		U	5.00	2.50
2-Chloronaphthalene	91-58-7		U	5.00	2.50
2-Chlorophenol	95-57-8		U	5.00	2.50
2-Methylnaphthalene	91-57-6		U	5.00	2.50
2-Methylphenol	95-48-7		U	5.00	2.50
2-Nitroaniline	88-74-4		U	25.0	12.5
2-Nitrophenol	88-75-5		U	5.00	2.50
3-Nitroaniline	99-09-2		U	25.0	12.5
3,3'-Dichlorobenzidine	91-94-1		U	5.00	2.50
3-,4-Methylphenol	65794-96-9		U	5.00	2.50
4-Bromophenyl-phenylether	101-55-3		U	5.00	2.50
4-Chloroaniline	106-47-8		U	5.00	2.50
4-Nitrophenol	100-02-7		U	25.0	12.5
Acenaphthene	83-32-9		U	5.00	2.50
Acenaphthylene	208-96-8		U	5.00	2.50
Anthracene	120-12-7		U	5.00	2.50
Benzo(a)anthracene	56-55-3		U	5.00	2.50
Benzo(a)pyrene	50-32-8		U	5.00	2.50
Benzo(b)fluoranthene	205-99-2		U	5.00	2.50
Benzo(g,h,i)Perylene	191-24-2		U	5.00	2.50
Benzo(k)fluoranthene	207-08-9		U	5.00	2.50
Benzoic acid	65-85-0		U	20.0	10.0
Benzyl alcohol	100-51-6		U	5.00	2.50
Bis(2-Chloroethyl)ether	111-44-4		U	5.00	2.50
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.00	2.50
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.00	2.50
Butylbenzylphthalate	85-68-7		U	5.00	2.50
Carbazole	86-74-8		U	20.0	2.50
Chrysene	218-01-9		U	5.00	2.50
Di-N-Butylphthalate	84-74-2		U	5.00	2.50
Di-n-octylphthalate	117-84-0		U	5.00	2.50
Dibenzo(a,h)Anthracene	53-70-3		U	5.00	2.50
Dibenzofuran	132-64-9		U	5.00	2.50
Diethylphthalate	84-66-2		U	5.00	2.50

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Dimethylphthalate	131-11-3		U	5.00	2.50
Fluoranthene	206-44-0		U	5.00	2.50
Fluorene	86-73-7		U	5.00	2.50
Hexachlorobenzene	118-74-1		U	5.00	2.50
Hexachlorobutadiene	87-68-3		U	5.00	2.50
Hexachlorocyclopentadiene	77-47-4		U	5.00	2.50
Hexachloroethane	67-72-1		U	5.00	2.50
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.00	2.50
Isophorone	78-59-1		U	5.00	2.50
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.00	2.50
Naphthalene	91-20-3		U	5.00	2.50
Nitrobenzene	98-95-3		U	5.00	2.50
Pentachlorophenol	87-86-5		U	25.0	12.5
Phenanthrene	85-01-8		U	5.00	2.50
Phenol	108-95-2		U	5.00	2.50
Pyrene	129-00-0		U	5.00	2.50

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	109	10	123	
2-Fluorobiphenyl	85.8	43	116	
2-Fluorophenol	46.1	21	100	
Nitrobenzene-d5	73.3	35	114	
p-Terphenyl-d14	90.6	33	141	
Phenol-d5	30.5	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-07
Client ID: MW10-082517
Matrix: Water
Workgroup #: WG628159
Collect Date: 08/25/2017 10:20
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D_SIM
Analyst: LJH/SCB
Dilution: 1
Units: ug/L

Instrument: HPMS15
Prep Date: 08/31/2017 16:00
Cal Date: 09/02/2017 12:13
Run Date: 09/02/2017 16:26
File ID: 15M21960

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	0.0532	0.0266
Acenaphthene	83-32-9		U	0.0532	0.0266
Acenaphthylene	208-96-8		U	0.0532	0.0266
Anthracene	120-12-7		U	0.0532	0.0266
Benzo(a)anthracene	56-55-3		U	0.0532	0.0266
Benzo(a)pyrene	50-32-8		U	0.0532	0.0266
Benzo(b)fluoranthene	205-99-2		U	0.0532	0.0266

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Benzo(g,h,i)perylene	191-24-2		U	0.0532	0.0266
Benzo(k)fluoranthene	207-08-9		U	0.0532	0.0266
Chrysene	218-01-9		U	0.0532	0.0266
Dibenzo(a,h)anthracene	53-70-3		U	0.0532	0.0266
Fluoranthene	206-44-0		U	0.0532	0.0266
Fluorene	86-73-7		U	0.0532	0.0266
Indeno(1,2,3-cd)pyrene	193-39-5		U	0.0532	0.0266
Naphthalene	91-20-3		U	0.0532	0.0266
Phenanthrene	85-01-8		U	0.0532	0.0266
Pyrene	129-00-0		U	0.0532	0.0266

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2-Fluorobiphenyl	75.8	43	116	
Nitrobenzene-d5	85.2	35	114	
p-Terphenyl-d14	90.4	33	141	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW10-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:20
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** T4.090117.172026
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	82.4		0.500	0.250
Iron, Total	7439-89-6	0.276		0.100	0.0500
Magnesium, Total	7439-95-4	20.1		0.500	0.250
Manganese, Total	7439-96-5	0.221		0.0100	0.00500
Potassium, Total	7440-09-7	2.41		1.00	0.500
Sodium, Total	7440-23-5	172		0.500	0.250

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW10-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:30
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** NI.090117.133053
Sample Tag: 01 **Units:** mg/L

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00468		0.00100	0.000500

Sample #: L17081498-08 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW10-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:24
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** T4.090117.172407
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	1.85		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.129		0.0100	0.00500

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-08 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW10-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 12:41
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** NI.090117.124123
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00455		0.00100	0.000500

Sample #: L17081498-09 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: MW20-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260B **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 **Analyst:** JDS **Run Date:** 09/06/2017 20:14
Collect Date: 08/25/2017 14:10 **Dilution:** 1 **File ID:** 9M982381
Sample Tag: 02 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
unknown		5.96		0.000	0.000

Certificate of Analysis

Sample #:	L17081498-09	**PrePrep Method:**	N/A	**Instrument:**	HPMS9
Client ID:	MW20-082517	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	08/14/2017 14:15
Workgroup #:	WG627829	**Analyst:**	JDS	**Run Date:**	08/30/2017 20:53
Collect Date:	08/25/2017 14:10	**Dilution:**	1	**File ID:**	9M982284
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
unknown		5.43		0.000	0.000

Sample #:	L17081498-09	**PrePrep Method:**	N/A	**Instrument:**	HPMS9
Client ID:	MW20-082517	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260C	**Cal Date:**	08/14/2017 14:15
Workgroup #:	WG628579	**Analyst:**	JDS	**Run Date:**	09/06/2017 20:14
Collect Date:	08/25/2017 14:10	**Dilution:**	1	**File ID:**	9M982381
Sample Tag:	02	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	7.78	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	106	80	120	
Dibromofluoromethane	100	86	118	
p-Bromofluorobenzene	109	86	115	
Toluene-d8	104	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #:	L17081498-09	**PrePrep Method:**	N/A	**Instrument:**	HPMS12
Client ID:	MW20-082517	**Prep Method:**	3510C	**Prep Date:**	08/30/2017 12:10
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/03/2017 13:41
Workgroup #:	WG627873	**Analyst:**	SCB	**Run Date:**	08/31/2017 15:04
Collect Date:	08/25/2017 14:10	**Dilution:**	1	**File ID:**	12M64175
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
UNKNOWN		4.53		0.000	0.000
UNKNOWN2		14.1		0.000	0.000
UNKNOWN3		5.44		0.000	0.000
UNKNOWN4		6.81		0.000	0.000
Tetratriacontane		5.64		0.000	0.000
UNKNOWN5		8.10		0.000	0.000
Nonadecane, 2,3-dimethyl-		8.24		0.000	0.000
Heptadecane		11.5		0.000	0.000
Eicosane		10.3		0.000	0.000
UNKNOWN6		5.82		0.000	0.000
Tetratriacontane		6.83		0.000	0.000
UNKNOWN7		5.06		0.000	0.000

Sample #:	L17081498-09	**PrePrep Method:**	N/A	**Instrument:**	HPMS12
Client ID:	MW20-082517	**Prep Method:**	3510C	**Prep Date:**	08/30/2017 12:10
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/03/2017 13:41
Workgroup #:	WG627873	**Analyst:**	SCB	**Run Date:**	08/31/2017 15:04
Collect Date:	08/25/2017 14:10	**Dilution:**	1	**File ID:**	12M64175
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	20.2	2.53
1,3,5-Trinitrobenzene	99-35-4		U	5.05	2.53
1,3-Dinitrobenzene	99-65-0		U	5.05	2.53
1,4-Dioxane	123-91-1		U	10.1	5.05
2,4,5-Trichlorophenol	95-95-4		U	5.05	2.53
2,4,6-Trichlorophenol	88-06-2		U	5.05	2.53
2,4-Dichlorophenol	120-83-2		U	5.05	2.53
2,4-Dimethylphenol	105-67-9		U	5.05	2.53
2,4-Dinitrophenol	51-28-5		U	25.3	12.6
2,4-Dinitrotoluene	121-14-2		U	5.05	2.53
2,6-Dinitrotoluene	606-20-2		U	5.05	2.53
2-Chloronaphthalene	91-58-7		U	5.05	2.53

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
2-Chlorophenol	95-57-8		U	5.05	2.53
2-Methylnaphthalene	91-57-6		U	5.05	2.53
2-Methylphenol	95-48-7		U	5.05	2.53
2-Nitroaniline	88-74-4		U	25.3	12.6
2-Nitrophenol	88-75-5		U	5.05	2.53
3-Nitroaniline	99-09-2		U	25.3	12.6
3,3'-Dichlorobenzidine	91-94-1		U	5.05	2.53
3-,4-Methylphenol	65794-96-9		U	5.05	2.53
4-Bromophenyl-phenylether	101-55-3		U	5.05	2.53
4-Chloroaniline	106-47-8		U	5.05	2.53
4-Nitrophenol	100-02-7		U	25.3	12.6
Acenaphthene	83-32-9		U	5.05	2.53
Acenaphthylene	208-96-8		U	5.05	2.53
Anthracene	120-12-7		U	5.05	2.53
Benzo(a)anthracene	56-55-3		U	5.05	2.53
Benzo(a)pyrene	50-32-8		U	5.05	2.53
Benzo(b)fluoranthene	205-99-2		U	5.05	2.53
Benzo(g,h,i)Perylene	191-24-2		U	5.05	2.53
Benzo(k)fluoranthene	207-08-9		U	5.05	2.53
Benzoic acid	65-85-0		U	20.2	10.1
Benzyl alcohol	100-51-6		U	5.05	2.53
Bis(2-Chloroethyl)ether	111-44-4		U	5.05	2.53
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.05	2.53
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.05	2.53
Butylbenzylphthalate	85-68-7		U	5.05	2.53
Carbazole	86-74-8		U	20.2	2.53
Chrysene	218-01-9		U	5.05	2.53
Di-N-Butylphthalate	84-74-2		U	5.05	2.53
Di-n-octylphthalate	117-84-0		U	5.05	2.53
Dibenzo(a,h)Anthracene	53-70-3		U	5.05	2.53
Dibenzofuran	132-64-9		U	5.05	2.53
Diethylphthalate	84-66-2		U	5.05	2.53
Dimethylphthalate	131-11-3		U	5.05	2.53
Fluoranthene	206-44-0		U	5.05	2.53
Fluorene	86-73-7		U	5.05	2.53
Hexachlorobenzene	118-74-1		U	5.05	2.53
Hexachlorobutadiene	87-68-3		U	5.05	2.53
Hexachlorocyclopentadiene	77-47-4		U	5.05	2.53
Hexachloroethane	67-72-1		U	5.05	2.53

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.05	2.53
Isophorone	78-59-1		U	5.05	2.53
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.05	2.53
Naphthalene	91-20-3		U	5.05	2.53
Nitrobenzene	98-95-3		U	5.05	2.53
Pentachlorophenol	87-86-5		U	25.3	12.6
Phenanthrene	85-01-8		U	5.05	2.53
Phenol	108-95-2		U	5.05	2.53
Pyrene	129-00-0		U	5.05	2.53

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	114	10	123	
2-Fluorobiphenyl	97.1	43	116	
2-Fluorophenol	51.9	21	100	
Nitrobenzene-d5	84.4	35	114	
p-Terphenyl-d14	94.5	33	141	
Phenol-d5	32.7	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09
Client ID: MW20-082517
Matrix: Water
Workgroup #: WG628781
Collect Date: 08/25/2017 14:10
Sample Tag: RE

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS19
Prep Date: 09/06/2017 15:00
Cal Date: 08/15/2017 20:30
Run Date: 09/13/2017 18:29
File ID: 19M000549

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.1	2.63
1,3,5-Trinitrobenzene	99-35-4		U	5.26	2.63
1,3-Dinitrobenzene	99-65-0		U	5.26	2.63
1,4-Dioxane	123-91-1		U	10.5	5.26
2,4,5-Trichlorophenol	95-95-4		U	5.26	2.63
2,4,6-Trichlorophenol	88-06-2		U	5.26	2.63
2,4-Dichlorophenol	120-83-2		U	5.26	2.63
2,4-Dimethylphenol	105-67-9		U	5.26	2.63
2,4-Dinitrophenol	51-28-5		U	26.3	13.2
2,4-Dinitrotoluene	121-14-2		U	5.26	2.63
2,6-Dinitrotoluene	606-20-2		U	5.26	2.63
2-Chloronaphthalene	91-58-7		U	5.26	2.63
2-Chlorophenol	95-57-8		U	5.26	2.63
2-Methylnaphthalene	91-57-6		U	5.26	2.63

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylphenol	95-48-7		U	5.26	2.63
2-Nitroaniline	88-74-4		U	26.3	13.2
2-Nitrophenol	88-75-5		U	5.26	2.63
3-Nitroaniline	99-09-2		U	26.3	13.2
3,3'-Dichlorobenzidine	91-94-1		U	5.26	2.63
3-,4-Methylphenol	65794-96-9		U	5.26	2.63
4-Bromophenyl-phenylether	101-55-3		U	5.26	2.63
4-Chloroaniline	106-47-8		U	5.26	2.63
4-Nitrophenol	100-02-7		U	26.3	13.2
Acenaphthene	83-32-9		U	5.26	2.63
Acenaphthylene	208-96-8		U	5.26	2.63
Anthracene	120-12-7		U	5.26	2.63
Benzo(a)anthracene	56-55-3		U	5.26	2.63
Benzo(a)pyrene	50-32-8		U	5.26	2.63
Benzo(b)fluoranthene	205-99-2		U	5.26	2.63
Benzo(g,h,i)Perylene	191-24-2		U	5.26	2.63
Benzo(k)fluoranthene	207-08-9		U	5.26	2.63
Benzoic acid	65-85-0		U	21.1	10.5
Benzyl alcohol	100-51-6		U	5.26	2.63
Bis(2-Chloroethyl)ether	111-44-4		U	5.26	2.63
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.26	2.63
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.26	2.63
Butylbenzylphthalate	85-68-7		U	5.26	2.63
Carbazole	86-74-8		U	21.1	2.63
Chrysene	218-01-9		U	5.26	2.63
Di-N-Butylphthalate	84-74-2		U	5.26	2.63
Di-n-octylphthalate	117-84-0		U	5.26	2.63
Dibenzo(a,h)Anthracene	53-70-3		U	5.26	2.63
Dibenzofuran	132-64-9		U	5.26	2.63
Diethylphthalate	84-66-2		U	5.26	2.63
Dimethylphthalate	131-11-3		U	5.26	2.63
Fluoranthene	206-44-0		U	5.26	2.63
Fluorene	86-73-7		U	5.26	2.63
Hexachlorobenzene	118-74-1		U	5.26	2.63
Hexachlorobutadiene	87-68-3		U	5.26	2.63
Hexachlorocyclopentadiene	77-47-4		U	5.26	2.63
Hexachloroethane	67-72-1		U	5.26	2.63
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.26	2.63
Isophorone	78-59-1		U	5.26	2.63

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.26	2.63
Naphthalene	91-20-3		U	5.26	2.63
Nitrobenzene	98-95-3		U	5.26	2.63
Pentachlorophenol	87-86-5		U	26.3	13.2
Phenanthrene	85-01-8		U	5.26	2.63
Phenol	108-95-2		U	5.26	2.63
Pyrene	129-00-0		U	5.26	2.63

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	67.7	10	123	
2-Fluorobiphenyl	67.3	43	116	
2-Fluorophenol	37.2	21	100	
Nitrobenzene-d5	67.4	35	114	
p-Terphenyl-d14	86.5	33	141	
Phenol-d5	24.5	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09
Client ID: MW20-082517
Matrix: Water
Workgroup #: WG628159
Collect Date: 08/25/2017 14:10
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D_SIM
Analyst: LJH/SCB
Dilution: 1
Units: ug/L

Instrument: HPMS15
Prep Date: 08/31/2017 16:00
Cal Date: 09/02/2017 12:13
Run Date: 09/02/2017 16:54
File ID: 15M21961

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	0.0500	0.0250
Acenaphthene	83-32-9		U	0.0500	0.0250
Acenaphthylene	208-96-8		U	0.0500	0.0250
Anthracene	120-12-7		U	0.0500	0.0250
Benzo(a)anthracene	56-55-3		U	0.0500	0.0250
Benzo(a)pyrene	50-32-8		U	0.0500	0.0250
Benzo(b)fluoranthene	205-99-2		U	0.0500	0.0250
Benzo(g,h,i)perylene	191-24-2		U	0.0500	0.0250
Benzo(k)fluoranthene	207-08-9		U	0.0500	0.0250
Chrysene	218-01-9		U	0.0500	0.0250
Dibenzo(a,h)anthracene	53-70-3		U	0.0500	0.0250
Fluoranthene	206-44-0		U	0.0500	0.0250
Fluorene	86-73-7		U	0.0500	0.0250
Indeno(1,2,3-cd)pyrene	193-39-5		U	0.0500	0.0250
Naphthalene	91-20-3	0.0342	J	0.0500	0.0250
Phenanthrene	85-01-8		U	0.0500	0.0250

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Pyrene	129-00-0		U	0.0500	0.0250

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2-Fluorobiphenyl	87.9	43	116	
Nitrobenzene-d5	98.1	35	114	
p-Terphenyl-d14	61.0	33	141	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW20-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:42
Collect Date: 08/25/2017 14:10 **Dilution:** 1 **File ID:** T4.090117.174210
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	111		0.500	0.250
Iron, Total	7439-89-6	0.0789	J	0.100	0.0500
Magnesium, Total	7439-95-4	30.1		0.500	0.250
Manganese, Total	7439-96-5	0.0328		0.0100	0.00500
Potassium, Total	7440-09-7	3.69		1.00	0.500
Sodium, Total	7440-23-5	22.9		0.500	0.250

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW20-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:33
Collect Date: 08/25/2017 14:10 **Dilution:** 1 **File ID:** NI.090117.133358
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.000821	J	0.00100	0.000500

J	The analyte was positively identified, but the quantitation was below the RL.

Certificate of Analysis

Sample #:	L17081498-10	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO4
Client ID:	MW20-082517	**Prep Method:**	3015A	**Prep Date:**	08/31/2017 07:16
Matrix:	Water	**Analytical Method:**	6010C	**Cal Date:**	09/01/2017 12:40
Workgroup #:	WG628174	**Analyst:**	KKB	**Run Date:**	09/01/2017 17:45
Collect Date:	08/25/2017 14:10	**Dilution:**	1	**File ID:**	T4.090117.174552
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	0.0750	J	0.100	0.0500
Manganese, Dissolved	7439-96-5	0.125		0.0100	0.00500

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #:	L17081498-10	**PrePrep Method:**	N/A	**Instrument:**	ICP-MS2
Client ID:	MW20-082517	**Prep Method:**	3015A	**Prep Date:**	08/31/2017 09:05
Matrix:	Water	**Analytical Method:**	6020A	**Cal Date:**	09/01/2017 12:04
Workgroup #:	WG628140	**Analyst:**	JYH	**Run Date:**	09/01/2017 13:37
Collect Date:	08/25/2017 14:10	**Dilution:**	1	**File ID:**	NI.090117.133704
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.000672	J	0.00100	0.000500

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #:	L17081498-11	**PrePrep Method:**	N/A	**Instrument:**	HPMS9
Client ID:	TB-082517	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260C	**Cal Date:**	08/14/2017 14:15
Workgroup #:	WG628579	**Analyst:**	JDS	**Run Date:**	09/06/2017 16:45
Collect Date:	08/25/2017 08:00	**Dilution:**	1	**File ID:**	9M982374
Sample Tag:	02	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	4.91	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	108	80	120	
Dibromofluoromethane	101	86	118	
p-Bromofluorobenzene	118	86	115	*
Toluene-d8	107	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-12 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: FB-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260B **Cal Date:** 08/14/2017 14:15
Workgroup #: WG627829 **Analyst:** JDS **Run Date:** 08/30/2017 17:52
Collect Date: 08/25/2017 12:40 **Dilution:** 1 **File ID:** 9M982278
Sample Tag: 01 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
No Searchable Peaks				0.000	0.000

Sample #: L17081498-12 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: FB-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260B **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 **Analyst:** JDS **Run Date:** 09/06/2017 17:15
Collect Date: 08/25/2017 12:40 **Dilution:** 1 **File ID:** 9M982375
Sample Tag: 02 **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
No Searchable Peaks				0.000	0.000

Sample #: L17081498-12 **PrePrep Method:** N/A **Instrument:** HPMS9
Client ID: FB-082517 **Prep Method:** 5030B/5030C/5035A **Prep Date:** N/A
Matrix: Water **Analytical Method:** 8260C **Cal Date:** 08/14/2017 14:15
Workgroup #: WG628579 **Analyst:** JDS **Run Date:** 09/06/2017 17:15
Collect Date: 08/25/2017 12:40 **Dilution:** 1 **File ID:** 9M982375
Sample Tag: 02 **Units:** ug/L

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	2.81	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	2.58		1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	108	80	120	
Dibromofluoromethane	101	86	118	
p-Bromofluorobenzene	115	86	115	
Toluene-d8	107	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

Login Number: L17081498
Department: Volatiles
Analyst: Jared Smith

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260C

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: Recoveries marginally out of range were observed for the following analytes: Bromomethane. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: Recoveries marginally above the UCL were observed for the following analytes in sample 11: p-Bromofluorobenzene. Please see the applicable QC report for a detailed presentation of the failures. No target analytes were detected above the RL in sample 11.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L17081498-11	p-Bromofluorobenzene	2017-09-06 16:45:00	118	86	115	Recovery

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low areacounts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 129222
Approved By: Anthony Canter

Certificate of Analysis

Sample #:	L17081498-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS9
Client ID:	MW07-082517	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260C	**Cal Date:**	08/14/2017 14:15
Workgroup #:	WG628579	**Analyst:**	JDS	**Run Date:**	09/06/2017 18:46
Collect Date:	08/25/2017 10:34	**Dilution:**	1	**File ID:**	9M982378
Sample Tag:	02	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	3.20	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	106	80	120	
Dibromofluoromethane	100	86	118	
p-Bromofluorobenzene	109	86	115	
Toluene-d8	104	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03
Client ID: MW06-082517
Matrix: Water
Workgroup #: WG628579
Collect Date: 08/25/2017 13:54
Sample Tag: 02

PrePrep Method: N/A
Prep Method: 5030B/5030C/5035A
Analytical Method: 8260C
Analyst: JDS
Dilution: 1
Units: ug/L

Instrument: HPMS9
Prep Date: N/A
Cal Date: 08/14/2017 14:15
Run Date: 09/06/2017 19:15
File ID: 9M982379

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	2.52	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	108	80	120	
Dibromofluoromethane	103	86	118	
p-Bromofluorobenzene	112	86	115	
Toluene-d8	107	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-07
Client ID: MW10-082517
Matrix: Water
Workgroup #: WG628579
Collect Date: 08/25/2017 10:20
Sample Tag: 02

PrePrep Method: N/A
Prep Method: 5030B/5030C/5035A
Analytical Method: 8260C
Analyst: JDS
Dilution: 1
Units: ug/L

Instrument: HPMS9
Prep Date: N/A
Cal Date: 08/14/2017 14:15
Run Date: 09/06/2017 19:45
File ID: 9M982380

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	3.66	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	105	80	120	
Dibromofluoromethane	101	86	118	

Certificate of Analysis

p-Bromofluorobenzene	110	86	115	
Toluene-d8	105	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09
Client ID: MW20-082517
Matrix: Water
Workgroup #: WG628579
Collect Date: 08/25/2017 14:10
Sample Tag: 02

PrePrep Method: N/A
Prep Method: 5030B/5030C/5035A
Analytical Method: 8260C
Analyst: JDS
Dilution: 1
Units: ug/L

Instrument: HPMS9
Prep Date: N/A
Cal Date: 08/14/2017 14:15
Run Date: 09/06/2017 20:14
File ID: 9M982381

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	7.78	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	106	80	120	
Dibromofluoromethane	100	86	118	
p-Bromofluorobenzene	109	86	115	
Toluene-d8	104	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-11
Client ID: TB-082517
Matrix: Water
Workgroup #: WG628579
Collect Date: 08/25/2017 08:00
Sample Tag: 02

PrePrep Method: N/A
Prep Method: 5030B/5030C/5035A
Analytical Method: 8260C
Analyst: JDS
Dilution: 1
Units: ug/L

Instrument: HPMS9
Prep Date: N/A
Cal Date: 08/14/2017 14:15
Run Date: 09/06/2017 16:45
File ID: 9M982374

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	4.91	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	108	80	120	
Dibromofluoromethane	101	86	118	
p-Bromofluorobenzene	118	86	115	*
Toluene-d8	107	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-12
Client ID: FB-082517
Matrix: Water
Workgroup #: WG628579
Collect Date: 08/25/2017 12:40
Sample Tag: 02

PrePrep Method: N/A
Prep Method: 5030B/5030C/5035A
Analytical Method: 8260C
Analyst: JDS
Dilution: 1
Units: ug/L

Instrument: HPMS9
Prep Date: N/A
Cal Date: 08/14/2017 14:15
Run Date: 09/06/2017 17:15
File ID: 9M982375

Analyte	CAS #	Result	Qual	RL	MDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.500
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	2.00
1,1,2-Trichloroethane	79-00-5		U	1.00	0.500
1,1-Dichloroethane	75-34-3		U	1.00	0.500
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.500
1,2-Dichlorobenzene	95-50-1		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
1,2-Dichloroethane	107-06-2		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.500
1,2-Dichloropropane	78-87-5		U	1.00	0.500
1,3-Dichlorobenzene	541-73-1		U	1.00	0.500
1,4-Dichlorobenzene	106-46-7		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	2.81	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.500
Bromochloromethane	74-97-5		U	1.00	0.500
Bromodichloromethane	75-27-4		U	1.00	0.500
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.500
Chlorobenzene	108-90-7		U	1.00	0.500
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	2.58		1.00	0.500
Chloromethane	74-87-3		U	1.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.500
Cyclohexane	110-82-7		U	5.00	1.00
Dibromochloromethane	124-48-1		U	1.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	1.00	0.500
Isopropylbenzene	98-82-8		U	1.00	0.500
Methyl acetate	79-20-9		U	5.00	1.00
Methyl tert-butyl ether	1634-04-4		U	1.00	0.500
Methylcyclohexane	108-87-2		U	5.00	1.00
Methylene chloride	75-09-2		U	5.00	0.500
m,p-Xylene	179601-23-1		U	1.00	0.500
o-Xylene	95-47-6		U	1.00	0.500
Styrene	100-42-5		U	1.00	0.500
Tetrachloroethene	127-18-4		U	1.00	0.500
Toluene	108-88-3		U	1.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.500
Trichlorofluoromethane	75-69-4		U	1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Vinyl chloride	75-01-4		U	1.00	0.500
Epichlorohydrin	106-89-8			0.000	0.000

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	108	80	120	
Dibromofluoromethane	101	86	118	
p-Bromofluorobenzene	115	86	115	
Toluene-d8	107	88	110	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 081417
Analyst1: ADC Analyst2: NA
Method: 8260B/C SOP: MSV01(C), OVAP MSV01 Rev: 25,0
Method: 5035, 5030B/ 5030C SOP: PAT01, OVAP PAT01 Rev: 19,1

Maintenance Log ID:

Internal Standard: STD82922 Surrogate Standard: STD82921
CCV: STD83326 LCS: STD83237 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG625140 (ICAL), WG625726

Comments: Low first surrogates after L17080372.

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
9M981988	WG625140-01 50ng BFB 8260	NA	1	1	STD83010	08/14/17 08:49
9M981989	RINSE	NA	1	1		08/14/17 09:13
9M981990	WG625140-02 0.5ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 09:43
9M981991	WG625140-03 1ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 10:13
9M981992	WG625140-04 2ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 10:43
9M981993	WG625140-05 5ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 11:14
9M981994	WG625140-03 1ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 11:44
9M981995	WG625140-06 20ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 12:14
9M981996	WG625140-07 50ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 12:44
9M981997	WG625140-08 100ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 13:14
9M981998	WG625140-09 200ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 13:45
9M981999	WG625140-10 300ug/L ICAL 8260C	NA	1	1	STD83326	08/14/17 14:15
9M982000	RINSE	NA	1	1		08/14/17 14:46
9M982001	WG625140-11 50ug/L ICV 8260C	NA	1	1	STD83237	08/14/17 15:16
9M982002	RINSE	NA	1	1		08/14/17 15:46
9M982003	WG625726-01 BLANK 8260C	NA	1	1		08/14/17 16:16
9M982004	L17080372-01 B 10X 8260C	<2	1	10		08/14/17 16:47
9M982005	WG625726-02 20ug/L LCS	NA	1	1	STD83233	08/14/17 17:17
9M982006	WG625726-03 20ug/L LCSDUP	NA	1	1	STD83233	08/14/17 17:47
9M982007	RINSE	NA	1	1		08/14/17 18:18
9M982008	L17080491-01 B 8260C	<2	1	1		08/14/17 18:48
9M982009	L17080541-01 A 8260C	<2	1	1		08/14/17 19:18
9M982010	RINSE	NA	1	1		08/14/17 19:48
9M982011	RINSE	NA	1	1		08/14/17 20:18

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3				
File ID: 9M981991				
			WG625140-03 RR. No secondary in DCDF	
6				
File ID: 9M981994				
			WG625140-03 No secondary in DCDF. RL changed to 2.	

Approved: August 15, 2017

Tiffany Bailey

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 090617
Analyst1: JDS Analyst2: NA
Method: 8260 SOP: MSV01, OVAP MSV01 Rev: 25,0
Method: 5035, 5030B, 5030C SOP: PAT01, OVAP PAT01 Rev: 19,1

Maintenance Log ID:

Internal Standard: STD83390 Surrogate Standard: STD83391
CCV: STD83691 LCS: STD83659 MS/MSD: STD83659

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG628529 WG628579

Comments:

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
9M982359	WG628528-01 50ng BFB 8260	NA	7	1	STD83478	09/06/17 09:37
9M982360	WG628528-02 50ug/Kg CCV 8260C	NA	7	1	STD83691	09/06/17 10:03
9M982361	WG628528-02 50ug/Kg CCV 8260C	NA	7	1	STD83691	09/06/17 10:39
9M982362	WG000000-01 100ug/Kg A9FOO	NA	7	1	STD83554	09/06/17 11:09
9M982364	WG628529-01 BLANK 8260	NA	7	1		09/06/17 11:42
9M982365	WG628529-02 20ug/kG LCS 8260	NA	7	1	STD83659	09/06/17 12:13
9M982366	WG628578-02 50ug/L CCV 8260C	NA	1	1	STD83691	09/06/17 12:42
9M982367	WG628578-02 50ug/L CCV 8260C	NA	1	1	STD83691	09/06/17 13:15
9M982368	WG000000-01 100ug/L A9 CCV 8260C	NA	1	1	STD83554	09/06/17 13:47
9M982369	WG628579-01 BLANK 8260C	NA	1	1		09/06/17 14:16
9M982370	WG628579-02 20ug/L LCS 8260C	NA	1	1	STD83659	09/06/17 14:46
9M982371	L17081366-12 B MS 8260C	<2	1	1	STD83659	09/06/17 15:16
9M982372	L17081366-13 B MSD 8260C	<2	1	1	STD83659	09/06/17 15:46
9M982373	WG628527-01 L17090122-01 4.99g 826-SP	NA	7	1		09/06/17 16:15
9M982374	L17081498-11 B TB 826-SPE	<2	1	1		09/06/17 16:45
9M982375	L17081498-12 B FB 826-SPE	<2	1	1		09/06/17 17:15
9M982376	L17081366-10 B REF 826-SPE	<2	1	1		09/06/17 17:45
9M982377	L17081366-17 B 826-SPE	<2	1	1		09/06/17 18:16
9M982378	L17081498-01 B 826-SPE	<2	1	1		09/06/17 18:46
9M982379	L17081498-03 B 826-SPE	<2	1	1		09/06/17 19:15
9M982380	L17081498-07 B 826-SPE	<2	1	1		09/06/17 19:45
9M982381	L17081498-09 B 826-SPE	<2	1	1		09/06/17 20:14
9M982382	WG628527-02 MS 4.92g 8260	NA	7	1		09/06/17 20:44
9M982383	WG628527-03 MSD 4.96g 8260	NA	7	1		09/06/17 21:13
9M982384	RINSE	NA	7	1		09/06/17 21:43
9M982385	RINSE	NA	7	1		09/06/17 22:12
9M982386	RINSE	NA	7	1		09/06/17 22:42

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8			Check Standard Failure	
File ID: 9M982367				
WG628578-02 CCV failed low for BM				

Approved: September 07, 2017

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 090617
Analyst1: JDS Analyst2: NA
Method: 8260 SOP: MSV01, OVAP MSV01 Rev: 25,0
Method: 5035, 5030B, 5030C SOP: PAT01, OVAP PAT01 Rev: 19,1

Maintenance Log ID:

Internal Standard: STD83390 Surrogate Standard: STD83391
CCV: STD83691 LCS: STD83659 MS/MSD: STD83659

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG628529 WG628579

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
14				
File ID: 9M982373				
	L17090122-01 sample received OOH			
15			Surrogate standard failure	
File ID: 9M982374				
	L17081498-11 Sample took ace. hit with high failing surrogate			

Approved: September 07, 2017

Page: 2

Microbac Laboratories Inc.

Data Checklist

Date: 14-AUG-2017
Analyst: ADC
Analyst: NA
Method: 8260C
Instrument: HPMS9
Curve Workgroup: WG625140
Runlog ID: 83962
Analytical Workgroups: WG625726

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	ADC
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	ADC
Secondary Reviewer	TMB
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
15-AUG-2017

Secondary Reviewer:
15-AUG-2017

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-15-2017 11:54:53

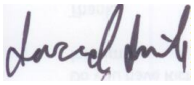
Microbac Laboratories Inc.

Data Checklist

Date: 06-SEP-2017
Analyst: JDS
Analyst: NA
Method: 8260
Instrument: HPMS9
Curve Workgroup: NA
Runlog ID: 84438
Analytical Workgroups: WG628529 WG628579

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	JDS
Surrogates	X
Internal Standards Criteria	X
Library Searches	X
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	JDS
Secondary Reviewer	ADC
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
07-SEP-2017



Secondary Reviewer:
07-SEP-2017

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-07-2017 17:01:01

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260C **AAB#:** WG628579

Login Number: L17081498

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW07-082517	01	08/25/17					09/06/2017	12.3	14		09/06/17	12.3	14	
MW06-082517	03	08/25/17					09/06/2017	12.2	14		09/06/17	12.2	14	
MW10-082517	07	08/25/17					09/06/2017	12.4	14		09/06/17	12.4	14	
MW20-082517	09	08/25/17					09/06/2017	12.3	14		09/06/17	12.3	14	
TB-082517	11	08/25/17					09/06/2017	12.4	14		09/06/17	12.4	14	
FB-082517	12	08/25/17					09/06/2017	12.2	14		09/06/17	12.2	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5461657
Report generated 09/07/2017 16:56

Microbac Laboratories Inc.
SURROGATE STANDARDS

Login Number: L17081498 **Method:** 8260C
Instrument Id: HPMS9 **CAL ID:** HPMS9-14-AUG-17
Workgroup (AAB#): WG628579 **Matrix:** Water

Sample Number	Dilution	Tag	1	2	3	4
L17081498-01	1.00	02	106	100	109	104
L17081498-03	1.00	02	108	103	112	107
L17081498-07	1.00	02	105	101	110	105
L17081498-09	1.00	02	106	100	109	104
L17081498-11	1.00	02	108	101	118	107
L17081498-12	1.00	02	108	101	115	107
WG628579-01	1.00	01	105	100	111	103
WG628579-02	1.00	01	106	102	102	105

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - p-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 5461665
Report generated: 09/07/2017 16:56

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L17081498
Work Group: WG628579
Blank File ID: 9M982369
Blank Sample ID: WG628579-01
Prep Date: 09/06/17 14:16
Instrument ID: HPMS9
Analyzed Date: 09/06/17 14:16
Method: 8260C
Analyst: JDS

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG628579-02	9M982370	09/06/17 14:46	01
TB-082517	L17081498-11	9M982374	09/06/17 16:45	02
FB-082517	L17081498-12	9M982375	09/06/17 17:15	02
MW07-082517	L17081498-01	9M982378	09/06/17 18:46	02
MW06-082517	L17081498-03	9M982379	09/06/17 19:15	02
MW10-082517	L17081498-07	9M982380	09/06/17 19:45	02
MW20-082517	L17081498-09	9M982381	09/06/17 20:14	02

Report Name: BLANK_SUMMARY
PDF File ID: 5461658
Report generated 09/07/2017 16:56

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L17081498 Prep Date: 09/06/17 14:16 Sample ID: WG628579-01
Instrument ID: HPMS9 Run Date: 09/06/17 14:16 Prep Method: 5030B/5030C/503
File ID: 9M982369 Analyst: JDS Method: 8260C
Workgroup (AAB#): WG628579 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS9-14-AUG-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
1,1,1-Trichloroethane	0.500	1.00	0.500	1	U
1,1,2,2-Tetrachloroethane	0.500	1.00	0.500	1	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	2.00	5.00	2.00	1	U
1,1,2-Trichloroethane	0.500	1.00	0.500	1	U
1,1-Dichloroethane	0.500	1.00	0.500	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,2,3-Trichlorobenzene	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.500	1.00	0.500	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.500	1.00	0.500	1	U
1,2-Dichlorobenzene	0.500	1.00	0.500	1	U
1,2-Dichloroethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.500	1.00	0.500	1	U
trans-1,2-Dichloroethene	0.500	1.00	0.500	1	U
1,2-Dichloropropane	0.500	1.00	0.500	1	U
1,3-Dichlorobenzene	0.500	1.00	0.500	1	U
1,4-Dichlorobenzene	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Acetone	2.50	10.0	2.50	1	U
Benzene	0.500	1.00	0.500	1	U
Bromochloromethane	0.500	1.00	0.500	1	U
Bromodichloromethane	0.500	1.00	0.500	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.500	1.00	0.500	1	U
Chlorobenzene	0.500	1.00	0.500	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.500	1.00	0.500	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Cyclohexane	1.00	5.00	1.00	1	U
Dibromochloromethane	0.500	1.00	0.500	1	U
Dichlorodifluoromethane	0.500	2.00	0.500	1	U
Ethyl benzene	0.500	1.00	0.500	1	U
Isopropylbenzene	0.500	1.00	0.500	1	U
Methyl acetate	1.00	5.00	1.00	1	U
Methyl tert-butyl ether	0.500	1.00	0.500	1	U
Methylcyclohexane	1.00	5.00	1.00	1	U
Methylene chloride	0.500	5.00	0.500	1	U

Report Name:BLANK
PDF ID: 5461659
07-SEP-2017 16:56

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L17081498 Prep Date: 09/06/17 14:16 Sample ID: WG628579-01
Instrument ID: HPMS9 Run Date: 09/06/17 14:16 Prep Method: 5030B/5030C/503
File ID: 9M982369 Analyst: JDS Method: 8260C
Workgroup (AAB#): WG628579 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS9-14-AUG-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
m,p-Xylene	0.500	1.00	0.500	1	U
o-Xylene	0.500	1.00	0.500	1	U
Styrene	0.500	1.00	0.500	1	U
Tetrachloroethene	0.500	1.00	0.500	1	U
Toluene	0.500	1.00	0.500	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.500	1.00	0.500	1	U
Trichlorofluoromethane	0.500	1.00	0.500	1	U
Vinyl chloride	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	105	80 - 120	PASS
Dibromofluoromethane	100	86 - 118	PASS
p-Bromofluorobenzene	111	86 - 115	PASS
Toluene-d8	103	88 - 110	PASS

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 5461659
07-SEP-2017 16:56

Login Number: L17081498 Run Date: 09/06/2017 Sample ID: WG628579-02
Instrument ID: HPMS9 Run Time: 14:46 Prep Method: 5030B/5030C/503
File ID: 9M982370 Analyst: JDS Method: 8260C
Workgroup (AAB#): WG628579 Matrix: Water Units: ug/L
QC Key: WATERLOO Lot#: STD83659 Cal ID: HPMS9-14-AUG-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1-Trichloroethane	20.0	19.8	98.9	80 - 134	
1,1,2,2-Tetrachloroethane	20.0	18.0	90.1	79 - 125	
1,1,2-Trichloro-1,2,2-Trifluoroethane	20.0	21.0	105	80 - 130	
1,1,2-Trichloroethane	20.0	20.5	102	80 - 125	
1,1-Dichloroethane	20.0	19.9	99.7	80 - 125	
1,1-Dichloroethene	20.0	18.9	94.6	80 - 132	
1,2,3-Trichlorobenzene	20.0	21.1	105	55 - 140	
1,2,4-Trichlorobenzene	20.0	17.5	87.6	65 - 135	
1,2-Dibromo-3-chloropropane	20.0	17.2	86.1	50 - 130	
1,2-Dibromoethane	20.0	19.8	98.9	80 - 125	
1,2-Dichlorobenzene	20.0	21.3	106	80 - 125	
1,2-Dichloroethane	20.0	20.2	101	80 - 129	
cis-1,2-Dichloroethene	20.0	19.9	99.3	70 - 125	
trans-1,2-Dichloroethene	20.0	19.2	96.1	80 - 127	
1,2-Dichloropropane	20.0	20.5	102	80 - 120	
1,3-Dichlorobenzene	20.0	20.3	102	80 - 120	
1,4-Dichlorobenzene	20.0	20.4	102	80 - 120	
2-Butanone	20.0	19.6	98.0	30 - 150	
2-Hexanone	20.0	18.2	91.1	55 - 130	
4-Methyl-2-pentanone	20.0	17.5	87.6	64 - 140	
Acetone	20.0	19.8	98.8	40 - 142	
Benzene	20.0	19.5	97.7	80 - 121	
Bromochloromethane	20.0	19.4	97.0	65 - 130	
Bromodichloromethane	20.0	19.2	95.9	80 - 131	
Bromoform	20.0	16.0	79.9	70 - 130	
Bromomethane	20.0	17.3	86.7	30 - 145	
Carbon disulfide	20.0	17.1	85.7	58 - 138	
Carbon tetrachloride	20.0	19.8	98.9	65 - 140	
Chlorobenzene	20.0	20.8	104	80 - 120	
Chloroethane	20.0	19.9	99.7	60 - 135	
Chloroform	20.0	20.7	103	80 - 125	
Chloromethane	20.0	19.2	95.9	40 - 125	
cis-1,3-Dichloropropene	20.0	21.2	106	70 - 130	
Cyclohexane	20.0	18.7	93.3	80 - 130	
Dibromochloromethane	20.0	20.0	100	60 - 135	
Dichlorodifluoromethane	20.0	18.6	93.0	50 - 133	
Ethyl benzene	20.0	20.7	103	80 - 122	
Isopropylbenzene	20.0	20.0	99.8	80 - 122	
Methyl acetate	20.0	19.3	96.5	80 - 130	
Methyl tert-butyl ether	20.0	19.3	96.5	65 - 125	
Methylcyclohexane	20.0	18.4	91.9	80 - 130	

LCS - Modified 03/06/2008
PDF File ID: 5461660
Report generated: 09/07/2017 16:56

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L17081498 Run Date: 09/06/2017 Sample ID: WG628579-02
Instrument ID: HPMS9 Run Time: 14:46 Prep Method: 5030B/5030C/503
File ID: 9M982370 Analyst: JDS Method: 8260C
Workgroup (AAB#): WG628579 Matrix: Water Units: ug/L
QC Key: WATERLOO Lot#: STD83659 Cal ID: HPMS9-14-AUG-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
Methylene chloride	20.0	19.5	97.4	80 - 123	
m,p-Xylene	40.0	43.2	108	80 - 122	
o-Xylene	20.0	20.9	104	80 - 122	
Styrene	20.0	18.1	90.3	80 - 123	
Tetrachloroethene	20.0	19.9	99.5	80 - 124	
Toluene	20.0	20.7	103	80 - 124	
trans-1,3-Dichloropropene	20.0	20.7	104	80 - 130	
Trichloroethene	20.0	21.6	108	80 - 122	
Trichlorofluoromethane	20.0	19.2	96.0	62 - 151	
Vinyl chloride	20.0	20.5	103	65 - 140	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	106	80 - 120	PASS
Dibromofluoromethane	102	86 - 118	PASS
p-Bromofluorobenzene	102	86 - 115	PASS
Toluene-d8	105	88 - 110	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 5461660
Report generated: 09/07/2017 16:56

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L17081498
Instrument: HPMS9
Analyst: ADC
Workgroup: WG625140

Tune ID: WG625140-01
Run Date: 08/14/2017
Run Time: 08:49
File ID: 9M981988
Cal ID: HPMS9-14-AUG-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	22.1	5904	PASS
75.0	95.0	30.0	60.0	49.1	13134	PASS
95.0	95.0	100	100	100	26746	PASS
96.0	95.0	5.00	9.00	7.11	1901	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	83.3	22290	PASS
175	174	5.00	9.00	7.18	1601	PASS
176	174	95.0	101	96.5	21505	PASS
177	176	5.00	9.00	7.01	1507	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG625140-02	STD	01	08/14/2017 09:43	
WG625140-04	STD	01	08/14/2017 10:43	
WG625140-05	STD	01	08/14/2017 11:14	
WG625140-03	STD	01	08/14/2017 11:44	
WG625140-06	STD	01	08/14/2017 12:14	
WG625140-07	STD-CCV	01	08/14/2017 12:44	
WG625140-08	STD	01	08/14/2017 13:14	
WG625140-09	STD	01	08/14/2017 13:45	
WG625140-10	STD	01	08/14/2017 14:15	
WG625140-11	SSCV	01	08/14/2017 15:16	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5461662
Report generated 09/07/2017 16:56

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L17081498
Instrument: HPMS9
Analyst: JDS
Workgroup: WG628528

Tune ID: WG628528-01
Run Date: 09/06/2017
Run Time: 09:37
File ID: 9M982359
Cal ID: HPMS9-11-JUL-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	22.9	6413	PASS
75.0	95.0	30.0	60.0	49.0	13703	PASS
95.0	95.0	100	100	100	27950	PASS
96.0	95.0	5.00	9.00	6.89	1925	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	86.3	24117	PASS
175	174	5.00	9.00	8.06	1945	PASS
176	174	95.0	101	99.9	24082	PASS
177	176	5.00	9.00	6.98	1681	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG628578-02	CCV	01	09/06/2017 13:15	
WG628579-01	BLANK	01	09/06/2017 14:16	
WG628579-01	BLANK	01	09/06/2017 14:16	
WG628579-02	LCS	01	09/06/2017 14:46	
L17081498-11	TB-082517	02	09/06/2017 16:45	
L17081498-12	FB-082517	02	09/06/2017 17:15	
L17081498-01	MW07-082517	02	09/06/2017 18:46	
L17081498-03	MW06-082517	02	09/06/2017 19:15	
L17081498-07	MW10-082517	02	09/06/2017 19:45	
L17081498-09	MW20-082517	02	09/06/2017 20:14	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5461662
Report generated 09/07/2017 16:56

Calibration Table Report
Method: 8260C.M
Title: 8260C SOP: OVL MSV01-C WATER 081017 HPMS9
Last Calibration: Mon Aug 14 14:47:27 2017
Curve: WG625140
Calibration Files

Compound	0.5 9M981990.D	1 9M981994.D	2 9M981992.D	5 9M981993.D	20 9M981995.D	50 9M981996.D	100 9M981997.D	200 9M981998.D	300 9M981999.D	Avg	%RSD	R^2 Linear	 Quadratic
Fluorobenzene	ISTD												
Dichlorodifluoromethane			0.308	0.320	0.393	0.402	0.375	0.397		0.366	11.242		
Chloromethane		0.611	0.533	0.492	0.488	0.515	0.444	0.430		0.502	12.003		
Vinyl Chloride		0.322	0.379	0.335	0.383	0.393	0.341	0.344		0.357	7.794		
1,3-Butadiene		0.110	0.140	0.134	0.143	0.146	0.131	0.137	0.111	0.131	10.402		
Bromomethane		0.241	0.240	0.224	0.207	0.211	0.204	0.209		0.219	7.177		
Chloroethane		0.172	0.184	0.207	0.217	0.231	0.223	0.218		0.207	10.509		
Trichlorofluoromethane		0.392	0.449	0.452	0.469	0.490	0.472	0.493		0.460	7.411		
Diethyl ether		0.280	0.278	0.294	0.271	0.288	0.281		0.301	0.285	3.594		
Isoprene		0.306	0.307	0.357	0.381	0.411	0.399	0.421	0.414	0.374	12.473		
Acrolein			0.041	0.048	0.046	0.050	0.050		0.053	0.048	8.902		
1,1,2-Trichloro-1,2,2-Trifluoroet			0.209	0.229	0.247	0.256	0.247	0.259		0.241	7.956		
Acetone			0.155	0.148	0.156	0.152	0.145	0.160	0.148	0.152	3.567		
1,1-Dichloroethene		0.420	0.405	0.411	0.429	0.456	0.442	0.462		0.432	5.077		
Tert-Butyl Alcohol		0.043	0.049	0.052	0.047	0.052	0.054		0.070	0.052	16.455		
Dimethyl Sulfide		0.264	0.305	0.329	0.350	0.365	0.353	0.374	0.366	0.338	11.045		
Iodomethane				0.257	0.321	0.356	0.348	0.372		0.331	13.668		
Methyl acetate		0.375	0.370	0.383	0.392	0.402	0.391	0.408	0.402	0.390	3.492		
Methylene Chloride		0.258	0.263	0.286	0.288	0.295	0.290	0.300		0.283	5.644		
Carbon Disulfide		0.652	0.659	0.673	0.704	0.756	0.721	0.772		0.705	6.659		
Acrylonitrile		0.165	0.174	0.185	0.176	0.197	0.193		0.195	0.184	6.581		
Methyl Tert Butyl Ether		0.848	0.834	0.875	0.879	0.920	0.906	0.940		0.886	4.306		
trans-1,2-Dichloroethene		0.387	0.376	0.385	0.398	0.421	0.413	0.432		0.402	5.122		
n-Hexane				0.329	0.359	0.397	0.386	0.419	0.383	0.379	8.263		
Diisopropyl ether		1.024	1.068	1.141	1.062	1.118	1.080		1.116	1.087	3.700		
Vinyl Acetate				0.619	0.660	0.694	0.681	0.765	0.659	0.680	7.201		
1,1-Dichloroethane		0.468	0.494	0.527	0.545	0.573	0.552	0.575		0.533	7.506		
Ethyl-Tert-Butyl ether		0.915	0.979	1.039	0.960	1.021	0.995		1.044	0.993	4.645		
2-Butanone				0.190	0.229	0.229	0.225	0.242	0.243	0.226	8.429		
Propionitrile		0.039	0.066	0.069	0.068	0.074	0.075		0.085	0.068	20.740	0.994	
2,2-Dichloropropane		0.393	0.352	0.387	0.386	0.401	0.393	0.408		0.388	4.599		
cis-1,2-Dichloroethene		0.238	0.252	0.276	0.298	0.311	0.308	0.321		0.286	11.165		
Chloroform	0.400	0.441	0.441	0.489	0.499	0.516	0.502	0.522		0.476	9.160		
1-Bromopropane				0.037	0.054	0.058	0.056	0.060	0.059	0.054	15.789		
Bromochloromethane		0.165	0.190	0.207	0.208	0.220	0.218	0.228		0.205	10.522		
Tetrahydrofuran		0.126	0.137	0.144	0.136	0.146	0.146		0.152	0.141	6.199		
Dibromofluoromethane	0.271	0.272	0.275	0.277	0.284	0.285	0.281	0.291	0.286	0.280	2.430		
1,1,1-Trichloroethane		0.400	0.396	0.419	0.442	0.469	0.455	0.478		0.437	7.506		
Cyclohexane				0.507	0.541	0.569	0.544	0.579	0.551	0.549	4.568		
1,1-Dichloropropene		0.302	0.270	0.312	0.331	0.361	0.360	0.375		0.330	11.440		
Tert-Amyl-Methyl ether		0.736	0.801	0.864	0.801	0.849	0.836		0.882	0.824	5.986		
Carbon Tetrachloride		0.33761	0.34851	0.38431	0.4003	0.42763	0.42516	0.44222		0.39511	10.2295		
1,2-Dichloroethane-d4	0.32291	0.32907	0.32444	0.33099	0.32894	0.32662	0.3213	0.3307	0.32813	0.32701	1.05287		
Heptane										0	0		
1,2-Dichloroethane		0.42705	0.41484	0.47359	0.46673	0.47856	0.46972	0.48886		0.45991	6.03806		
Benzene		1.06454	1.06415	1.09109	1.10495	1.13533	1.10146	1.12952		1.09872	2.5627		
Trichloroethene		0.25766	0.26059	0.28251	0.29694	0.31524	0.30913	0.32107		0.29188	8.8006		
Methylcyclohexane				0.39421	0.42656	0.45093	0.433	0.46255	0.44097	0.4347	5.43098		
1,2-Dichloropropane		0.27173	0.265	0.29468	0.30947	0.32893	0.3213	0.33922		0.30433	9.3317		
1,4-Dioxane			0.00296	0.00478	0.00483	0.00527	0.00577		0.00668	0.00505	24.6457	0.993	
Bromodichloromethane		0.29497	0.32406	0.35527	0.36607	0.39761	0.39886	0.42325		0.36573	12.3674		
Dibromomethane		0.15809	0.16593	0.19368	0.20641	0.22027	0.22082	0.23591		0.20016	14.6101		
2-Chloroethyl Vinyl Ether				0.17562	0.23178	0.24578	0.24923	0.27256	0.2697	0.24078	14.7059		
4-Methyl-2-Pentanone				0.11975	0.17176	0.18485	0.18632	0.21227	0.21588	0.18181	19.1652		
cis-1,3-Dichloropropene		0.29924	0.32568	0.37734	0.42344	0.46312	0.4686	0.49803		0.40792	18.6161		
Dimethyl Disulfide				0.15901	0.20597	0.25525	0.26667	0.3041	0.29671	0.24795	22.5327	0.997	
Chlorobenzene-d5	ISTD												
Toluene-d8	1.22603	1.23433	1.22294	1.26156	1.25706	1.23697	1.19606	1.20531	1.23814	1.23093	1.74278		
Toluene		1.36674	1.32922	1.47151	1.48931	1.54244	1.47848	1.46224		1.44856	5.12122		
Ethyl Methacrylate			0.28255	0.40775	0.50145	0.5686	0.57308	0.6161	0.60964	0.50845	24.2	0.999	
trans-1,3-Dichloropropene		0.34549	0.38916	0.43933	0.50246	0.57695	0.56288	0.58497		0.48589	19.8027		
1,1,2-Trichloroethane		0.32099	0.30224	0.35984	0.36784	0.38116	0.37378	0.38428		0.35573	8.90357		
2-Hexanone				0.24677	0.37888	0.43358	0.44958	0.49314	0.51577	0.41962	23.1734	0.997	
1,3-Dichloropropane		0.52259	0.53311	0.57806	0.59603	0.6221	0.61135	0.6196		0.58327	7.00083		
Tetrachloroethene		0.28903	0.24472	0.30345	0.28798	0.31319	0.30429	0.31151		0.29345	8.06098		
Dibromochloromethane		0.32493	0.34704	0.38294	0.42283	0.46217	0.47266	0.49412		0.41524	15.7398		
1,2-Dibromoethane		0.28481	0.31736	0.36914	0.3893	0.42156	0.41938	0.43794		0.37707	15.2209		
1-Chlorohexane		0.30452	0.29036	0.3508	0.4031	0.45518	0.4429	0.47739	0.44863	0.39661	18.2606		
Chlorobenzene		0.96494	0.85828	0.97451	1.01905	1.07761	1.05436	1.08507		1.00483	7.95934		
1,1,1,2-Tetrachloroethane		0.34549	0.31891	0.38356	0.40035	0.42702	0.42148	0.44719		0.392	11.7772		
Ethylbenzene		0.44643	0.4355	0.5161	0.54304	0.57848	0.57532	0.61222		0.52959	12.7699		
m-,p-Xylene	0.4666	0.54702	0.54837	0.65143	0.67167	0.71082	0.70003	0.71558		0.62644	14.9145		
o-Xylene		0.53836	0.53691	0.63994	0.67301	0.70733	0.70446	0.73943		0.64849	12.6093		
Styrene		0.62931	0.71566	0.89457	1.06136	1.18019	1.18818	1.2598		0.98987	25.0122	0.998	
Bromoform			0.20696	0.2706	0.31545	0.35843	0.37704	0.42106		0.32492	23.8541	0.995	
Isopropylbenzene		1.3873	1.37184	1.60388	1.68831	1.79542	1.75966	1.78985		1.62804	11.1958		
1,4-Dichlorobenzene-d4	ISTD												
1,1,2,2-Tetrachloroethane		0.87465	0.87272	1.03791	1.07035	1.13204	1.0509	1.09467		1.01903	10.1943		
p-Bromofluorobenzene	0.90463	0.91396	0.89058	0.95089	0.9348	0.87976	0.81712	0.83822	0.84915	0.88657	5.06991		
1,2,3-Trichloropropane		0.23991	0.34832	0.35374	0.36184	0.38226	0.34984	0.35941		0.34219	13.5916		

trans-1,4-Dichloro-2-Butene			0.3209	0.37667	0.3952	0.37599	0.40844	0.38907	0.37771	8.03946	
n-Propylbenzene	3.03535	2.99421	3.52689	3.73324	3.89173	3.45372	3.32297		3.42259	9.77686	
Bromobenzene	0.79142	0.77525	0.9108	0.92161	0.93029	0.85346	0.87142		0.86489	7.19124	
1,3,5-Trimethylbenzene	2.43793	2.26808	2.68607	2.91025	2.95587	2.66641	2.63276		2.65105	9.16215	
2-Chlorotoluene	2.28954	2.27869	2.18882	2.34678	2.44985	2.12323	2.16323		2.26288	5.03455	
4-Chlorotoluene	1.58639	1.67466	1.8971	2.29573	2.33151	2.16186	2.1338		2.01158	14.7473	
a-Methylstyrene		0.91962	1.20508	1.44797	1.61913	1.51006	1.60159	1.53571	1.40559	18.1391	
tert-Butylbenzene	0.45998	0.52263	0.60263	0.6194	0.62492	0.57226	0.59203		0.57055	10.4567	
1,2,4-Trimethylbenzene	2.42342	2.37071	2.79005	3.02279	3.08775	2.78128	2.76524		2.74875	9.87201	
sec-Butylbenzene	2.76019	2.77242	3.22203	3.54512	3.70135	3.3203	3.26719		3.22694	11.0371	
p-Isopropyltoluene	2.06118	2.13167	2.70949	3.01673	3.14876	2.8766	2.88407		2.68979	15.8984	
1,3-Dichlorobenzene	1.28191	1.29743	1.495	1.61386	1.70928	1.62336	1.68262		1.52907	11.5777	
1,4-Dichlorobenzene	1.41193	1.42204	1.54522	1.63198	1.69729	1.65868	1.71778		1.58356	7.98574	
n-Butylbenzene	1.43148	1.61523	1.99998	2.34876	2.64134	2.50828	2.57445		2.15993	22.4716	0.999
1,2-Dichlorobenzene	1.45044	1.41924	1.6392	1.74601	1.82688	1.74475	1.75565		1.6546	9.67268	
1,2-Dibromo-3-Chloropropane		0.14363	0.21413	0.27859	0.32946	0.3086	0.31936		0.26563	27.4126	0.999
1,2,4-Trichlorobenzene	0.74729	0.72717	0.92655	1.11571	1.28664	1.21227	1.25193		1.03822	22.8457	0.999
Hexachlorobutadiene	0.27338	0.36381	0.44889	0.47704	0.56012	0.54453	0.55867		0.46092	23.6661	0.999
Naphthalene	2.60143	2.67067	3.48684	4.14419	4.57953	4.00693	3.65977		3.59277	20.6359	0.993
1,2,3-Trichlorobenzene	0.82933	0.86284	1.04721	1.2484	1.39547	1.27179	1.28414		1.13417	19.6122	

Mon Aug 14 15:51:36 2017

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/14/2017 Sample ID: WG625140-11
Instrument ID: HPMS9 Run Time: 15:16 Method: 8260C
File ID: 9M982001 Analyst: ADC QC Key: WATERLOO
ICal Workgroup: WG625140 Cal ID: HPMS9 - 14-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	47.3	ug/L	0.409	5.40	25	
1,2-Dichloropropane	CCC	50.0	51.6	ug/L	0.314	3.30	25	
Chloroform	CCC	50.0	51.9	ug/L	0.495	3.80	25	
Ethylbenzene	CCC	50.0	53.8	ug/L	0.570	7.60	25	
Toluene	CCC	50.0	50.1	ug/L	1.45	0.300	25	
Vinyl Chloride	CCC	50.0	45.2	ug/L	0.323	9.50	25	
1,1,2,2-Tetrachloroethane	SPCC	50.0	54.5	ug/L	1.11	9.00	25	
1,1-Dichloroethane	SPCC	50.0	49.5	ug/L	0.528	1.00	25	
Bromoform	SPCC	50.0	47.3	ug/L	0.368	5.40	25	
Chlorobenzene	SPCC	50.0	53.2	ug/L	1.07	6.40	25	
Chloromethane	SPCC	50.0	48.7	ug/L	0.489	2.60	25	
1,1,1-Trichloroethane		50.0	49.9	ug/L	0.436	0.200	25	
1,1,2-Trichloro-1,2,2-Trifluoroethane		50.0	55.3	ug/L	0.267	10.7	25	
1,1,2-Trichloroethane		50.0	52.3	ug/L	0.372	4.70	25	
1,2,3-Trichlorobenzene		50.0	56.9	ug/L	1.29	13.8	25	
1,2,4-Trichlorobenzene		50.0	49.8	ug/L	1.22	0.300	25	
1,2-Dibromo-3-Chloropropane		50.0	49.3	ug/L	0.307	1.30	25	
1,2-Dibromoethane		50.0	54.2	ug/L	0.409	8.30	25	
1,2-Dichlorobenzene		50.0	56.6	ug/L	1.87	13.1	25	
1,2-Dichloroethane		50.0	49.5	ug/L	0.456	0.900	25	
cis-1,2-Dichloroethene		50.0	51.2	ug/L	0.293	2.40	25	
trans-1,2-Dichloroethene		50.0	48.7	ug/L	0.392	2.50	25	
1,3-Dichlorobenzene		50.0	53.9	ug/L	1.65	7.80	25	
1,4-Dichlorobenzene		50.0	55.2	ug/L	1.75	10.4	25	
2-Butanone		50.0	52.0	ug/L	0.236	4.10	25	
2-Hexanone		50.0	54.3	ug/L	0.512	8.70	25	
4-Methyl-2-Pentanone		50.0	56.7	ug/L	0.206	13.5	25	
Acetone		50.0	51.0	ug/L	0.155	2.10	25	
Benzene		50.0	48.9	ug/L	1.08	2.10	25	
Bromochloromethane		50.0	50.0	ug/L	0.205	0.100	25	
Bromodichloromethane		50.0	50.9	ug/L	0.373	1.90	25	
Bromomethane		50.0	42.1	ug/L	0.185	15.7	25	
Carbon Disulfide		50.0	47.3	ug/L	0.667	5.40	25	
Carbon Tetrachloride		50.0	50.5	ug/L	0.399	1.00	25	
Chloroethane		50.0	55.0	ug/L	0.228	10.0	25	
cis-1,3-Dichloropropene		50.0	58.4	ug/L	0.477	16.8	25	
Cyclohexane		50.0	49.0	ug/L	0.538	2.00	25	
Dibromochloromethane		50.0	53.5	ug/L	0.445	7.10	25	
Dichlorodifluoromethane		50.0	54.7	ug/L	0.400	9.40	25	
Isopropylbenzene		50.0	53.0	ug/L	1.73	6.10	25	
Methyl acetate		50.0	48.6	ug/L	0.379	2.80	25	
Methyl Tert Butyl Ether		50.0	51.2	ug/L	0.907	2.30	25	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5461661
Report generated 09/07/2017 16:56

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/14/2017 Sample ID: WG625140-11
Instrument ID: HPMS9 Run Time: 15:16 Method: 8260C
File ID: 9M982001 Analyst: ADC QC Key: WATERLOO
ICal Workgroup: WG625140 Cal ID: HPMS9 - 14-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Methylcyclohexane		50.0	50.0	ug/L	0.435	0	25	
Methylene Chloride		50.0	49.3	ug/L	0.279	1.40	25	
m-,p-Xylene		100	111	ug/L	0.695	10.9	25	
o-Xylene		50.0	54.5	ug/L	0.707	9.00	25	
Styrene		50.0	49.8	ug/L	1.20	0.400	25	
Tetrachloroethene		50.0	50.1	ug/L	0.294	0.200	25	
trans-1,3-Dichloropropene		50.0	56.7	ug/L	0.551	13.4	25	
Trichloroethene		50.0	50.1	ug/L	0.293	0.200	25	
Trichlorofluoromethane		50.0	50.2	ug/L	0.462	0.500	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5461661
Report generated 09/07/2017 16:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/06/2017 Sample ID: WG628578-02

Instrument ID: HPMS9 Run Time: 13:15 Method: 8260C

File ID: 9M982367 Analyst: JDS QC Key: WATERLOO

Workgroup (AAB#): WG628579 Cal ID: HPMS9 - 14-AUG-17

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	48.7	ug/L	0.421	2.58	20	
1,2-Dichloropropane	CCC	50.0	50.1	ug/L	0.305	0.170	20	
Chloroform	CCC	50.0	49.5	ug/L	0.472	0.921	20	
Ethylbenzene	CCC	50.0	51.5	ug/L	0.545	2.94	20	
Toluene	CCC	50.0	49.5	ug/L	1.43	0.962	20	
Vinyl Chloride	CCC	50.0	46.1	ug/L	0.329	7.81	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	45.6	ug/L	0.930	8.75	20	
1,1-Dichloroethane	SPCC	50.0	49.5	ug/L	0.528	1.08	20	
Bromoform	SPCC	50.0	41.7	ug/L	0.323	16.7	20	
Chlorobenzene	SPCC	50.0	50.2	ug/L	1.01	0.334	20	
Chloromethane	SPCC	50.0	43.7	ug/L	0.439	12.6	20	
Xylenes		150	156	ug/L	0.657	3.94	20	
1,1,1-Trichloroethane		50.0	47.5	ug/L	0.415	4.98	20	
1,1,2-Trichloro-1,2,2-Trifluoroethane		50.0	49.8	ug/L	0.241	0.311	20	
1,1,2-Trichloroethane		50.0	50.1	ug/L	0.357	0.231	20	
1,2,3-Trichlorobenzene		50.0	55.7	ug/L	1.26	11.4	20	
1,2,4-Trichlorobenzene		50.0	48.4	ug/L	1.19	3.23	20	
1,2-Dibromo-3-Chloropropane		50.0	41.3	ug/L	0.256	17.4	20	
1,2-Dibromoethane		50.0	51.0	ug/L	0.385	2.01	20	
1,2-Dichlorobenzene		50.0	50.8	ug/L	1.68	1.62	20	
1,2-Dichloroethane		50.0	49.2	ug/L	0.452	1.66	20	
cis-1,2-Dichloroethene		50.0	49.0	ug/L	0.281	1.99	20	
trans-1,2-Dichloroethene		50.0	47.6	ug/L	0.383	4.75	20	
1,3-Dichlorobenzene		50.0	51.8	ug/L	1.59	3.69	20	
1,4-Dichlorobenzene		50.0	50.8	ug/L	1.61	1.68	20	
2-Butanone		50.0	44.0	ug/L	0.199	12.0	20	
2-Hexanone		50.0	42.5	ug/L	0.392	15.0	20	
4-Methyl-2-Pentanone		50.0	44.9	ug/L	0.163	10.3	20	
Acetone		50.0	43.9	ug/L	0.134	12.1	20	
Benzene		50.0	46.3	ug/L	1.02	7.39	20	
Bromochloromethane		50.0	48.9	ug/L	0.201	2.15	20	
Bromodichloromethane		50.0	50.9	ug/L	0.372	1.76	20	
Bromomethane		50.0	37.9	ug/L	0.166	24.1	20	*
Carbon Disulfide		50.0	48.3	ug/L	0.682	3.35	20	
Carbon Tetrachloride		50.0	49.9	ug/L	0.394	0.216	20	
Chloroethane		50.0	48.1	ug/L	0.199	3.88	20	
cis-1,3-Dichloropropene		50.0	52.1	ug/L	0.425	4.17	20	
Cyclohexane		50.0	47.5	ug/L	0.521	5.04	20	
Dibromochloromethane		50.0	52.7	ug/L	0.437	5.33	20	
Dichlorodifluoromethane		50.0	49.5	ug/L	0.362	0.957	20	
Isopropylbenzene		50.0	51.7	ug/L	1.68	3.46	20	
Methyl acetate		50.0	46.2	ug/L	0.361	7.64	20	

CCV - Modified 03/05/2008

PDF File ID: 5461663

Report generated 09/07/2017 16:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/06/2017 Sample ID: WG628578-02

Instrument ID: HPMS9 Run Time: 13:15 Method: 8260C

File ID: 9M982367 Analyst: JDS QC Key: WATERLOO

Workgroup (AAB#): WG628579 Cal ID: HPMS9 - 14-AUG-17

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Methyl Tert Butyl Ether		50.0	47.7	ug/L	0.845	4.67	20	
Methylcyclohexane		50.0	48.9	ug/L	0.425	2.28	20	
Methylene Chloride		50.0	47.8	ug/L	0.270	4.44	20	
m-,p-Xylene		100	106	ug/L	0.662	5.63	20	
o-Xylene		50.0	50.3	ug/L	0.652	0.545	20	
Styrene		50.0	45.1	ug/L	1.09	9.89	20	
Tetrachloroethene		50.0	50.1	ug/L	0.294	0.125	20	
trans-1,3-Dichloropropene		50.0	54.7	ug/L	0.532	9.41	20	
Trichloroethene		50.0	52.3	ug/L	0.305	4.57	20	
Trichlorofluoromethane		50.0	49.5	ug/L	0.455	1.02	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 5461663
Report generated 09/07/2017 16:56

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L17081498
Instrument ID: HPMS9
Workgroup (AAB#): WG628579

CCV Number: WG628578-02
CAL ID: HPMS9-14-AUG-17
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG628578-02	NA	NA	204442	387698	506086
Upper Limit	NA	NA	408884	775396	1012172
Lower Limit	NA	NA	102221	193849	253043
L17081498-01	1.00	02	152786	335580	451597
L17081498-03	1.00	02	155673	338027	453482
L17081498-07	1.00	02	157268	343005	461057
L17081498-09	1.00	02	154130	334089	444988
L17081498-11	1.00	02	168784	368435	491548
L17081498-12	1.00	02	159920	347899	468103
WG628579-01	1.00	01	169772	371235	493444
WG628579-02	1.00	01	195286	372839	491864

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 5461664
Report generated 09/07/2017 16:56

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L17081498
Instrument ID: HPMS9
Workgroup (AAB#): WG628579

CCV Number: WG628578-02
CAL ID: HPMS9 - 14-AUG-17
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG628578-02	NA	NA	17.58	14.56	10.7
Upper Limit	NA	NA	18.08	15.06	11.2
Lower Limit	NA	NA	17.08	14.06	10.2
L17081498-01	1.00	02	17.58	14.56	10.7
L17081498-03	1.00	02	17.58	14.56	10.7
L17081498-07	1.00	02	17.58	14.56	10.7
L17081498-09	1.00	02	17.58	14.56	10.7
L17081498-11	1.00	02	17.58	14.56	10.7
L17081498-12	1.00	02	17.58	14.56	10.7
WG628579-01	1.00	01	17.58	14.56	10.7
WG628579-02	1.00	01	17.58	14.56	10.7

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 5461666
Report generated 09/07/2017 16:56

2.2 Semivolatiles Data

2.2.1 Semivolatiles GC/MS Data (8270)

2.2.1.1 Summary Data

Login Number: L17081498
Department: Semivolatiles
Analyst: Mary Schilling

METHOD

Preparation 3510C/1311

Analysis SW-846 8270C

HOLDING TIMES

Sample Preparation: Samples 01, 03, 05-07 and 09 were re-extracted out of hold. All other holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Benzoic Acid, 2,4-Dinitrophenol. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analytes: 4-Nitrophenol, Benzoic Acid. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Recoveries out of range were observed for the following analytes: 1,4-Dioxane failed low in the LCS/LCSD, 2,4-Dinitrophenol exceeded % RPD criteria only. Please see the applicable QC report for a detailed presentation of the failures. Samples 01, 03, 05-07 and 09 were re-extracted due to the LCS not being spiked for 1,1-biphenyl. The re-extract LCS/LCSD yielded acceptable recoveries for 1,1-biphenyl; both extractions were reported.

Sample #	Analyte	Date	Result	Lower	Upper	Type

WG627757-02	1,4-Dioxane	2017-08-31 10:44:00	32.0	50	150	Recovery
WG628510-02	1,4-Dioxane	2017-09-12 17:21:00	27.0	50	150	Recovery
WG628510-03	1,4-Dioxane	2017-09-12 17:51:00	26.0	50	150	Recovery
WG628510-03	2,4-Dinitrophenol	2017-09-12 17:51:00	36.7		30	RPD

Matrix Spikes: Recoveries out of range were observed for the following analyte: 1,4-Dioxane failed low in the MS/MSD. Please see the applicable QC report for a detailed presentation of the failures.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L17081498-05	1,4-Dioxane	2017-08-31 13:27:00	36.1	50	150	Recovery
L17081498-06	1,4-Dioxane	2017-08-31 14:01:00	43.9	50	150	Recovery

SAMPLES

Samples: All acceptance criteria were met. The extracts were library searched using the NIST library and the top twenty TICs found were reported. Requested acid compounds listed as TICs in the Waterloo QAPP may not have been detected due to unknown extraction efficiency and chromatographic performance.

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peakcompletely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low areacounts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene andbenzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data

contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 129402
Approved By: Mary Schilling

Certificate of Analysis

Sample #:	L17081498-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS19
Client ID:	MW07-082517	**Prep Method:**	3510C	**Prep Date:**	09/06/2017 15:00
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/15/2017 20:30
Workgroup #:	WG628781	**Analyst:**	SCB	**Run Date:**	09/13/2017 15:58
Collect Date:	08/25/2017 10:34	**Dilution:**	1	**File ID:**	19M000544
Sample Tag:	RE	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	22.7	2.84
1,3,5-Trinitrobenzene	99-35-4		U	5.68	2.84
1,3-Dinitrobenzene	99-65-0		U	5.68	2.84
1,4-Dioxane	123-91-1		U	11.4	5.68
2,4,5-Trichlorophenol	95-95-4		U	5.68	2.84
2,4,6-Trichlorophenol	88-06-2		U	5.68	2.84
2,4-Dichlorophenol	120-83-2		U	5.68	2.84
2,4-Dimethylphenol	105-67-9		U	5.68	2.84
2,4-Dinitrophenol	51-28-5		U	28.4	14.2
2,4-Dinitrotoluene	121-14-2		U	5.68	2.84
2,6-Dinitrotoluene	606-20-2		U	5.68	2.84
2-Chloronaphthalene	91-58-7		U	5.68	2.84
2-Chlorophenol	95-57-8		U	5.68	2.84
2-Methylnaphthalene	91-57-6		U	5.68	2.84
2-Methylphenol	95-48-7		U	5.68	2.84
2-Nitroaniline	88-74-4		U	28.4	14.2
2-Nitrophenol	88-75-5		U	5.68	2.84
3-Nitroaniline	99-09-2		U	28.4	14.2
3,3'-Dichlorobenzidine	91-94-1		U	5.68	2.84
3-,4-Methylphenol	65794-96-9		U	5.68	2.84
4-Bromophenyl-phenylether	101-55-3		U	5.68	2.84
4-Chloroaniline	106-47-8		U	5.68	2.84
4-Nitrophenol	100-02-7		U	28.4	14.2
Acenaphthene	83-32-9		U	5.68	2.84
Acenaphthylene	208-96-8		U	5.68	2.84
Anthracene	120-12-7		U	5.68	2.84
Benzo(a)anthracene	56-55-3		U	5.68	2.84
Benzo(a)pyrene	50-32-8		U	5.68	2.84
Benzo(b)fluoranthene	205-99-2		U	5.68	2.84
Benzo(g,h,i)Perylene	191-24-2		U	5.68	2.84
Benzo(k)fluoranthene	207-08-9		U	5.68	2.84
Benzoic acid	65-85-0		U	22.7	11.4
Benzyl alcohol	100-51-6		U	5.68	2.84

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bis(2-Chloroethyl)ether	111-44-4		U	5.68	2.84
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.68	2.84
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.68	2.84
Butylbenzylphthalate	85-68-7		U	5.68	2.84
Carbazole	86-74-8		U	22.7	2.84
Chrysene	218-01-9		U	5.68	2.84
Di-N-Butylphthalate	84-74-2		U	5.68	2.84
Di-n-octylphthalate	117-84-0		U	5.68	2.84
Dibenzo(a,h)Anthracene	53-70-3		U	5.68	2.84
Dibenzofuran	132-64-9		U	5.68	2.84
Diethylphthalate	84-66-2		U	5.68	2.84
Dimethylphthalate	131-11-3		U	5.68	2.84
Fluoranthene	206-44-0		U	5.68	2.84
Fluorene	86-73-7		U	5.68	2.84
Hexachlorobenzene	118-74-1		U	5.68	2.84
Hexachlorobutadiene	87-68-3		U	5.68	2.84
Hexachlorocyclopentadiene	77-47-4		U	5.68	2.84
Hexachloroethane	67-72-1		U	5.68	2.84
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.68	2.84
Isophorone	78-59-1		U	5.68	2.84
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.68	2.84
Naphthalene	91-20-3		U	5.68	2.84
Nitrobenzene	98-95-3		U	5.68	2.84
Pentachlorophenol	87-86-5		U	28.4	14.2
Phenanthrene	85-01-8		U	5.68	2.84
Phenol	108-95-2		U	5.68	2.84
Pyrene	129-00-0		U	5.68	2.84

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	81.6	10	123	
2-Fluorobiphenyl	57.4	43	116	
2-Fluorophenol	33.2	21	100	
Nitrobenzene-d5	58.7	35	114	
p-Terphenyl-d14	91.7	33	141	
Phenol-d5	23.5	10	94	

U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #: L17081498-01 | **PrePrep Method:** N/A | **Instrument:** HPMS12
Client ID: MW07-082517 | **Prep Method:** 3510C | **Prep Date:** 08/30/2017 12:10
Matrix: Water | **Analytical Method:** 8270D | **Cal Date:** 08/03/2017 13:41
Workgroup #: WG627873 | **Analyst:** SCB | **Run Date:** 08/31/2017 12:22
Collect Date: 08/25/2017 10:34 | **Dilution:** 1 | **File ID:** 12M64170
Sample Tag: 01 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
n-Hexadecanoic acid		8.66		0.000	0.000
Octadecanoic acid		12.8		0.000	0.000
Hentriacontane		7.15		0.000	0.000
Hexadecane, 2,6,10,14-tetramethyl-		12.3		0.000	0.000
UNKNOWN		4.46		0.000	0.000
Pentacosane		18.4		0.000	0.000
Tetratetracontane		22.2		0.000	0.000
Eicosane		20.6		0.000	0.000
Tetratetracontane		13.7		0.000	0.000
Tetratriacontane		7.50		0.000	0.000
Tetrapentacontane		6.54		0.000	0.000

Sample #: L17081498-01 | **PrePrep Method:** N/A | **Instrument:** HPMS12
Client ID: MW07-082517 | **Prep Method:** 3510C | **Prep Date:** 08/30/2017 12:10
Matrix: Water | **Analytical Method:** 8270D | **Cal Date:** 08/03/2017 13:41
Workgroup #: WG627873 | **Analyst:** SCB | **Run Date:** 08/31/2017 12:22
Collect Date: 08/25/2017 10:34 | **Dilution:** 1 | **File ID:** 12M64170
Sample Tag: 01 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.3	2.66
1,3,5-Trinitrobenzene	99-35-4		U	5.32	2.66
1,3-Dinitrobenzene	99-65-0		U	5.32	2.66
1,4-Dioxane	123-91-1		U	10.6	5.32
2,4,5-Trichlorophenol	95-95-4		U	5.32	2.66
2,4,6-Trichlorophenol	88-06-2		U	5.32	2.66
2,4-Dichlorophenol	120-83-2		U	5.32	2.66
2,4-Dimethylphenol	105-67-9		U	5.32	2.66
2,4-Dinitrophenol	51-28-5		U	26.6	13.3
2,4-Dinitrotoluene	121-14-2		U	5.32	2.66
2,6-Dinitrotoluene	606-20-2		U	5.32	2.66
2-Chloronaphthalene	91-58-7		U	5.32	2.66
2-Chlorophenol	95-57-8		U	5.32	2.66

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	5.32	2.66
2-Methylphenol	95-48-7		U	5.32	2.66
2-Nitroaniline	88-74-4		U	26.6	13.3
2-Nitrophenol	88-75-5		U	5.32	2.66
3-Nitroaniline	99-09-2		U	26.6	13.3
3,3'-Dichlorobenzidine	91-94-1		U	5.32	2.66
3-,4-Methylphenol	65794-96-9		U	5.32	2.66
4-Bromophenyl-phenylether	101-55-3		U	5.32	2.66
4-Chloroaniline	106-47-8		U	5.32	2.66
4-Nitrophenol	100-02-7		U	26.6	13.3
Acenaphthene	83-32-9		U	5.32	2.66
Acenaphthylene	208-96-8		U	5.32	2.66
Anthracene	120-12-7		U	5.32	2.66
Benzo(a)anthracene	56-55-3		U	5.32	2.66
Benzo(a)pyrene	50-32-8		U	5.32	2.66
Benzo(b)fluoranthene	205-99-2		U	5.32	2.66
Benzo(g,h,i)Perylene	191-24-2		U	5.32	2.66
Benzo(k)fluoranthene	207-08-9		U	5.32	2.66
Benzoic acid	65-85-0		U	21.3	10.6
Benzyl alcohol	100-51-6		U	5.32	2.66
Bis(2-Chloroethyl)ether	111-44-4		U	5.32	2.66
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.32	2.66
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.32	2.66
Butylbenzylphthalate	85-68-7		U	5.32	2.66
Carbazole	86-74-8		U	21.3	2.66
Chrysene	218-01-9		U	5.32	2.66
Di-N-Butylphthalate	84-74-2		U	5.32	2.66
Di-n-octylphthalate	117-84-0		U	5.32	2.66
Dibenzo(a,h)Anthracene	53-70-3		U	5.32	2.66
Dibenzofuran	132-64-9		U	5.32	2.66
Diethylphthalate	84-66-2		U	5.32	2.66
Dimethylphthalate	131-11-3		U	5.32	2.66
Fluoranthene	206-44-0		U	5.32	2.66
Fluorene	86-73-7		U	5.32	2.66
Hexachlorobenzene	118-74-1		U	5.32	2.66
Hexachlorobutadiene	87-68-3		U	5.32	2.66
Hexachlorocyclopentadiene	77-47-4		U	5.32	2.66
Hexachloroethane	67-72-1		U	5.32	2.66
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.32	2.66

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Isophorone	78-59-1		U	5.32	2.66
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.32	2.66
Naphthalene	91-20-3		U	5.32	2.66
Nitrobenzene	98-95-3		U	5.32	2.66
Pentachlorophenol	87-86-5		U	26.6	13.3
Phenanthrene	85-01-8		U	5.32	2.66
Phenol	108-95-2		U	5.32	2.66
Pyrene	129-00-0		U	5.32	2.66

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	114	10	123	
2-Fluorobiphenyl	89.0	43	116	
2-Fluorophenol	49.0	21	100	
Nitrobenzene-d5	76.8	35	114	
p-Terphenyl-d14	90.0	33	141	
Phenol-d5	33.6	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03
Client ID: MW06-082517
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 13:54
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 12:54
File ID: 12M64171

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.1	2.63
1,3,5-Trinitrobenzene	99-35-4		U	5.26	2.63
1,3-Dinitrobenzene	99-65-0		U	5.26	2.63
1,4-Dioxane	123-91-1		U	10.5	5.26
2,4,5-Trichlorophenol	95-95-4		U	5.26	2.63
2,4,6-Trichlorophenol	88-06-2		U	5.26	2.63
2,4-Dichlorophenol	120-83-2		U	5.26	2.63
2,4-Dimethylphenol	105-67-9		U	5.26	2.63
2,4-Dinitrophenol	51-28-5		U	26.3	13.2
2,4-Dinitrotoluene	121-14-2		U	5.26	2.63
2,6-Dinitrotoluene	606-20-2		U	5.26	2.63
2-Chloronaphthalene	91-58-7		U	5.26	2.63
2-Chlorophenol	95-57-8		U	5.26	2.63
2-Methylnaphthalene	91-57-6		U	5.26	2.63
2-Methylphenol	95-48-7		U	5.26	2.63

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
2-Nitroaniline	88-74-4		U	26.3	13.2
2-Nitrophenol	88-75-5		U	5.26	2.63
3-Nitroaniline	99-09-2		U	26.3	13.2
3,3'-Dichlorobenzidine	91-94-1		U	5.26	2.63
3-,4-Methylphenol	65794-96-9		U	5.26	2.63
4-Bromophenyl-phenylether	101-55-3		U	5.26	2.63
4-Chloroaniline	106-47-8		U	5.26	2.63
4-Nitrophenol	100-02-7		U	26.3	13.2
Acenaphthene	83-32-9		U	5.26	2.63
Acenaphthylene	208-96-8		U	5.26	2.63
Anthracene	120-12-7		U	5.26	2.63
Benzo(a)anthracene	56-55-3		U	5.26	2.63
Benzo(a)pyrene	50-32-8		U	5.26	2.63
Benzo(b)fluoranthene	205-99-2		U	5.26	2.63
Benzo(g,h,i)Perylene	191-24-2		U	5.26	2.63
Benzo(k)fluoranthene	207-08-9		U	5.26	2.63
Benzoic acid	65-85-0		U	21.1	10.5
Benzyl alcohol	100-51-6		U	5.26	2.63
Bis(2-Chloroethyl)ether	111-44-4		U	5.26	2.63
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.26	2.63
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.26	2.63
Butylbenzylphthalate	85-68-7		U	5.26	2.63
Carbazole	86-74-8		U	21.1	2.63
Chrysene	218-01-9		U	5.26	2.63
Di-N-Butylphthalate	84-74-2		U	5.26	2.63
Di-n-octylphthalate	117-84-0		U	5.26	2.63
Dibenzo(a,h)Anthracene	53-70-3		U	5.26	2.63
Dibenzofuran	132-64-9		U	5.26	2.63
Diethylphthalate	84-66-2		U	5.26	2.63
Dimethylphthalate	131-11-3		U	5.26	2.63
Fluoranthene	206-44-0		U	5.26	2.63
Fluorene	86-73-7		U	5.26	2.63
Hexachlorobenzene	118-74-1		U	5.26	2.63
Hexachlorobutadiene	87-68-3		U	5.26	2.63
Hexachlorocyclopentadiene	77-47-4		U	5.26	2.63
Hexachloroethane	67-72-1		U	5.26	2.63
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.26	2.63
Isophorone	78-59-1		U	5.26	2.63
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.26	2.63

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Naphthalene	91-20-3		U	5.26	2.63
Nitrobenzene	98-95-3		U	5.26	2.63
Pentachlorophenol	87-86-5		U	26.3	13.2
Phenanthrene	85-01-8		U	5.26	2.63
Phenol	108-95-2		U	5.26	2.63
Pyrene	129-00-0		U	5.26	2.63

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	116	10	123	
2-Fluorobiphenyl	93.1	43	116	
2-Fluorophenol	49.1	21	100	
Nitrobenzene-d5	91.6	35	114	
p-Terphenyl-d14	97.7	33	141	
Phenol-d5	34.7	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03
Client ID: MW06-082517
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 13:54
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 12:54
File ID: 12M64171

Analyte	CAS #	Result	Qual	RL	MDL
Benzenesulfonamide, N-butyl-		4.80		0.000	0.000
n-Hexadecanoic acid		6.72		0.000	0.000
UNKNOWN		10.1		0.000	0.000
UNKNOWN2		5.35		0.000	0.000
Tetratriacontane		7.66		0.000	0.000
Octacosane		10.9		0.000	0.000
UNKNOWN3		4.37		0.000	0.000
Octacosane		16.3		0.000	0.000
Eicosane		20.2		0.000	0.000
Octacosane		18.5		0.000	0.000
Tetratriacontane		12.5		0.000	0.000
Tetratetracontane		6.95		0.000	0.000
UNKNOWN4		6.48		0.000	0.000

Certificate of Analysis

Sample #:	L17081498-03	**PrePrep Method:**	N/A	**Instrument:**	HPMS19
Client ID:	MW06-082517	**Prep Method:**	3510C	**Prep Date:**	09/06/2017 15:00
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/15/2017 20:30
Workgroup #:	WG628781	**Analyst:**	SCB	**Run Date:**	09/13/2017 16:28
Collect Date:	08/25/2017 13:54	**Dilution:**	1	**File ID:**	19M000545
Sample Tag:	RE	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.3	2.66
1,3,5-Trinitrobenzene	99-35-4		U	5.32	2.66
1,3-Dinitrobenzene	99-65-0		U	5.32	2.66
1,4-Dioxane	123-91-1		U	10.6	5.32
2,4,5-Trichlorophenol	95-95-4		U	5.32	2.66
2,4,6-Trichlorophenol	88-06-2		U	5.32	2.66
2,4-Dichlorophenol	120-83-2		U	5.32	2.66
2,4-Dimethylphenol	105-67-9		U	5.32	2.66
2,4-Dinitrophenol	51-28-5		U	26.6	13.3
2,4-Dinitrotoluene	121-14-2		U	5.32	2.66
2,6-Dinitrotoluene	606-20-2		U	5.32	2.66
2-Chloronaphthalene	91-58-7		U	5.32	2.66
2-Chlorophenol	95-57-8		U	5.32	2.66
2-Methylnaphthalene	91-57-6		U	5.32	2.66
2-Methylphenol	95-48-7		U	5.32	2.66
2-Nitroaniline	88-74-4		U	26.6	13.3
2-Nitrophenol	88-75-5		U	5.32	2.66
3-Nitroaniline	99-09-2		U	26.6	13.3
3,3'-Dichlorobenzidine	91-94-1		U	5.32	2.66
3-,4-Methylphenol	65794-96-9		U	5.32	2.66
4-Bromophenyl-phenylether	101-55-3		U	5.32	2.66
4-Chloroaniline	106-47-8		U	5.32	2.66
4-Nitrophenol	100-02-7		U	26.6	13.3
Acenaphthene	83-32-9		U	5.32	2.66
Acenaphthylene	208-96-8		U	5.32	2.66
Anthracene	120-12-7		U	5.32	2.66
Benzo(a)anthracene	56-55-3		U	5.32	2.66
Benzo(a)pyrene	50-32-8		U	5.32	2.66
Benzo(b)fluoranthene	205-99-2		U	5.32	2.66
Benzo(g,h,i)Perylene	191-24-2		U	5.32	2.66
Benzo(k)fluoranthene	207-08-9		U	5.32	2.66
Benzoic acid	65-85-0		U	21.3	10.6
Benzyl alcohol	100-51-6		U	5.32	2.66

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bis(2-Chloroethyl)ether	111-44-4		U	5.32	2.66
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.32	2.66
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.32	2.66
Butylbenzylphthalate	85-68-7		U	5.32	2.66
Carbazole	86-74-8		U	21.3	2.66
Chrysene	218-01-9		U	5.32	2.66
Di-N-Butylphthalate	84-74-2		U	5.32	2.66
Di-n-octylphthalate	117-84-0		U	5.32	2.66
Dibenzo(a,h)Anthracene	53-70-3		U	5.32	2.66
Dibenzofuran	132-64-9		U	5.32	2.66
Diethylphthalate	84-66-2		U	5.32	2.66
Dimethylphthalate	131-11-3		U	5.32	2.66
Fluoranthene	206-44-0		U	5.32	2.66
Fluorene	86-73-7		U	5.32	2.66
Hexachlorobenzene	118-74-1		U	5.32	2.66
Hexachlorobutadiene	87-68-3		U	5.32	2.66
Hexachlorocyclopentadiene	77-47-4		U	5.32	2.66
Hexachloroethane	67-72-1		U	5.32	2.66
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.32	2.66
Isophorone	78-59-1		U	5.32	2.66
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.32	2.66
Naphthalene	91-20-3		U	5.32	2.66
Nitrobenzene	98-95-3		U	5.32	2.66
Pentachlorophenol	87-86-5		U	26.6	13.3
Phenanthrene	85-01-8		U	5.32	2.66
Phenol	108-95-2		U	5.32	2.66
Pyrene	129-00-0		U	5.32	2.66

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	89.2	10	123	
2-Fluorobiphenyl	67.0	43	116	
2-Fluorophenol	37.1	21	100	
Nitrobenzene-d5	70.6	35	114	
p-Terphenyl-d14	93.5	33	141	
Phenol-d5	25.5	10	94	

U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #:	L17081498-05	**PrePrep Method:**	N/A	**Instrument:**	HPMS19
Client ID:	MW06-082517-MS	**Prep Method:**	3510C	**Prep Date:**	09/06/2017 15:00
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/15/2017 20:30
Workgroup #:	WG628781	**Analyst:**	SCB	**Run Date:**	09/13/2017 16:58
Collect Date:	08/25/2017 13:54	**Dilution:**	1	**File ID:**	19M000546
Sample Tag:	RE	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4	36.7		22.0	2.75
1,3,5-Trinitrobenzene	99-35-4	10.1		5.49	2.75
1,3-Dinitrobenzene	99-65-0	50.8		5.49	2.75
1,4-Dioxane	123-91-1	14.1		11.0	5.49
2,4,5-Trichlorophenol	95-95-4	43.2		5.49	2.75
2,4,6-Trichlorophenol	88-06-2	39.6		5.49	2.75
2,4-Dichlorophenol	120-83-2	36.3		5.49	2.75
2,4-Dimethylphenol	105-67-9	36.8		5.49	2.75
2,4-Dinitrophenol	51-28-5	48.3		27.5	13.7
2,4-Dinitrotoluene	121-14-2	54.7		5.49	2.75
2,6-Dinitrotoluene	606-20-2	48.4		5.49	2.75
2-Chloronaphthalene	91-58-7	31.8		5.49	2.75
2-Chlorophenol	95-57-8	29.7		5.49	2.75
2-Methylnaphthalene	91-57-6	29.8		5.49	2.75
2-Methylphenol	95-48-7	29.3		5.49	2.75
2-Nitroaniline	88-74-4	46.5		27.5	13.7
2-Nitrophenol	88-75-5	34.6		5.49	2.75
3-Nitroaniline	99-09-2	48.6		27.5	13.7
3,3'-Dichlorobenzidine	91-94-1	57.7		5.49	2.75
3-,4-Methylphenol	65794-96-9	26.8		5.49	2.75
4-Bromophenyl-phenylether	101-55-3	43.0		5.49	2.75
4-Chloroaniline	106-47-8	32.7		5.49	2.75
4-Nitrophenol	100-02-7	25.4	J	27.5	13.7
Acenaphthene	83-32-9	40.5		5.49	2.75
Acenaphthylene	208-96-8	38.1		5.49	2.75
Anthracene	120-12-7	49.6		5.49	2.75
Benzo(a)anthracene	56-55-3	54.7		5.49	2.75
Benzo(a)pyrene	50-32-8	56.5		5.49	2.75
Benzo(b)fluoranthene	205-99-2	57.9		5.49	2.75
Benzo(g,h,i)Perylene	191-24-2	63.4		5.49	2.75
Benzo(k)fluoranthene	207-08-9	53.6		5.49	2.75
Benzoic acid	65-85-0	18.0	J	22.0	11.0
Benzyl alcohol	100-51-6	30.2		5.49	2.75

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bis(2-Chloroethyl)ether	111-44-4	29.4		5.49	2.75
Bis(2-Chloroethoxy)Methane	111-91-1	27.9		5.49	2.75
bis(2-Ethylhexyl)phthalate	117-81-7	59.9		5.49	2.75
Butylbenzylphthalate	85-68-7	60.7		5.49	2.75
Carbazole	86-74-8	55.2		22.0	2.75
Chrysene	218-01-9	57.2		5.49	2.75
Di-N-Butylphthalate	84-74-2	53.7		5.49	2.75
Di-n-octylphthalate	117-84-0	60.9		5.49	2.75
Dibenzo(a,h)Anthracene	53-70-3	56.9		5.49	2.75
Dibenzofuran	132-64-9	40.0		5.49	2.75
Diethylphthalate	84-66-2	47.8		5.49	2.75
Dimethylphthalate	131-11-3	44.6		5.49	2.75
Fluoranthene	206-44-0	53.0		5.49	2.75
Fluorene	86-73-7	44.1		5.49	2.75
Hexachlorobenzene	118-74-1	46.1		5.49	2.75
Hexachlorobutadiene	87-68-3	23.2		5.49	2.75
Hexachlorocyclopentadiene	77-47-4	24.7		5.49	2.75
Hexachloroethane	67-72-1	20.7		5.49	2.75
Indeno(1,2,3-cd)pyrene	193-39-5	59.0		5.49	2.75
Isophorone	78-59-1	35.2		5.49	2.75
Diphenylamine/n-Nitrosodiphenylamine	86-30-6	46.6		5.49	2.75
Naphthalene	91-20-3	28.4		5.49	2.75
Nitrobenzene	98-95-3	30.1		5.49	2.75
Pentachlorophenol	87-86-5	60.3		27.5	13.7
Phenanthrene	85-01-8	50.0		5.49	2.75
Phenol	108-95-2	12.9		5.49	2.75
Pyrene	129-00-0	54.5		5.49	2.75

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	101	10	123	
2-Fluorobiphenyl	67.7	43	116	
2-Fluorophenol	33.5	21	100	
Nitrobenzene-d5	62.5	35	114	
p-Terphenyl-d14	95.4	33	141	
Phenol-d5	23.8	10	94	

J	The analyte was positively identified, but the quantitation was below the RL.

Certificate of Analysis

Sample #:	L17081498-05	**PrePrep Method:**	N/A	**Instrument:**	HPMS12
Client ID:	MW06-082517-MS	**Prep Method:**	3510C	**Prep Date:**	08/30/2017 12:10
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/03/2017 13:41
Workgroup #:	WG627873	**Analyst:**	SCB	**Run Date:**	08/31/2017 13:27
Collect Date:	08/25/2017 13:54	**Dilution:**	1	**File ID:**	12M64172
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.3	2.66
1,3,5-Trinitrobenzene	99-35-4	10.5		5.32	2.66
1,3-Dinitrobenzene	99-65-0	49.8		5.32	2.66
1,4-Dioxane	123-91-1	19.2		10.6	5.32
2,4,5-Trichlorophenol	95-95-4	53.8		5.32	2.66
2,4,6-Trichlorophenol	88-06-2	52.6		5.32	2.66
2,4-Dichlorophenol	120-83-2	48.5		5.32	2.66
2,4-Dimethylphenol	105-67-9	49.6		5.32	2.66
2,4-Dinitrophenol	51-28-5	27.9		26.6	13.3
2,4-Dinitrotoluene	121-14-2	54.5		5.32	2.66
2,6-Dinitrotoluene	606-20-2	54.9		5.32	2.66
2-Chloronaphthalene	91-58-7	41.4		5.32	2.66
2-Chlorophenol	95-57-8	36.7		5.32	2.66
2-Methylnaphthalene	91-57-6	37.7		5.32	2.66
2-Methylphenol	95-48-7	40.7		5.32	2.66
2-Nitroaniline	88-74-4	59.9		26.6	13.3
2-Nitrophenol	88-75-5	43.0		5.32	2.66
3-Nitroaniline	99-09-2	51.0		26.6	13.3
3,3'-Dichlorobenzidine	91-94-1	60.8		5.32	2.66
3-,4-Methylphenol	65794-96-9	38.3		5.32	2.66
4-Bromophenyl-phenylether	101-55-3	50.9		5.32	2.66
4-Chloroaniline	106-47-8	50.0		5.32	2.66
4-Nitrophenol	100-02-7	28.1		26.6	13.3
Acenaphthene	83-32-9	48.8		5.32	2.66
Acenaphthylene	208-96-8	50.4		5.32	2.66
Anthracene	120-12-7	52.1		5.32	2.66
Benzo(a)anthracene	56-55-3	57.0		5.32	2.66
Benzo(a)pyrene	50-32-8	56.2		5.32	2.66
Benzo(b)fluoranthene	205-99-2	50.2		5.32	2.66
Benzo(g,h,i)Perylene	191-24-2	59.0		5.32	2.66
Benzo(k)fluoranthene	207-08-9	57.3		5.32	2.66
Benzoic acid	65-85-0	24.3		21.3	10.6
Benzyl alcohol	100-51-6	43.6		5.32	2.66

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bis(2-Chloroethyl)ether	111-44-4	41.9		5.32	2.66
Bis(2-Chloroethoxy)Methane	111-91-1	37.3		5.32	2.66
bis(2-Ethylhexyl)phthalate	117-81-7	56.2		5.32	2.66
Butylbenzylphthalate	85-68-7	53.4		5.32	2.66
Carbazole	86-74-8	56.6		21.3	2.66
Chrysene	218-01-9	60.7		5.32	2.66
Di-N-Butylphthalate	84-74-2	53.5		5.32	2.66
Di-n-octylphthalate	117-84-0	52.7		5.32	2.66
Dibenzo(a,h)Anthracene	53-70-3	33.4		5.32	2.66
Dibenzofuran	132-64-9	48.4		5.32	2.66
Diethylphthalate	84-66-2	55.3		5.32	2.66
Dimethylphthalate	131-11-3	53.4		5.32	2.66
Fluoranthene	206-44-0	56.2		5.32	2.66
Fluorene	86-73-7	52.0		5.32	2.66
Hexachlorobenzene	118-74-1	61.3		5.32	2.66
Hexachlorobutadiene	87-68-3	33.5		5.32	2.66
Hexachlorocyclopentadiene	77-47-4	24.2		5.32	2.66
Hexachloroethane	67-72-1	26.8		5.32	2.66
Indeno(1,2,3-cd)pyrene	193-39-5	53.2		5.32	2.66
Isophorone	78-59-1	55.1		5.32	2.66
Diphenylamine/n-Nitrosodiphenylamine	86-30-6	51.6		5.32	2.66
Naphthalene	91-20-3	34.1		5.32	2.66
Nitrobenzene	98-95-3	43.2		5.32	2.66
Pentachlorophenol	87-86-5	61.5		26.6	13.3
Phenanthrene	85-01-8	54.0		5.32	2.66
Phenol	108-95-2	19.2		5.32	2.66
Pyrene	129-00-0	53.0		5.32	2.66

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	117	10	123	
2-Fluorobiphenyl	94.9	43	116	
2-Fluorophenol	48.6	21	100	
Nitrobenzene-d5	90.9	35	114	
p-Terphenyl-d14	92.1	33	141	
Phenol-d5	34.7	10	94	

U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #:	L17081498-06	**PrePrep Method:**	N/A	**Instrument:**	HPMS12
Client ID:	MW06-082517-MSD	**Prep Method:**	3510C	**Prep Date:**	08/30/2017 12:10
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/03/2017 13:41
Workgroup #:	WG627873	**Analyst:**	SCB	**Run Date:**	08/31/2017 14:01
Collect Date:	08/25/2017 13:54	**Dilution:**	1	**File ID:**	12M64173
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	22.0	2.75
1,3,5-Trinitrobenzene	99-35-4	11.2		5.49	2.75
1,3-Dinitrobenzene	99-65-0	53.2		5.49	2.75
1,4-Dioxane	123-91-1	24.1		11.0	5.49
2,4,5-Trichlorophenol	95-95-4	57.9		5.49	2.75
2,4,6-Trichlorophenol	88-06-2	57.1		5.49	2.75
2,4-Dichlorophenol	120-83-2	55.8		5.49	2.75
2,4-Dimethylphenol	105-67-9	53.7		5.49	2.75
2,4-Dinitrophenol	51-28-5	30.2		27.5	13.7
2,4-Dinitrotoluene	121-14-2	57.0		5.49	2.75
2,6-Dinitrotoluene	606-20-2	58.0		5.49	2.75
2-Chloronaphthalene	91-58-7	46.8		5.49	2.75
2-Chlorophenol	95-57-8	43.3		5.49	2.75
2-Methylnaphthalene	91-57-6	44.2		5.49	2.75
2-Methylphenol	95-48-7	42.7		5.49	2.75
2-Nitroaniline	88-74-4	51.5		27.5	13.7
2-Nitrophenol	88-75-5	51.4		5.49	2.75
3-Nitroaniline	99-09-2	54.2		27.5	13.7
3,3'-Dichlorobenzidine	91-94-1	67.0		5.49	2.75
3-,4-Methylphenol	65794-96-9	39.6		5.49	2.75
4-Bromophenyl-phenylether	101-55-3	53.6		5.49	2.75
4-Chloroaniline	106-47-8	47.7		5.49	2.75
4-Nitrophenol	100-02-7	23.7	J	27.5	13.7
Acenaphthene	83-32-9	51.7		5.49	2.75
Acenaphthylene	208-96-8	53.1		5.49	2.75
Anthracene	120-12-7	54.4		5.49	2.75
Benzo(a)anthracene	56-55-3	60.5		5.49	2.75
Benzo(a)pyrene	50-32-8	59.9		5.49	2.75
Benzo(b)fluoranthene	205-99-2	54.2		5.49	2.75
Benzo(g,h,i)Perylene	191-24-2	63.0		5.49	2.75
Benzo(k)fluoranthene	207-08-9	59.9		5.49	2.75
Benzoic acid	65-85-0	34.6		22.0	11.0
Benzyl alcohol	100-51-6	45.8		5.49	2.75

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bis(2-Chloroethyl)ether	111-44-4	40.6		5.49	2.75
Bis(2-Chloroethoxy)Methane	111-91-1	37.4		5.49	2.75
bis(2-Ethylhexyl)phthalate	117-81-7	59.3		5.49	2.75
Butylbenzylphthalate	85-68-7	61.2		5.49	2.75
Carbazole	86-74-8	58.9		22.0	2.75
Chrysene	218-01-9	64.8		5.49	2.75
Di-N-Butylphthalate	84-74-2	54.6		5.49	2.75
Di-n-octylphthalate	117-84-0	56.8		5.49	2.75
Dibenzo(a,h)Anthracene	53-70-3	35.9		5.49	2.75
Dibenzofuran	132-64-9	52.0		5.49	2.75
Diethylphthalate	84-66-2	54.1		5.49	2.75
Dimethylphthalate	131-11-3	55.5		5.49	2.75
Fluoranthene	206-44-0	54.6		5.49	2.75
Fluorene	86-73-7	54.4		5.49	2.75
Hexachlorobenzene	118-74-1	64.2		5.49	2.75
Hexachlorobutadiene	87-68-3	41.7		5.49	2.75
Hexachlorocyclopentadiene	77-47-4	29.1		5.49	2.75
Hexachloroethane	67-72-1	30.4		5.49	2.75
Indeno(1,2,3-cd)pyrene	193-39-5	56.9		5.49	2.75
Isophorone	78-59-1	51.8		5.49	2.75
Diphenylamine/n-Nitrosodiphenylamine	86-30-6	58.7		5.49	2.75
Naphthalene	91-20-3	41.2		5.49	2.75
Nitrobenzene	98-95-3	43.5		5.49	2.75
Pentachlorophenol	87-86-5	64.7		27.5	13.7
Phenanthrene	85-01-8	56.8		5.49	2.75
Phenol	108-95-2	20.3		5.49	2.75
Pyrene	129-00-0	56.6		5.49	2.75

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	123	10	123	
2-Fluorobiphenyl	102	43	116	
2-Fluorophenol	53.3	21	100	
Nitrobenzene-d5	89.3	35	114	
p-Terphenyl-d14	91.6	33	141	
Phenol-d5	35.7	10	94	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #:	L17081498-06	**PrePrep Method:**	N/A	**Instrument:**	HPMS19
Client ID:	MW06-082517-MSD	**Prep Method:**	3510C	**Prep Date:**	09/06/2017 15:00
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/15/2017 20:30
Workgroup #:	WG628781	**Analyst:**	SCB	**Run Date:**	09/13/2017 17:28
Collect Date:	08/25/2017 13:54	**Dilution:**	1	**File ID:**	19M000547
Sample Tag:	RE	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4	36.6		21.5	2.69
1,3,5-Trinitrobenzene	99-35-4	10.4		5.38	2.69
1,3-Dinitrobenzene	99-65-0	52.2		5.38	2.69
1,4-Dioxane	123-91-1	15.0		10.8	5.38
2,4,5-Trichlorophenol	95-95-4	43.5		5.38	2.69
2,4,6-Trichlorophenol	88-06-2	39.1		5.38	2.69
2,4-Dichlorophenol	120-83-2	36.9		5.38	2.69
2,4-Dimethylphenol	105-67-9	39.9		5.38	2.69
2,4-Dinitrophenol	51-28-5	48.3		26.9	13.4
2,4-Dinitrotoluene	121-14-2	55.1		5.38	2.69
2,6-Dinitrotoluene	606-20-2	49.4		5.38	2.69
2-Chloronaphthalene	91-58-7	30.8		5.38	2.69
2-Chlorophenol	95-57-8	31.3		5.38	2.69
2-Methylnaphthalene	91-57-6	28.9		5.38	2.69
2-Methylphenol	95-48-7	30.5		5.38	2.69
2-Nitroaniline	88-74-4	47.4		26.9	13.4
2-Nitrophenol	88-75-5	35.3		5.38	2.69
3-Nitroaniline	99-09-2	51.2		26.9	13.4
3,3'-Dichlorobenzidine	91-94-1	59.4		5.38	2.69
3-,4-Methylphenol	65794-96-9	28.0		5.38	2.69
4-Bromophenyl-phenylether	101-55-3	44.6		5.38	2.69
4-Chloroaniline	106-47-8	33.8		5.38	2.69
4-Nitrophenol	100-02-7	26.4	J	26.9	13.4
Acenaphthene	83-32-9	39.5		5.38	2.69
Acenaphthylene	208-96-8	37.2		5.38	2.69
Anthracene	120-12-7	51.0		5.38	2.69
Benzo(a)anthracene	56-55-3	53.9		5.38	2.69
Benzo(a)pyrene	50-32-8	55.5		5.38	2.69
Benzo(b)fluoranthene	205-99-2	53.6		5.38	2.69
Benzo(g,h,i)Perylene	191-24-2	62.3		5.38	2.69
Benzo(k)fluoranthene	207-08-9	51.0		5.38	2.69
Benzoic acid	65-85-0	13.2	J	21.5	10.8
Benzyl alcohol	100-51-6	31.0		5.38	2.69

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bis(2-Chloroethyl)ether	111-44-4	30.7		5.38	2.69
Bis(2-Chloroethoxy)Methane	111-91-1	28.4		5.38	2.69
bis(2-Ethylhexyl)phthalate	117-81-7	59.1		5.38	2.69
Butylbenzylphthalate	85-68-7	60.1		5.38	2.69
Carbazole	86-74-8	56.1		21.5	2.69
Chrysene	218-01-9	56.0		5.38	2.69
Di-N-Butylphthalate	84-74-2	53.9		5.38	2.69
Di-n-octylphthalate	117-84-0	60.0		5.38	2.69
Dibenzo(a,h)Anthracene	53-70-3	47.9		5.38	2.69
Dibenzofuran	132-64-9	39.2		5.38	2.69
Diethylphthalate	84-66-2	49.0		5.38	2.69
Dimethylphthalate	131-11-3	45.4		5.38	2.69
Fluoranthene	206-44-0	53.4		5.38	2.69
Fluorene	86-73-7	44.2		5.38	2.69
Hexachlorobenzene	118-74-1	47.5		5.38	2.69
Hexachlorobutadiene	87-68-3	20.9		5.38	2.69
Hexachlorocyclopentadiene	77-47-4	23.6		5.38	2.69
Hexachloroethane	67-72-1	19.2		5.38	2.69
Indeno(1,2,3-cd)pyrene	193-39-5	56.5		5.38	2.69
Isophorone	78-59-1	34.6		5.38	2.69
Diphenylamine/n-Nitrosodiphenylamine	86-30-6	48.4		5.38	2.69
Naphthalene	91-20-3	27.9		5.38	2.69
Nitrobenzene	98-95-3	31.0		5.38	2.69
Pentachlorophenol	87-86-5	63.0		26.9	13.4
Phenanthrene	85-01-8	51.4		5.38	2.69
Phenol	108-95-2	14.0		5.38	2.69
Pyrene	129-00-0	53.7		5.38	2.69

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	106	10	123	
2-Fluorobiphenyl	69.0	43	116	
2-Fluorophenol	37.1	21	100	
Nitrobenzene-d5	65.7	35	114	
p-Terphenyl-d14	90.9	33	141	
Phenol-d5	26.1	10	94	

J	The analyte was positively identified, but the quantitation was below the RL.

Certificate of Analysis

Sample #:	L17081498-07	**PrePrep Method:**	N/A	**Instrument:**	HPMS19
Client ID:	MW10-082517	**Prep Method:**	3510C	**Prep Date:**	09/06/2017 15:00
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/15/2017 20:30
Workgroup #:	WG628781	**Analyst:**	SCB	**Run Date:**	09/13/2017 17:59
Collect Date:	08/25/2017 10:20	**Dilution:**	1	**File ID:**	19M000548
Sample Tag:	RE	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	20.0	2.50
1,3,5-Trinitrobenzene	99-35-4		U	5.00	2.50
1,3-Dinitrobenzene	99-65-0		U	5.00	2.50
1,4-Dioxane	123-91-1		U	10.0	5.00
2,4,5-Trichlorophenol	95-95-4		U	5.00	2.50
2,4,6-Trichlorophenol	88-06-2		U	5.00	2.50
2,4-Dichlorophenol	120-83-2		U	5.00	2.50
2,4-Dimethylphenol	105-67-9		U	5.00	2.50
2,4-Dinitrophenol	51-28-5		U	25.0	12.5
2,4-Dinitrotoluene	121-14-2		U	5.00	2.50
2,6-Dinitrotoluene	606-20-2		U	5.00	2.50
2-Chloronaphthalene	91-58-7		U	5.00	2.50
2-Chlorophenol	95-57-8		U	5.00	2.50
2-Methylnaphthalene	91-57-6		U	5.00	2.50
2-Methylphenol	95-48-7		U	5.00	2.50
2-Nitroaniline	88-74-4		U	25.0	12.5
2-Nitrophenol	88-75-5		U	5.00	2.50
3-Nitroaniline	99-09-2		U	25.0	12.5
3,3'-Dichlorobenzidine	91-94-1		U	5.00	2.50
3-,4-Methylphenol	65794-96-9		U	5.00	2.50
4-Bromophenyl-phenylether	101-55-3		U	5.00	2.50
4-Chloroaniline	106-47-8		U	5.00	2.50
4-Nitrophenol	100-02-7		U	25.0	12.5
Acenaphthene	83-32-9		U	5.00	2.50
Acenaphthylene	208-96-8		U	5.00	2.50
Anthracene	120-12-7		U	5.00	2.50
Benzo(a)anthracene	56-55-3		U	5.00	2.50
Benzo(a)pyrene	50-32-8		U	5.00	2.50
Benzo(b)fluoranthene	205-99-2		U	5.00	2.50
Benzo(g,h,i)Perylene	191-24-2		U	5.00	2.50
Benzo(k)fluoranthene	207-08-9		U	5.00	2.50
Benzoic acid	65-85-0		U	20.0	10.0
Benzyl alcohol	100-51-6		U	5.00	2.50

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bis(2-Chloroethyl)ether	111-44-4		U	5.00	2.50
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.00	2.50
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.00	2.50
Butylbenzylphthalate	85-68-7		U	5.00	2.50
Carbazole	86-74-8		U	20.0	2.50
Chrysene	218-01-9		U	5.00	2.50
Di-N-Butylphthalate	84-74-2		U	5.00	2.50
Di-n-octylphthalate	117-84-0		U	5.00	2.50
Dibenzo(a,h)Anthracene	53-70-3		U	5.00	2.50
Dibenzofuran	132-64-9		U	5.00	2.50
Diethylphthalate	84-66-2		U	5.00	2.50
Dimethylphthalate	131-11-3		U	5.00	2.50
Fluoranthene	206-44-0		U	5.00	2.50
Fluorene	86-73-7		U	5.00	2.50
Hexachlorobenzene	118-74-1		U	5.00	2.50
Hexachlorobutadiene	87-68-3		U	5.00	2.50
Hexachlorocyclopentadiene	77-47-4		U	5.00	2.50
Hexachloroethane	67-72-1		U	5.00	2.50
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.00	2.50
Isophorone	78-59-1		U	5.00	2.50
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.00	2.50
Naphthalene	91-20-3		U	5.00	2.50
Nitrobenzene	98-95-3		U	5.00	2.50
Pentachlorophenol	87-86-5		U	25.0	12.5
Phenanthrene	85-01-8		U	5.00	2.50
Phenol	108-95-2		U	5.00	2.50
Pyrene	129-00-0		U	5.00	2.50

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	71.3	10	123	
2-Fluorobiphenyl	57.8	43	116	
2-Fluorophenol	33.0	21	100	
Nitrobenzene-d5	59.3	35	114	
p-Terphenyl-d14	83.0	33	141	
Phenol-d5	21.7	10	94	

U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #:	L17081498-07	**PrePrep Method:**	N/A	**Instrument:**	HPMS12
Client ID:	MW10-082517	**Prep Method:**	3510C	**Prep Date:**	08/30/2017 12:10
Matrix:	Water	**Analytical Method:**	8270D	**Cal Date:**	08/03/2017 13:41
Workgroup #:	WG627873	**Analyst:**	SCB	**Run Date:**	08/31/2017 14:31
Collect Date:	08/25/2017 10:20	**Dilution:**	1	**File ID:**	12M64174
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	20.0	2.50
1,3,5-Trinitrobenzene	99-35-4		U	5.00	2.50
1,3-Dinitrobenzene	99-65-0		U	5.00	2.50
1,4-Dioxane	123-91-1		U	10.0	5.00
2,4,5-Trichlorophenol	95-95-4		U	5.00	2.50
2,4,6-Trichlorophenol	88-06-2		U	5.00	2.50
2,4-Dichlorophenol	120-83-2		U	5.00	2.50
2,4-Dimethylphenol	105-67-9		U	5.00	2.50
2,4-Dinitrophenol	51-28-5		U	25.0	12.5
2,4-Dinitrotoluene	121-14-2		U	5.00	2.50
2,6-Dinitrotoluene	606-20-2		U	5.00	2.50
2-Chloronaphthalene	91-58-7		U	5.00	2.50
2-Chlorophenol	95-57-8		U	5.00	2.50
2-Methylnaphthalene	91-57-6		U	5.00	2.50
2-Methylphenol	95-48-7		U	5.00	2.50
2-Nitroaniline	88-74-4		U	25.0	12.5
2-Nitrophenol	88-75-5		U	5.00	2.50
3-Nitroaniline	99-09-2		U	25.0	12.5
3,3'-Dichlorobenzidine	91-94-1		U	5.00	2.50
3-,4-Methylphenol	65794-96-9		U	5.00	2.50
4-Bromophenyl-phenylether	101-55-3		U	5.00	2.50
4-Chloroaniline	106-47-8		U	5.00	2.50
4-Nitrophenol	100-02-7		U	25.0	12.5
Acenaphthene	83-32-9		U	5.00	2.50
Acenaphthylene	208-96-8		U	5.00	2.50
Anthracene	120-12-7		U	5.00	2.50
Benzo(a)anthracene	56-55-3		U	5.00	2.50
Benzo(a)pyrene	50-32-8		U	5.00	2.50
Benzo(b)fluoranthene	205-99-2		U	5.00	2.50
Benzo(g,h,i)Perylene	191-24-2		U	5.00	2.50
Benzo(k)fluoranthene	207-08-9		U	5.00	2.50
Benzoic acid	65-85-0		U	20.0	10.0
Benzyl alcohol	100-51-6		U	5.00	2.50

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Bis(2-Chloroethyl)ether	111-44-4		U	5.00	2.50
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.00	2.50
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.00	2.50
Butylbenzylphthalate	85-68-7		U	5.00	2.50
Carbazole	86-74-8		U	20.0	2.50
Chrysene	218-01-9		U	5.00	2.50
Di-N-Butylphthalate	84-74-2		U	5.00	2.50
Di-n-octylphthalate	117-84-0		U	5.00	2.50
Dibenzo(a,h)Anthracene	53-70-3		U	5.00	2.50
Dibenzofuran	132-64-9		U	5.00	2.50
Diethylphthalate	84-66-2		U	5.00	2.50
Dimethylphthalate	131-11-3		U	5.00	2.50
Fluoranthene	206-44-0		U	5.00	2.50
Fluorene	86-73-7		U	5.00	2.50
Hexachlorobenzene	118-74-1		U	5.00	2.50
Hexachlorobutadiene	87-68-3		U	5.00	2.50
Hexachlorocyclopentadiene	77-47-4		U	5.00	2.50
Hexachloroethane	67-72-1		U	5.00	2.50
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.00	2.50
Isophorone	78-59-1		U	5.00	2.50
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.00	2.50
Naphthalene	91-20-3		U	5.00	2.50
Nitrobenzene	98-95-3		U	5.00	2.50
Pentachlorophenol	87-86-5		U	25.0	12.5
Phenanthrene	85-01-8		U	5.00	2.50
Phenol	108-95-2		U	5.00	2.50
Pyrene	129-00-0		U	5.00	2.50

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	109	10	123	
2-Fluorobiphenyl	85.8	43	116	
2-Fluorophenol	46.1	21	100	
Nitrobenzene-d5	73.3	35	114	
p-Terphenyl-d14	90.6	33	141	
Phenol-d5	30.5	10	94	

U	Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #: L17081498-07 | **PrePrep Method:** N/A | **Instrument:** HPMS12
Client ID: MW10-082517 | **Prep Method:** 3510C | **Prep Date:** 08/30/2017 12:10
Matrix: Water | **Analytical Method:** 8270D | **Cal Date:** 08/03/2017 13:41
Workgroup #: WG627873 | **Analyst:** SCB | **Run Date:** 08/31/2017 14:31
Collect Date: 08/25/2017 10:20 | **Dilution:** 1 | **File ID:** 12M64174
Sample Tag: 01 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
n-Hexadecanoic acid		6.22		0.000	0.000
UNKNOWN		5.24		0.000	0.000
UNKNOWN2		5.51		0.000	0.000
UNKNOWN3		5.82		0.000	0.000
UNKNOWN4		4.52		0.000	0.000
UNKNOWN5		7.13		0.000	0.000
Hexadecane		7.82		0.000	0.000
Eicosane		11.7		0.000	0.000
Eicosane		14.1		0.000	0.000
Tetratriacontane		13.6		0.000	0.000
Tetratriacontane		9.18		0.000	0.000
UNKNOWN6		5.02		0.000	0.000
UNKNOWN7		5.96		0.000	0.000

Sample #: L17081498-09 | **PrePrep Method:** N/A | **Instrument:** HPMS19
Client ID: MW20-082517 | **Prep Method:** 3510C | **Prep Date:** 09/06/2017 15:00
Matrix: Water | **Analytical Method:** 8270D | **Cal Date:** 08/15/2017 20:30
Workgroup #: WG628781 | **Analyst:** SCB | **Run Date:** 09/13/2017 18:29
Collect Date: 08/25/2017 14:10 | **Dilution:** 1 | **File ID:** 19M000549
Sample Tag: RE | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	21.1	2.63
1,3,5-Trinitrobenzene	99-35-4		U	5.26	2.63
1,3-Dinitrobenzene	99-65-0		U	5.26	2.63
1,4-Dioxane	123-91-1		U	10.5	5.26
2,4,5-Trichlorophenol	95-95-4		U	5.26	2.63
2,4,6-Trichlorophenol	88-06-2		U	5.26	2.63
2,4-Dichlorophenol	120-83-2		U	5.26	2.63
2,4-Dimethylphenol	105-67-9		U	5.26	2.63
2,4-Dinitrophenol	51-28-5		U	26.3	13.2
2,4-Dinitrotoluene	121-14-2		U	5.26	2.63
2,6-Dinitrotoluene	606-20-2		U	5.26	2.63

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
2-Chloronaphthalene	91-58-7		U	5.26	2.63
2-Chlorophenol	95-57-8		U	5.26	2.63
2-Methylnaphthalene	91-57-6		U	5.26	2.63
2-Methylphenol	95-48-7		U	5.26	2.63
2-Nitroaniline	88-74-4		U	26.3	13.2
2-Nitrophenol	88-75-5		U	5.26	2.63
3-Nitroaniline	99-09-2		U	26.3	13.2
3,3'-Dichlorobenzidine	91-94-1		U	5.26	2.63
3-,4-Methylphenol	65794-96-9		U	5.26	2.63
4-Bromophenyl-phenylether	101-55-3		U	5.26	2.63
4-Chloroaniline	106-47-8		U	5.26	2.63
4-Nitrophenol	100-02-7		U	26.3	13.2
Acenaphthene	83-32-9		U	5.26	2.63
Acenaphthylene	208-96-8		U	5.26	2.63
Anthracene	120-12-7		U	5.26	2.63
Benzo(a)anthracene	56-55-3		U	5.26	2.63
Benzo(a)pyrene	50-32-8		U	5.26	2.63
Benzo(b)fluoranthene	205-99-2		U	5.26	2.63
Benzo(g,h,i)Perylene	191-24-2		U	5.26	2.63
Benzo(k)fluoranthene	207-08-9		U	5.26	2.63
Benzoic acid	65-85-0		U	21.1	10.5
Benzyl alcohol	100-51-6		U	5.26	2.63
Bis(2-Chloroethyl)ether	111-44-4		U	5.26	2.63
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.26	2.63
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.26	2.63
Butylbenzylphthalate	85-68-7		U	5.26	2.63
Carbazole	86-74-8		U	21.1	2.63
Chrysene	218-01-9		U	5.26	2.63
Di-N-Butylphthalate	84-74-2		U	5.26	2.63
Di-n-octylphthalate	117-84-0		U	5.26	2.63
Dibenzo(a,h)Anthracene	53-70-3		U	5.26	2.63
Dibenzofuran	132-64-9		U	5.26	2.63
Diethylphthalate	84-66-2		U	5.26	2.63
Dimethylphthalate	131-11-3		U	5.26	2.63
Fluoranthene	206-44-0		U	5.26	2.63
Fluorene	86-73-7		U	5.26	2.63
Hexachlorobenzene	118-74-1		U	5.26	2.63
Hexachlorobutadiene	87-68-3		U	5.26	2.63
Hexachlorocyclopentadiene	77-47-4		U	5.26	2.63

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Hexachloroethane	67-72-1		U	5.26	2.63
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.26	2.63
Isophorone	78-59-1		U	5.26	2.63
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.26	2.63
Naphthalene	91-20-3		U	5.26	2.63
Nitrobenzene	98-95-3		U	5.26	2.63
Pentachlorophenol	87-86-5		U	26.3	13.2
Phenanthrene	85-01-8		U	5.26	2.63
Phenol	108-95-2		U	5.26	2.63
Pyrene	129-00-0		U	5.26	2.63

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	67.7	10	123	
2-Fluorobiphenyl	67.3	43	116	
2-Fluorophenol	37.2	21	100	
Nitrobenzene-d5	67.4	35	114	
p-Terphenyl-d14	86.5	33	141	
Phenol-d5	24.5	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09
Client ID: MW20-082517
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 14:10
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 15:04
File ID: 12M64175

Analyte	CAS #	Result	Qual	RL	MDL
1,1'-Biphenyl	92-52-4		U	20.2	2.53
1,3,5-Trinitrobenzene	99-35-4		U	5.05	2.53
1,3-Dinitrobenzene	99-65-0		U	5.05	2.53
1,4-Dioxane	123-91-1		U	10.1	5.05
2,4,5-Trichlorophenol	95-95-4		U	5.05	2.53
2,4,6-Trichlorophenol	88-06-2		U	5.05	2.53
2,4-Dichlorophenol	120-83-2		U	5.05	2.53
2,4-Dimethylphenol	105-67-9		U	5.05	2.53
2,4-Dinitrophenol	51-28-5		U	25.3	12.6
2,4-Dinitrotoluene	121-14-2		U	5.05	2.53
2,6-Dinitrotoluene	606-20-2		U	5.05	2.53
2-Chloronaphthalene	91-58-7		U	5.05	2.53
2-Chlorophenol	95-57-8		U	5.05	2.53

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	5.05	2.53
2-Methylphenol	95-48-7		U	5.05	2.53
2-Nitroaniline	88-74-4		U	25.3	12.6
2-Nitrophenol	88-75-5		U	5.05	2.53
3-Nitroaniline	99-09-2		U	25.3	12.6
3,3'-Dichlorobenzidine	91-94-1		U	5.05	2.53
3-,4-Methylphenol	65794-96-9		U	5.05	2.53
4-Bromophenyl-phenylether	101-55-3		U	5.05	2.53
4-Chloroaniline	106-47-8		U	5.05	2.53
4-Nitrophenol	100-02-7		U	25.3	12.6
Acenaphthene	83-32-9		U	5.05	2.53
Acenaphthylene	208-96-8		U	5.05	2.53
Anthracene	120-12-7		U	5.05	2.53
Benzo(a)anthracene	56-55-3		U	5.05	2.53
Benzo(a)pyrene	50-32-8		U	5.05	2.53
Benzo(b)fluoranthene	205-99-2		U	5.05	2.53
Benzo(g,h,i)Perylene	191-24-2		U	5.05	2.53
Benzo(k)fluoranthene	207-08-9		U	5.05	2.53
Benzoic acid	65-85-0		U	20.2	10.1
Benzyl alcohol	100-51-6		U	5.05	2.53
Bis(2-Chloroethyl)ether	111-44-4		U	5.05	2.53
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.05	2.53
bis(2-Ethylhexyl)phthalate	117-81-7		U	5.05	2.53
Butylbenzylphthalate	85-68-7		U	5.05	2.53
Carbazole	86-74-8		U	20.2	2.53
Chrysene	218-01-9		U	5.05	2.53
Di-N-Butylphthalate	84-74-2		U	5.05	2.53
Di-n-octylphthalate	117-84-0		U	5.05	2.53
Dibenzo(a,h)Anthracene	53-70-3		U	5.05	2.53
Dibenzofuran	132-64-9		U	5.05	2.53
Diethylphthalate	84-66-2		U	5.05	2.53
Dimethylphthalate	131-11-3		U	5.05	2.53
Fluoranthene	206-44-0		U	5.05	2.53
Fluorene	86-73-7		U	5.05	2.53
Hexachlorobenzene	118-74-1		U	5.05	2.53
Hexachlorobutadiene	87-68-3		U	5.05	2.53
Hexachlorocyclopentadiene	77-47-4		U	5.05	2.53
Hexachloroethane	67-72-1		U	5.05	2.53
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.05	2.53

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Isophorone	78-59-1		U	5.05	2.53
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	5.05	2.53
Naphthalene	91-20-3		U	5.05	2.53
Nitrobenzene	98-95-3		U	5.05	2.53
Pentachlorophenol	87-86-5		U	25.3	12.6
Phenanthrene	85-01-8		U	5.05	2.53
Phenol	108-95-2		U	5.05	2.53
Pyrene	129-00-0		U	5.05	2.53

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	114	10	123	
2-Fluorobiphenyl	97.1	43	116	
2-Fluorophenol	51.9	21	100	
Nitrobenzene-d5	84.4	35	114	
p-Terphenyl-d14	94.5	33	141	
Phenol-d5	32.7	10	94	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09
Client ID: MW20-082517
Matrix: Water
Workgroup #: WG627873
Collect Date: 08/25/2017 14:10
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D
Analyst: SCB
Dilution: 1
Units: ug/L

Instrument: HPMS12
Prep Date: 08/30/2017 12:10
Cal Date: 08/03/2017 13:41
Run Date: 08/31/2017 15:04
File ID: 12M64175

Analyte	CAS #	Result	Qual	RL	MDL
UNKNOWN		4.53		0.000	0.000
UNKNOWN2		14.1		0.000	0.000
UNKNOWN3		5.44		0.000	0.000
UNKNOWN4		6.81		0.000	0.000
Tetratriacontane		5.64		0.000	0.000
UNKNOWN5		8.10		0.000	0.000
Nonadecane, 2,3-dimethyl-		8.24		0.000	0.000
Heptadecane		11.5		0.000	0.000
Eicosane		10.3		0.000	0.000
UNKNOWN6		5.82		0.000	0.000
Tetratriacontane		6.83		0.000	0.000
UNKNOWN7		5.06		0.000	0.000

Certificate of Analysis

2.2.1.2 QC Summary Data

Example 8270 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	1261197
Cis = Concentration of the specific internal standard (ug/mL)	40
Ais = Area of the characteristic ion of the specific internal standard	608044
Cx = Concentration of the compound in the standard being measured (ug/mL)	50
RF = Calculated Response Factor	**1.65935**

2.0 Calculating the concentration (C) of a compound in water using the data from the prep log and quantitation report: *

Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Vi)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Vi = Initial volume of sample extracted from prep log (mL)	1021
Cx = Concentration of the compound in the sample being measured (ug/mL)	0.016947
Cx = Concentration of the compound in the sample being measured (ug/L)	**16.947**

3.0 Calculating the concentration (C) of a compound in soil using the data from the prep log and quantitation report: *

Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Wi)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Wi = Initial weight of sample extracted (g) from prep log	30
Cx = Concentration of the compound in the sample being measured (ug/g)	0.576763
Cx = Concentration of the compound in the sample being measured (ug/kg)	**576.7627**

Dry weight correction:

Percent solids (PCT_S)	50
Cd = (Cx) (100)/PCT_S	**1153.525** ug/kg

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

x = (y - b)/m = [(0.02139 -(- 0.0435)]/ 0.0783 = 0.829

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.829) = 20.72 ug/L

Example Spreadsheet Calculation:

Slope from curve, m:	0.0783	
Intercept from curve, b:	-0.0435	
Area of analyte, Ax:	16790	
Area of Internal Standard , Ais:	784484	
Concentration of IS, Cis	25.00	ug/L
Response Ratio (y) :	0.021403	
Amount Ratio:	0.828897	
Concentration (Cx):	20.72241	ug/L

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**0.0259**	
Value of B from plot:	**0.0596**	
Value of C from plot:	**-0.0165**	
Area of analyte from quantitation report:	**203233**	
Area of IS from quantiation report:	**1425653**	
Response ratio, y:	**0.142554**	
C - y:	**-0.15905**	
Root 1 - Computed amount ratio , X1:	**-3.88278**	
Root 2 - Computed amount ratio , X2:	**1.581623**	use this solution
Concentration of IS, Cis:	**40.00**	
Concentration of analyte, Cx:	**63.26**	ug/L

Microbac Laboratories Inc.
Sample Extract Log

Workgroup: WG627757
Analyst: JDH
Spike Analyst: JDH
Method: 3510C
Run Date: 08/30/2017 12:10
SOP: EXB08 Revision 16
Spike Witness: JLD
Surr Solution: STD82960

METHYLENE CHLORIDE Lot #: COA19844
Na2SO4, Anhydrous, Granular Lot #: COA19759
10N NaOH Lot #: RGT40456
1:1 H2SO4 Lot #: RGT40290

	SAMPLE #	Type	Reference	pH	Prod	Init Amnt	Surr Amnt	Spike Amnt	Spike Sol	Final Vol	Color
1	L17081454-01	SAMP			827-TC	100 mL	.5 mL			1 mL	Transparent
2	L17081464-01	SAMP			827-SPE-DIO	980 mL	.5 mL			1 mL	Transparent
3	L17081466-01	SAMP			827-SPE-DIO	1000 mL	.5 mL			1 mL	Colored
4	L17081498-01	SAMP			827-SPE-DIO	940 mL	.5 mL			1 mL	Colored
5	L17081498-03	RS01			827-SPE-DIO	950 mL	.5 mL			1 mL	Transparent
6	L17081498-05	MS01	L17081498-03		827-SPE-DIO	940 mL	.5 mL	.5 mL	STD82689	1 mL	Colored
7	L17081498-06	SD01	L17081498-03		827-SPE-DIO	910 mL	.5 mL	.5 mL	STD82689	1 mL	Colored
8	L17081498-07	SAMP			827-SPE-DIO	1000 mL	.5 mL			1 mL	Transparent
9	L17081498-09	SAMP			827-SPE-DIO	990 mL	.5 mL			1 mL	Transparent
10	WG627606-01	FBLK2			827-TC	100 mL	.5 mL			1 mL	Transparent
11	WG627757-01	BLANK			827-TC	100 mL	.5 mL			1 mL	Transparent
12	WG627757-02	LCS			827-TC	100 mL	.5 mL	.5 mL	STD82689	1 mL	Colored
13	WG627757-03	REF	L17081498-03		827-SPE-DIO	950 mL	.5 mL			1 mL	Transparent
14	WG627757-04	MS	L17081498-03		827-SPE-DIO	940 mL	.5 mL	.5 mL	STD82689	1 mL	Colored
15	WG627757-05	MSD	L17081498-03		827-SPE-DIO	910 mL	.5 mL	.5 mL	STD82689	1 mL	Colored

Due to insufficient sample volume, this preparation batch failed to include the method prescribed MS and MSD.

pH lot # 230515/213515

Analyst: Justin Hesson

Reviewer: Jessica DeLong

EXTRACT - Modified 10/22/2008
PDF ID: 5455720
Report generated: 08/30/2017 15:25

TCLP Non-Volatile

Analyst(s): BNB
Date: 8-29-17
Filter Lot #: 94810030
Microbac SOP: TCLP01 Rev #: 12

Balance ID: BAL020
pH Probe ID: 15
Temp probe ID: ☒1025 ☐1023

Analyst / Date		Analyst / Date	
BNB 8-29-17		BNB 8-30-17	
Time On	Temp On °C	Time Off	Temp Off °C
15:35	23.6	7:40	22.0

Agitator Speed 30 ± 2 rpm ☑

Jug #	Sample #	Tests	Method	Fluid #	Matrix *	% Solid	Pretest pH Initial	Pretest pH Final	Int. Wt. (g)	Fluid Vol. (mL)	Final extract pH
32	08-1454-01	Me,SV	1311	Fl 401	S	100	9.21	6.35	100.44	2008	4.91
NA	08-1483-01	Me	〃	FIL	W	<0.5	NA	NA	100	100	8.95
NA	FBIK-2	Me,SV	1311	Fl 401	NA	NA	〃	〃	〃	〃	2.83
NA	08-1541-01	Me	1311	Fl-270	S	100	4.09	4.09	100.25	2005	4.88
NA	FBIK-1	Me	〃	〃	NA	NA	NA	NA	100	100	4.93

BNB 8-30-17

*Matrix Code: (S = solid, sand, soil or sludge) (P = paint) (O = organic) (W = water or aqueous waste)
D = Disposable plastic jug
TCLP Pretest weight will be 5.0 g (± 0.1) unless otherwise noted.
Temperature shall be maintained at 23° ± 2 for 18 ± 2 hours unless otherwise noted.

Comments: NA

Peer Review By:

Microbac Laboratories Inc.
Sample Extract Log

Workgroup: WG628510
Analyst: JLD
Spike Analyst: JLD
Method: 3510C
Run Date: 09/06/2017 15:00
SOP: EXB08 Revision 16
Spike Witness: JDH
Surr Solution: STD82960

METHYLENE CHLORIDE Lot #: COA19844
Na2SO4, Anhydrous, Granular Lot #: COA19759
1:1 H2SO4 Lot #: RGT40290
10N NaOH Lot #: RGT40951

	SAMPLE #	Type	Reference	pH	Prod	Init Amnt	Surr Amnt	Spike Amnt	Spike Sol	Final Vol	Color
1	L17081464-01	SAMP		<2>12	827-SPE-DIO	1000 mL	.5 mL			1 mL	Colored
2	L17081466-01	SAMP		<2>12	827-SPE-DIO	1000 mL	.5 mL			1 mL	Colored
3	L17081498-01	SAMP		<2>12	827-SPE-DIO	880 mL	.5 mL			1 mL	Colored
4	L17081498-03	RS01		<2>12	827-SPE-DIO	940 mL	.5 mL			1 mL	Transparent
5	L17081498-05	MS01	L17081498-03	<2>12	827-SPE-DIO	910 mL	.5 mL	.5 mL	STD82691	1 mL	Colored
6	L17081498-06	SD01	L17081498-03	<2>12	827-SPE-DIO	930 mL	.5 mL	.5 mL	STD82691	1 mL	Colored
7	L17081498-07	SAMP		<2>12	827-SPE-DIO	1000 mL	.5 mL			1 mL	Transparent
8	L17081498-09	SAMP		<2>12	827-SPE-DIO	950 mL	.5 mL			1 mL	Transparent
9	L17090208-01	SAMP		<2>12	827-TC	100 mL	.5 mL			1 mL	Colored
10	WG628510-01	BLANK			827-SPE-DIO	1000 mL	.5 mL			1 mL	Transparent
11	WG628510-02	LCS			827-SPE-DIO	1000 mL	.5 mL	.5 mL	STD82691	1 mL	Transparent
12	WG628510-03	LCS2			827-SPE-DIO	1000 mL	.5 mL	.5 mL	STD82691	1 mL	Transparent
13	WG628510-04	REF	L17081498-03	<2>12	827-SPE-DIO	940 mL	.5 mL			1 mL	Transparent
14	WG628510-05	MS	L17081498-03	<2>12	827-SPE-DIO	910 mL	.5 mL	.5 mL	STD82691	1 mL	Colored
15	WG628510-06	MSD	L17081498-03	<2>12	827-SPE-DIO	930 mL	.5 mL	.5 mL	STD82691	1 mL	Colored

TV1P5,6
pH 0-3 Lot#230515
pH 10-12 Lot#213515

L17081464-01	RE-EXT OUT OF HOLD
L17081466-01	RE-EXT OUT OF HOLD
L17081498-01	RE-EXT OUT OF HOLD
L17081498-03	RE-EXT OUT OF HOLD
L17081498-05	RE-EXT OUT OF HOLD
L17081498-06	RE-EXT OUT OF HOLD
L17081498-07	RE-EXT OUT OF HOLD
L17081498-09	RE-EXT OUT OF HOLD
WG628510-04	RE-EXT OUT OF HOLD
WG628510-05	RE-EXT OUT OF HOLD
WG628510-06	RE-EXT OUT OF HOLD

Analyst: Jessica DeLong

Reviewer: Justin Hesson

EXTRACT - Modified 10/22/2008
PDF ID: 5464921
Report generated: 09/07/2017 09:06

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS12 Dataset: 071417
Analyst1: SCB Analyst2: NA
Method: 8270C/D SOP: MSS01 Rev: 28
Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG621882, WG621894

Internal STD: COA19796 Surrogate STD: NA Calibration STD
CCV STD: STD81744, 81291 LCS STD: MS/MSD STD:

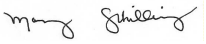
Comments: p-phenylenediamine for 625 only, not for 8270

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	12M63379	RINSE W/IS	1	1		07/14/17 13:48
2	12M63380	RINSE W/IS	1	1		07/14/17 14:21
3	12M63381	RINSE W/IS	1	1		07/14/17 14:54
4	12M63382	RINSE W/IS	1	1		07/14/17 15:34
5	12M63383	WG621882-01 50PPM DFTPP STD	1	1	STD80383	07/14/17 16:06
6	12M63384	WG621882-02 50PPM 8270 STD	1	1	STD81744	07/14/17 16:30
7	12M63385	WG621882-03 1PPM 8270 STD	1	1	STD81744	07/14/17 17:03
8	12M63386	WG621882-04 3PPM 8270 STD	1	1	STD81744	07/14/17 17:36
9	12M63387	WG621882-05 10PPM 8270 STD	1	1	STD81744	07/14/17 18:09
10	12M63388	WG621882-06 15PPM 8270 STD	1	1	STD81744	07/14/17 18:42
11	12M63389	WG621882-07 25PPM 8270 STD	1	1	STD81744	07/14/17 19:15
12	12M63390	WG621882-08 80PPM 8270 STD	1	1	STD81744	07/14/17 19:48
13	12M63391	WG621882-09 100PPM 8270 STD	1	1	STD81744	07/14/17 20:21
14	12M63392	WG621882-10 120PPM 8270 STD	1	1	STD81744	07/14/17 20:54
15	12M63393	WG621882-11 50PPM 8270 ALT SRC	1	1	STD81294	07/14/17 21:27
16	12M63394	WG621882-12 50PPM MP,A9,BENZ ALT SRC	1	1	STD82728	07/14/17 22:00
17	12M63395	WG621882-13 50PPM 1,4-DIOX ALT SRC	1	1	STD81996	07/14/17 22:33
18	12M63396	WG621894-01 50PPM TCL/A-TERP STD	1	1	STD81291	07/14/17 23:06
19	12M63397	WG621894-02 3PPM TCL/A-TERP STD	1	1	STD81291	07/14/17 23:39
20	12M63398	WG621894-03 10PPM TCL/A-TERP STD	1	1	STD81291	07/15/17 00:12
21	12M63399	WG621894-04 25PPM TCL/A-TERP STD	1	1	STD81291	07/15/17 00:45
22	12M63400	WG621894-05 80PPM TCL/A-TERP STD	1	1	STD81291	07/15/17 01:18
23	12M63401	WG621894-06 100PPM TCL/A-TERP STD	1	1	STD81291	07/15/17 01:51
24	12M63402	WG621894-07 120PPM TCL/A-TERP STD	1	1	STD81291	07/15/17 02:23
25	12M63403	WG621894-08 50PPM TCL/A-TERP ALT SRC	1	1	STD81289	07/15/17 02:56
26	12M63404	BAKE OUT	1	1		07/15/17 03:29
27	12M63405	BAKE OUT	1	1		07/15/17 04:01

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 17-JUL-17



Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS12 Dataset: 080317
Analyst1: MES Analyst2: NA
Method: 8270C/D SOP: MSS01 Rev: 28
Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG624321

Internal STD: COA19796 Surrogate STD: NA Calibration STD
CCV STD: STD81744,STD81126 LCS STD: STD81294,STD81996,ST MS/MSD STD:

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	12M63784	WG624321-01 50PPM DFTPP STD	1	1	STD80383	08/03/17 09:00
2	12M63785	WG624321-02 50PPM 8270 STD	1	1	STD81744	08/03/17 09:18
3	12M63786	WG624321-03 1 PPM 8270 STD	1	1	STD81744	08/03/17 09:51
4	12M63787	WG624321-04 3 PPM 8270 STD	1	1	STD81744	08/03/17 10:24
5	12M63788	WG624321-05 10 PPM 8270 STD	1	1	STD81744	08/03/17 10:57
6	12M63789	WG624321-06 15 PPM 8270 STD	1	1	STD81744	08/03/17 11:29
7	12M63790	WG624321-07 25 PPM 8270 STD	1	1	STD81744	08/03/17 12:02
8	12M63791	WG624321-08 80 PPM 8270 STD	1	1	STD81744	08/03/17 12:35
9	12M63792	WG624321-09 100 PPM 8270 STD	1	1	STD81744	08/03/17 13:08
10	12M63793	WG624321-10 120 PPM 8270 STD	1	1	STD81744	08/03/17 13:41
11	12M63794	WG624321-11 50PPM 8270 ALT SOURCE	1	1	STD81294	08/03/17 14:13
12	12M63795	WG624321-12 50PPM 1,4-DIOXANE ALT SOURC	1	1	STD81996	08/03/17 14:58
13	12M63796	WG624321-11 50PPM MM ALT SOURCE	1	1	STD81294	08/03/17 15:28
14	12M63797	WG624321-13 50PPM APPIX/MP/BENZIDINE ALT	1	1	STD82728	08/03/17 16:00
15	12M63798	500PPM KEPONE STD	1	1	STD81126	08/03/17 16:30
16	12M63799	WG623878-01 BLANK 8/1	1	1		08/03/17 17:03
17	12M63800	WG623878-02 LCS 8/1	1	1		08/03/17 17:36
18	12M63801	WG623878-03 LCSDUP 8/1	1	1		08/03/17 18:08
19	12M63802	L17071382-01	1	1		08/03/17 18:41
20	12M63803	L17071382-06	1	1		08/03/17 19:14
21	12M63804	L17071382-11	1	1		08/03/17 19:47
22	12M63805	L17071382-16	1	1		08/03/17 20:20
23	12M63806	L17071382-56	1	1		08/03/17 20:53
24	12M63807	L17071382-61	1	1		08/03/17 21:26
25	12M63808	BAKEOUT	1	1		08/03/17 21:59
26	12M63809	BAKEOUT	1	1		08/03/17 22:31
27	12M63810	BAKEOUT	1	1		08/03/17 23:04

Comments

Seq.	Rerun	Dil.	Reason	Analytes
11				
	WG624321-11 50PPM 8270 ALT SOURCE DNR-remix and rerun.			
24	X	1	Missed Tune	

Page: 1 Approved: 07-AUG-17

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS12 Dataset: 080317

Analyst1: MES Analyst2: NA

Method: 8270C/D SOP: MSS01 Rev: 28

Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:

Eluent ID#:

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG624321

Internal STD: COA19796 Surrogate STD: NA

CCV STD: STD81744,STD81126 LCS STD: STD81294,STD81996,ST

Comments

Seq.	Rerun	Dil.	Reason	Analytes

L17071382-61

Page: 2 Approved: 07-AUG-17

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS19 Dataset: 081517
Analyst1: SCB Analyst2: NA
Method: 8270C/D SOP: MSS01 Rev: 28
Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Workgroups: Column 1 ID: RXI-5MS Column 2 ID: NA
WG625881
Internal STD: COA19796 Surrogate STD: NA Calibration STD
CCV STD: STD81744 LCS STD: MS/MSD STD:

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	19M000300	RINSE W/IS	1	1		08/15/17 12:13
2	19M000301	RINSE W/IS	1	1		08/15/17 13:45
3	19M000302	RINSE W/IS	1	1		08/15/17 14:15
4	19M000303	RINSE W/IS	1	1		08/15/17 14:49
5	19M000305	RINSE W/IS	1	1		08/15/17 15:44
6	19M000306	WG625881-01 50PPM DFTPP	1	1	STD83235	08/15/17 16:11
7	19M000307	WG625881-02 50PPM 8270 STD	1	1	STD81744	08/15/17 16:29
8	19M000308	WG625881-03 1PPM 8270 STD	1	1	STD81744	08/15/17 16:59
9	19M000309	WG625881-04 3PPM 8270 STD	1	1	STD81744	08/15/17 17:30
10	19M000310	WG625881-05 10PPM 8270 STD	1	1	STD81744	08/15/17 18:00
11	19M000311	WG625881-06 15PPM 8270 STD	1	1	STD81744	08/15/17 18:30
12	19M000312	WG625881-07 25PPM 8270 STD	1	1	STD81744	08/15/17 19:00
13	19M000313	WG625881-08 80PPM 8270 STD	1	1	STD81744	08/15/17 19:30
14	19M000314	WG625881-09 100PPM 8270 STD	1	1	STD81744	08/15/17 20:00
15	19M000315	WG625881-10 120PPM 8270 STD	1	1	STD81744	08/15/17 20:30
16	19M000316	WG625881-11 50PPM 8270 ALT SRC	1	1	STD81294	08/15/17 21:00
17	19M000317	WG625881-12 50PPM 1,4-DIOX ALT SRC	1	1	STD81996	08/15/17 21:30
18	19M000318	WG625881-13 50PPM MP,A9,BENZ ALT SRC	1	1	STD82728	08/15/17 22:01
19	19M000319	BAKE OUT	1	1		08/15/17 22:31
20	19M000320	BAKE OUT	1	1		08/15/17 23:01

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 18-AUG-17

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS19 Dataset: 081617
Analyst1: SCB Analyst2: NA
Method: 8270C/D SOP: MSS01 Rev: 28
Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Workgroups: Column 1 ID: RXI-5MS Column 2 ID: NA
WG626039, WG626047
Internal STD: COA19796 Surrogate STD: NA Calibration STD
CCV STD: STD81291, 82937 LCS STD: MS/MSD STD:

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	19M000321	WG626039-01 50PPM DFTPP	1	1	STD83235	08/16/17 11:35
2	19M000322	WG626039-01 50PPM DFTPP	1	1	STD83235	08/16/17 11:56
3	19M000323	WG626039-02 50PPM TCL/A-TERP STD	1	1	STD81291	08/16/17 12:14
4	19M000324	WG626039-03 3PPM TCL/A-TERP STD	1	1	STD81291	08/16/17 12:44
5	19M000325	WG626039-04 10PPM TCL/A-TERP STD	1	1	STD81291	08/16/17 13:14
6	19M000326	WG626039-05 25PPM TCL/A-TERP STD	1	1	STD81291	08/16/17 13:45
7	19M000327	WG626039-06 80PPM TCL/A-TERP STD	1	1	STD81291	08/16/17 14:15
8	19M000328	WG626039-07 100PPM TCL/A-TERP STD	1	1	STD81291	08/16/17 14:45
9	19M000329	WG626039-08 120PPM TCL/A-TERP STD	1	1	STD81291	08/16/17 15:15
10	19M000330	WG626039-09 50PPM TCL/A-TERP ALT SRC	1	1	STD81289	08/16/17 15:45
11	19M000331	WG626047-01 50PPM PERYLENE STD	1	1	STD82937	08/16/17 16:15
12	19M000332	WG626047-02 5PPM PERYLENE STD	1	1	STD82937	08/16/17 16:46
13	19M000333	WG626047-03 10PPM PERYLENE STD	1	1	STD82937	08/16/17 17:16
14	19M000334	WG626047-04 25PPM PERYLENE STD	1	1	STD82937	08/16/17 17:46
15	19M000335	WG626047-05 80PPM PERYLENE STD	1	1	STD82937	08/16/17 18:16
16	19M000336	WG626047-06 100PPM PERYLENE STD	1	1	STD82937	08/16/17 18:46
17	19M000337	WG626047-07 120PPM PERYLENE STD	1	1	STD82937	08/16/17 19:16
18	19M000338	WG626047-08 50PPM PERYLENE ALT SRC	1	1	STD82938	08/16/17 19:46
19	19M000339	BAKE OUT	1	1		08/16/17 20:17
20	19M000340	BAKE OUT	1	1		08/16/17 20:47

Comments

Seq.	Rerun	Dil.	Reason	Analytes
1				
	WG626039-01 50PPM DFTPP has an ion failure, DNR			

Approved: 18-AUG-17

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS12 Dataset: 083117
Analyst1: SCB Analyst2: NA
Method: 8270C/D SOP: MSS01 Rev: 28
Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG627873
Internal STD: COA19896 Surrogate STD: NA Calibration STD
CCV STD: STD81744 LCS STD: MS/MSD STD:

Comments: The L17081498 samples need rerun for 1,1'biphenyl

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	12M64164	WG627960-01 50PPM DFTPP STD	1	1	STD83235	08/31/17 09:21
2	12M64165	WG627960-02 50PPM 8270 STD	1	1	STD81744	08/31/17 09:39
3	12M64166	WG627757-01 BLANK 8/30	1	1	STD81744	08/31/17 10:11
4	12M64167	WG627757-02 LCS 8/30	1	1		08/31/17 10:44
5	12M64168	L17081454-01	17	1		08/31/17 11:16
6	12M64169	L17081464-01	1	1		08/31/17 11:49
7	12M64170	L17081498-01	1	1		08/31/17 12:22
8	12M64171	L17081498-03 REF	1	1		08/31/17 12:54
9	12M64172	L17081498-05 MS	1	1		08/31/17 13:27
10	12M64173	L17081498-06 MSD	1	1		08/31/17 14:01
11	12M64174	L17081498-07	1	1		08/31/17 14:31
12	12M64175	L17081498-09	1	1		08/31/17 15:04
13	12M64176	L17081466-01 2X	1	2		08/31/17 15:36
14	12M64177	WG627606-01 FBLK2	17	1		08/31/17 16:09
15	12M64178	BAKE OUT	1	1		08/31/17 16:41
16	12M64179	BAKE OUT	1	1		08/31/17 17:13
17	12M64180	BAKE OUT	1	1		08/31/17 17:46

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X			
	WG627757-02 LCS 8/30 remixing and rerunning for the high %REC, 1,4-dioxane has a low %REC for the L17081498 samples. Report.			
5				
	L17081454-01 has one high acid surrogate recovery			
6				
	L17081464-01 has one low base surrogate recovery, the LCS has two low and three high %REC, the high outliers are non-detect. No need to re-extract for LCS outliers, per client.			
9				
	L17081498-05 MS 1,4-dioxane has a low %REC			
10				
	L17081498-06 MSD 1,4-dioxane has a low %REC			
13				
	L17081466-01 2X ran at a dilution due to a cloudy, amber sample matrix, the LCS has two low and three high %REC. No need to re-extract for LCS outliers, per client.			

Page: 1 Approved: 05-SEP-17

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS19 Dataset: 091217
Analyst1: MES Analyst2: NA
Method: 8270C/D SOP: MSS01 Rev: 28
Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Workgroups: Column 1 ID: RXI-5MS Column 2 ID: NA
WG628837,WG629333,WG628781,WG628842
Internal STD: COA19896 Surrogate STD: NA Calibration STD
CCV STD: STD81744 LCS STD: MS/MSD STD:

Comments: For L17090293-02,337-01, and 377-01 pyridine is non-detect in the LCSDUP. Pyridine recovery is acceptable in the LCS.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	19M000495	WG629380-01 50PPM DFTPP	1	1	STD83235	09/12/17 13:26
2	19M000496	WG629380-01 50PPM DFTPP	1	1	STD83235	09/12/17 13:42
3	19M000497	WG629380-01 50PPM DFTPP	1	1	STD83235	09/12/17 14:04
4	19M000498	WG629380-02 50PPM 8270 STD	1	1	STD81744	09/12/17 14:21
5	19M000499	WG629382-01 50PPM TCL STD	1	1	STD81291	09/12/17 14:52
6	19M000500	WG628559-01 BLANK 9/7	2	1		09/12/17 15:20
7	19M000501	WG628559-02 LCS 9/7	2	1		09/12/17 15:50
8	19M000502	WG628559-03 LCSDUP 9/7	2	1		09/12/17 16:20
9	19M000503	WG628510-01 BLANK 9/6	1	1		09/12/17 16:50
10	19M000504	WG628510-02 LCS 9/6	1	1		09/12/17 17:21
11	19M000505	WG628510-03 LCSDUP 9/6	1	1		09/12/17 17:51
12	19M000506	WG629016-01 BLANK 9/11	2	1		09/12/17 18:21
13	19M000507	WG629016-02 LCS 9/11	2	1		09/12/17 18:51
14	19M000508	WG629016-03 LCSDUP 9/11	2	1		09/12/17 19:21
15	19M000509	L17090130-01	17	1		09/12/17 19:51
16	19M000510	L17090208-01	17	1		09/12/17 20:21
17	19M000511	L17090089-02 40X	10	40	SOIL	09/12/17 20:51
18	19M000512	L17090146-01	17	1		09/12/17 21:21
19	19M000513	L17090146-02	17	1		09/12/17 21:51
20	19M000514	L17090146-03	17	1		09/12/17 22:22
21	19M000515	L17090146-04	17	1		09/12/17 22:52
22	19M000516	L17090146-05	17	1		09/12/17 23:22
23	19M000517	L17090146-06	17	1		09/12/17 23:52
24	19M000518	L17090187-01	17	1		09/13/17 00:22
43	19M000519	L17090089-03 5X	17	5		09/13/17 00:52
26	19M000520	WG628559-05 MS L17090089-03 5X	17	5		09/13/17 01:22
27	19M000521	WG628329-01 FBLK	17	1		09/13/17 01:52
28	19M000522	WG628531-01 FBLK	17	1		09/13/17 02:22
29	19M000523	L17090192-01	2	1		09/13/17 02:52
30	19M000524	L17090236-01	2	1		09/13/17 03:22
31	19M000525	L17090244-04	2	1		09/13/17 03:52
32	19M000526	L17090293-02	2	1		09/13/17 04:22
33	19M000527	L17090306-03	2	1		09/13/17 04:52

Page: 1 Approved: 13-SEP-17

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS19 Dataset: 091217
Analyst1: MES Analyst2: NA
Method: 8270C/D SOP: MSS01 Rev: 28
Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Workgroups: Column 1 ID: RXI-5MS Column 2 ID: NA
WG628837,WG629333,WG628781,WG628842
Internal STD: COA19896 Surrogate STD: NA
CCV STD: STD81744 LCS STD:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
34	19M000528	L17090337-01	2	1		09/13/17 05:22
35	19M000529	L17090377-01	2	1		09/13/17 05:52
36	19M000530	L17090378-01	2	1		09/13/17 06:21
37	19M000531	L17090419-01 5X	2	5		09/13/17 06:51
38	19M000532	L17090436-01 10X	2	10		09/13/17 07:22
39	19M000533	L17090440-01 2X	2	2		09/13/17 07:52
40	19M000534	L17090438-01 10X	2	10		09/13/17 08:22
41	19M000535	L17090419-01 2X	2	2		09/13/17 08:52
42	19M000536	L17090440-01	2	1		09/13/17 09:22

Comments

Seq.	Rerun	Dil.	Reason	Analytes
1				
	RR DFTPP, ion ratio failed.			
2				
	RR DFTPP, ion ratio failed. Performed a quicktune.			
14				
	WG629016-03 LCSDUP 9/11 pyridine is non-detect; recovery is acceptable in the LCS.			
43				
	L17090089-03 5X analyzed at a dilution due to amber,viscous matrix			
37	X	2	Analyzed too dilute	
	L17090419-01 5X DNR			
38				
	L17090436-01 10X analyzed at a dilution due to dark,viscous sample matrix.			
39	X	1	Analyzed too dilute	
	L17090440-01 2X dnr			
40				
	L17090438-01 10X analyzed at a dilution due to dark,viscous sample matrix.			
41				
	L17090419-01 2X analyzed at a dilution due to amber, foamy sample matirx.			

Page: 2 Approved: 13-SEP-17

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS19 Dataset: 091317
Analyst1: SCB Analyst2: NA
Method: 8270C/D SOP: MSS01 Rev: 28
Method: OVAP SOP: MSS01 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Column 1 ID: RXI-5MS Column 2 ID: NA
Workgroups: WG628781, WG629334
Internal STD: COA19896 Surrogate STD: NA Calibration STD
CCV STD: STD81744 LCS STD: MS/MSD STD:

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	19M000539	WG629552-01 50PPM DFTPP	1	1	STD83235	09/13/17 13:36
2	19M000540	WG629552-02 50PPM 8270 STD	1	1	STD81744	09/13/17 13:54
3	19M000541	WG629570-01 50PPM TCL/A-TERP STD	1	1	STD81291	09/13/17 14:25
4	19M000542	WG629032-01 BLANK 9/11	7	1	SOIL	09/13/17 14:57
5	19M000543	WG629032-02 LCS 9/11	7	1	SOIL	09/13/17 15:27
6	19M000544	L17081498-01 RE 827-SPE-DIOX	1	1		09/13/17 15:58
19	19M000545	L17081498-03 REF RE 827-SPE-DIOX	1	1		09/13/17 16:28
20	19M000546	L17081498-05 MS RE	1	1		09/13/17 16:58
21	19M000547	L17081498-06 MSD RE	1	1		09/13/17 17:28
10	19M000548	L17081498-07 RE 827-SPE-DIOX	1	1		09/13/17 17:59
11	19M000549	L17081498-09 RE 827-SPE-DIOX	1	1		09/13/17 18:29
22	19M000550	L17090356-01 REF 5X	7	5	SOIL	09/13/17 18:59
13	19M000551	WG629032-04 MS 5X	7	5	SOIL	09/13/17 19:29
14	19M000552	WG629032-05 MSD 5X	7	5	SOIL	09/13/17 19:59
15	19M000553	L17090350-01 10X	7	10	SOIL	09/13/17 20:29
16	19M000554	BAKE OUT	1	1		09/13/17 20:59
17	19M000555	BAKE OUT	1	1		09/13/17 21:29
18	19M000556	BAKE OUT	1	1		09/13/17 22:00

Comments

Seq.	Rerun	Dil.	Reason	Analytes
22				
	L17090356-01 REF 5X ran at a dilution due to a dark, viscous sample matrix			
13				
	WG629032-04 MS 5X ran at a dilution due to a dark, viscous sample matrix, 17 analytes fail %REC			
14				
	WG629032-05 MSD 5X ran at a dilution due to a dark, viscous sample matrix, ten analytes fail %REC			
15				
	L17090350-01 10X ran at a dilution due to a dark, viscous sample matrix, has one low acid surrogate recovery			

Page: 1 Approved: 14-SEP-17

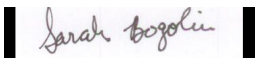
Microbac Laboratories Inc.

Data Checklist

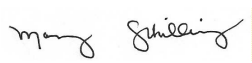
Date: 14-JUL-2017
Analyst: SCB
Analyst: NA
Method: 8270
Instrument: HPMS12
Curve Workgroup: NA
Runlog ID: 83397
Analytical Workgroups: WG621882, WG621894

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	X
Blanks	NA
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	NA
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	NA
TCL hits	NA
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	SCB
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MES

Primary Reviewer:
17-JUL-2017



Secondary Reviewer:
17-JUL-2017



CHECKLIST1 - Modified 03/05/2008
Generated: JUL-17-2017 12:05:22

Microbac Laboratories Inc.

Data Checklist

Date: 03-AUG-2017
Analyst: MES
Analyst: NA
Method: 8270/625
Instrument: HPMS12
Curve Workgroup: NA
Runlog ID: 83764
Analytical Workgroups: L17071382

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	NA
% D/% Drift	NA
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	X
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	MES
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:
04-AUG-2017

Secondary Reviewer:
07-AUG-2017

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-07-2017 16:36:24

Microbac Laboratories Inc.

Data Checklist

Date: 15-AUG-2017
Analyst: SCB
Analyst: NA
Method: 8270/625
Instrument: HPMS19
Curve Workgroup: NA
Runlog ID: 84031
Analytical Workgroups: WG625881

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	NA
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	NA
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	NA
TCL hits	NA
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	SCB
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MES

Primary Reviewer:
18-AUG-2017

Secondary Reviewer:
18-AUG-2017

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-18-2017 16:01:21

Microbac Laboratories Inc.

Data Checklist

Date: 16-AUG-2017
Analyst: SCB
Analyst: NA
Method: 8270/625
Instrument: HPMS19
Curve Workgroup: NA
Runlog ID: 84047
Analytical Workgroups: WG626039, WG626047

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	X
Blanks	NA
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	NA
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	NA
TCL hits	NA
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	SCB
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MES

Primary Reviewer:
18-AUG-2017

Secondary Reviewer:
18-AUG-2017

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-18-2017 16:11:53

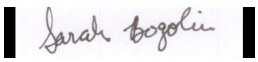
Microbac Laboratories Inc.

Data Checklist

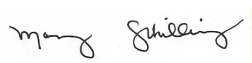
Date: 31-AUG-2017
Analyst: SCB
Analyst: NA
Method: 8270
Instrument: HPMS12
Curve Workgroup: NA
Runlog ID: 84348
Analytical Workgroups: L17081454, L17081464, L17081498, L17081466

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	X
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	SCB
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MES

Primary Reviewer:
05-SEP-2017



Secondary Reviewer:
05-SEP-2017



CHECKLIST1 - Modified 03/05/2008
Generated: SEP-05-2017 10:37:19

Microbac Laboratories Inc.

Data Checklist

Date: 12-SEP-2017
Analyst: MES
Analyst: NA
Method: 8270/625
Instrument: HPMS19
Curve Workgroup: NA
Runlog ID: 84562
Analytical Workgroups: 0208,0089,0293,0306,0337,0377,0378,0419,0436,0438,0440,0130,014

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	X
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	MES
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:
13-SEP-2017

Secondary Reviewer:
13-SEP-2017

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-13-2017 12:34:39

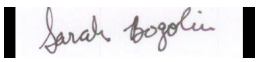
Microbac Laboratories Inc.

Data Checklist

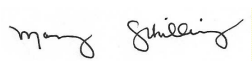
Date: 13-SEP-2017
Analyst: SCB
Analyst: NA
Method: 8270/625
Instrument: HPMS19
Curve Workgroup: NA
Runlog ID: 84598
Analytical Workgroups: L17081498, L17090356, L1709350

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	X
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	SCB
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MES

Primary Reviewer:
14-SEP-2017



Secondary Reviewer:
14-SEP-2017



CHECKLIST1 - Modified 03/05/2008
Generated: SEP-14-2017 16:26:59

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8270D AAB#: WG627873

Login Number: L17081498

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW07-082517	01	08/25/17					08/30/2017	5.1	7		08/31/17	1	40	
MW06-082517	03	08/25/17					08/30/2017	4.9	7		08/31/17	1	40	
MW06-082517-MS	05	08/25/17					08/30/2017	4.9	7		08/31/17	1.1	40	
MW06-082517-MSD	06	08/25/17					08/30/2017	4.9	7		08/31/17	1.1	40	
MW10-082517	07	08/25/17					08/30/2017	5.1	7		08/31/17	1.1	40	
MW20-082517	09	08/25/17					08/30/2017	4.9	7		08/31/17	1.1	40	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5460098
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8270D **AAB#:** WG628781

Login Number: L17081498

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW07-082517	01	08/25/17					09/06/2017	12.2	7	*	09/13/17	7	40	
MW06-082517	03	08/25/17					09/06/2017	12	7	*	09/13/17	7.1	40	
MW06-082517-MS	05	08/25/17					09/06/2017	12	7	*	09/13/17	7.1	40	
MW06-082517-MSD	06	08/25/17					09/06/2017	12	7	*	09/13/17	7.1	40	
MW10-082517	07	08/25/17					09/06/2017	12.2	7	*	09/13/17	7.1	40	
MW20-082517	09	08/25/17					09/06/2017	12	7	*	09/13/17	7.1	40	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5460098
Report generated 09/18/2017 08:41

Login Number: L17081498
Instrument Id: HPMS12
Workgroup (AAB#): WG627873

Method: 8270
CAL ID: HPMS12-03-AUG-17
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4	5	6
L17081498-01	1.00	01	114	89.0	49.0	76.8	90.0	33.6
L17081498-03	1.00	01	116	93.1	49.1	91.6	97.7	34.7
L17081498-05	1.00	01	117	94.9	48.6	90.9	92.1	34.7
L17081498-06	1.00	01	123	102	53.3	89.3	91.6	35.7
L17081498-07	1.00	01	109	85.8	46.1	73.3	90.6	30.5
L17081498-09	1.00	01	114	97.1	51.9	84.4	94.5	32.7
WG627757-01	1.00	01	109	77.9	43.6	79.0	115	31.7
WG627757-02	1.00	01	123	94.9	42.8	87.0	115	32.8

Surrogates	Surrogate Limits		
1 - 2,4,6-Tribromophenol	10	-	123
2 - 2-Fluorobiphenyl	43	-	116
3 - 2-Fluorophenol	21	-	100
4 - Nitrobenzene-d5	35	-	114
5 - p-Terphenyl-d14	33	-	141
6 - Phenol-d5	10	-	94

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 5460108
Report generated: 09/18/2017 08:44

Login Number: L17081498
Instrument Id: HPMS19
Workgroup (AAB#): WG628781

Method: 8270
CAL ID: HPMS19-15-AUG-17
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4	5	6
L17081498-01	1.00	RE	81.6	57.4	33.2	58.7	91.7	23.5
L17081498-03	1.00	RE	89.2	67.0	37.1	70.6	93.5	25.5
L17081498-05	1.00	RE	101	67.7	33.5	62.5	95.4	23.8
L17081498-06	1.00	RE	106	69.0	37.1	65.7	90.9	26.1
L17081498-07	1.00	RE	71.3	57.8	33.0	59.3	83.0	21.7
L17081498-09	1.00	RE	67.7	67.3	37.2	67.4	86.5	24.5
WG628510-01	1.00	01	69.1	57.2	35.4	60.3	101	24.6
WG628510-02	1.00	01	93.8	63.0	34.1	60.9	105	23.9
WG628510-03	1.00	01	103	62.5	33.5	60.6	109	23.8

Surrogates	Surrogate Limits		
1 - 2,4,6-Tribromophenol	10	-	123
2 - 2-Fluorobiphenyl	43	-	116
3 - 2-Fluorophenol	21	-	100
4 - Nitrobenzene-d5	35	-	114
5 - p-Terphenyl-d14	33	-	141
6 - Phenol-d5	10	-	94

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 5460108
Report generated: 09/18/2017 08:44

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L17081498
Work Group: WG627873
Blank File ID: 12M64166
Blank Sample ID: WG627757-01
Prep Date: 08/30/17 12:10
Instrument ID: HPMS12
Analyzed Date: 08/31/17 10:11
Method: 8270D
Analyst: SCB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG627757-02	12M64167	08/31/17 10:44	01
MW07-082517	L17081498-01	12M64170	08/31/17 12:22	01
MW06-082517	L17081498-03	12M64171	08/31/17 12:54	01
MW06-082517-MS	L17081498-05	12M64172	08/31/17 13:27	01
MW06-082517-MSD	L17081498-06	12M64173	08/31/17 14:01	01
MW10-082517	L17081498-07	12M64174	08/31/17 14:31	01
MW20-082517	L17081498-09	12M64175	08/31/17 15:04	01

Report Name: BLANK_SUMMARY
PDF File ID: 5460099
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L17081498
Work Group: WG628781
Blank File ID: 19M000503
Blank Sample ID: WG628510-01
Prep Date: 09/06/17 15:00
Instrument ID: HPMS19
Analyzed Date: 09/12/17 16:50
Method: 8270D
Analyst: MES

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG628510-02	19M000504	09/12/17 17:21	01
LCS2	WG628510-03	19M000505	09/12/17 17:51	01
MW07-082517	L17081498-01	19M000544	09/13/17 15:58	RE
MW06-082517	L17081498-03	19M000545	09/13/17 16:28	RE
MW06-082517-MS	L17081498-05	19M000546	09/13/17 16:58	RE
MW06-082517-MSD	L17081498-06	19M000547	09/13/17 17:28	RE
MW10-082517	L17081498-07	19M000548	09/13/17 17:59	RE
MW20-082517	L17081498-09	19M000549	09/13/17 18:29	RE

Report Name: BLANK_SUMMARY
PDF File ID: 5460099
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L17081498 Prep Date:08/30/17 12:10 Sample ID:WG627757-01
Instrument ID:HPMS12 Run Date:08/31/17 10:11 Prep Method:3510C
File ID:12M64166 Analyst:SCB Method:8270D
Workgroup (AAB#):WG627873 Matrix:Water Units:ug/L
Contract #: Cal ID:HPMS12-03-AUG-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
1,1'-Biphenyl	25.0	200	25.0	1	U
1,3,5-Trinitrobenzene	25.0	50.0	25.0	1	U
1,3-Dinitrobenzene	25.0	50.0	25.0	1	U
1,4-Dioxane	50.0	100	50.0	1	U
2,4,5-Trichlorophenol	25.0	50.0	25.0	1	U
2,4,6-Trichlorophenol	25.0	50.0	25.0	1	U
2,4-Dichlorophenol	25.0	50.0	25.0	1	U
2,4-Dimethylphenol	25.0	50.0	25.0	1	U
2,4-Dinitrophenol	125	250	125	1	U
2,4-Dinitrotoluene	25.0	50.0	25.0	1	U
2,6-Dinitrotoluene	25.0	50.0	25.0	1	U
2-Chloronaphthalene	25.0	50.0	25.0	1	U
2-Chlorophenol	25.0	50.0	25.0	1	U
2-Methylnaphthalene	25.0	50.0	25.0	1	U
2-Methylphenol	25.0	50.0	25.0	1	U
2-Nitroaniline	125	250	125	1	U
2-Nitrophenol	25.0	50.0	25.0	1	U
3-Nitroaniline	125	250	125	1	U
3,3'-Dichlorobenzidine	25.0	50.0	25.0	1	U
3-,4-Methylphenol	25.0	50.0	25.0	1	U
4-Bromophenyl-phenylether	25.0	50.0	25.0	1	U
4-Chloroaniline	25.0	50.0	25.0	1	U
4-Nitrophenol	125	250	125	1	U
Acenaphthene	25.0	50.0	25.0	1	U
Acenaphthylene	25.0	50.0	25.0	1	U
Anthracene	25.0	50.0	25.0	1	U
Benzo(a)anthracene	25.0	50.0	25.0	1	U
Benzo(a)pyrene	25.0	50.0	25.0	1	U
Benzo(b)fluoranthene	25.0	50.0	25.0	1	U
Benzo(g,h,i)Perylene	25.0	50.0	25.0	1	U
Benzo(k)fluoranthene	25.0	50.0	25.0	1	U
Benzoic acid	100	200	100	1	U
Benzyl alcohol	25.0	50.0	25.0	1	U
Bis(2-Chloroethyl)ether	25.0	50.0	25.0	1	U
Bis(2-Chloroethoxy)Methane	25.0	50.0	25.0	1	U
bis(2-Ethylhexyl)phthalate	25.0	50.0	25.0	1	U
Butylbenzylphthalate	25.0	50.0	25.0	1	U
Carbazole	25.0	200	25.0	1	U
Chrysene	25.0	50.0	25.0	1	U
Di-N-Butylphthalate	25.0	50.0	25.0	1	U
Di-n-octylphthalate	25.0	50.0	25.0	1	U
Dibenzo(a,h)Anthracene	25.0	50.0	25.0	1	U

Report Name:BLANK
PDF ID: 5460100
18-SEP-2017 08:41

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L17081498 Prep Date: 08/30/17 12:10 Sample ID: WG627757-01
Instrument ID: HPMS12 Run Date: 08/31/17 10:11 Prep Method: 3510C
File ID: 12M64166 Analyst: SCB Method: 8270D
Workgroup (AAB#): WG627873 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS12-03-AUG-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Dibenzofuran	25.0	50.0	25.0	1	U
Diethylphthalate	25.0	50.0	25.0	1	U
Dimethylphthalate	25.0	50.0	25.0	1	U
Fluoranthene	25.0	50.0	25.0	1	U
Fluorene	25.0	50.0	25.0	1	U
Hexachlorobenzene	25.0	50.0	25.0	1	U
Hexachlorobutadiene	25.0	50.0	25.0	1	U
Hexachlorocyclopentadiene	25.0	50.0	25.0	1	U
Hexachloroethane	25.0	50.0	25.0	1	U
Indeno(1,2,3-cd)pyrene	25.0	50.0	25.0	1	U
Isophorone	25.0	50.0	25.0	1	U
Diphenylamine/n-Nitrosodiphenylamine	25.0	50.0	25.0	1	U
Naphthalene	25.0	50.0	25.0	1	U
Nitrobenzene	25.0	50.0	25.0	1	U
Pentachlorophenol	125	250	125	1	U
Phenanthrene	25.0	50.0	25.0	1	U
Phenol	25.0	50.0	25.0	1	U
Pyrene	25.0	50.0	25.0	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
2,4,6-Tribromophenol	109	10	-	123	PASS
2-Fluorobiphenyl	77.9	43	-	116	PASS
2-Fluorophenol	43.6	21	-	100	PASS
Nitrobenzene-d5	79.0	35	-	114	PASS
p-Terphenyl-d14	115	33	-	141	PASS
Phenol-d5	31.7	10	-	94	PASS

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 5460100
18-SEP-2017 08:41

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L17081498 Prep Date:09/06/17 15:00 Sample ID:WG628510-01
Instrument ID:HPMS19 Run Date:09/12/17 16:50 Prep Method:3510C
File ID:19M000503 Analyst:MES Method:8270D
Workgroup (AAB#):WG628781 Matrix:Water Units:ug/L
Contract #: Cal ID:HPMS19-15-AUG-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
1,1'-Biphenyl	2.50	20.0	2.50	1	U
1,3,5-Trinitrobenzene	2.50	5.00	2.50	1	U
1,3-Dinitrobenzene	2.50	5.00	2.50	1	U
1,4-Dioxane	5.00	10.0	5.00	1	U
2,4,5-Trichlorophenol	2.50	5.00	2.50	1	U
2,4,6-Trichlorophenol	2.50	5.00	2.50	1	U
2,4-Dichlorophenol	2.50	5.00	2.50	1	U
2,4-Dimethylphenol	2.50	5.00	2.50	1	U
2,4-Dinitrophenol	12.5	25.0	12.5	1	U
2,4-Dinitrotoluene	2.50	5.00	2.50	1	U
2,6-Dinitrotoluene	2.50	5.00	2.50	1	U
2-Chloronaphthalene	2.50	5.00	2.50	1	U
2-Chlorophenol	2.50	5.00	2.50	1	U
2-Methylnaphthalene	2.50	5.00	2.50	1	U
2-Methylphenol	2.50	5.00	2.50	1	U
2-Nitroaniline	12.5	25.0	12.5	1	U
2-Nitrophenol	2.50	5.00	2.50	1	U
3-Nitroaniline	12.5	25.0	12.5	1	U
3,3'-Dichlorobenzidine	2.50	5.00	2.50	1	U
3-,4-Methylphenol	2.50	5.00	2.50	1	U
4-Bromophenyl-phenylether	2.50	5.00	2.50	1	U
4-Chloroaniline	2.50	5.00	2.50	1	U
4-Nitrophenol	12.5	25.0	12.5	1	U
Acenaphthene	2.50	5.00	2.50	1	U
Acenaphthylene	2.50	5.00	2.50	1	U
Anthracene	2.50	5.00	2.50	1	U
Benzo(a)anthracene	2.50	5.00	2.50	1	U
Benzo(a)pyrene	2.50	5.00	2.50	1	U
Benzo(b)fluoranthene	2.50	5.00	2.50	1	U
Benzo(g,h,i)Perylene	2.50	5.00	2.50	1	U
Benzo(k)fluoranthene	2.50	5.00	2.50	1	U
Benzoic acid	10.0	20.0	10.0	1	U
Benzyl alcohol	2.50	5.00	2.50	1	U
Bis(2-Chloroethyl)ether	2.50	5.00	2.50	1	U
Bis(2-Chloroethoxy)Methane	2.50	5.00	2.50	1	U
bis(2-Ethylhexyl)phthalate	2.50	5.00	2.50	1	U
Butylbenzylphthalate	2.50	5.00	2.50	1	U
Carbazole	2.50	20.0	2.50	1	U
Chrysene	2.50	5.00	2.50	1	U
Di-N-Butylphthalate	2.50	5.00	2.50	1	U
Di-n-octylphthalate	2.50	5.00	2.50	1	U
Dibenzo(a,h)Anthracene	2.50	5.00	2.50	1	U

Report Name:BLANK
PDF ID: 5460100
18-SEP-2017 08:41

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L17081498 Prep Date:09/06/17 15:00 Sample ID:WG628510-01
Instrument ID:HPMS19 Run Date:09/12/17 16:50 Prep Method:3510C
File ID:19M000503 Analyst:MES Method:8270D
Workgroup (AAB#):WG628781 Matrix:Water Units:ug/L
Contract #: Cal ID:HPMS19-15-AUG-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Dibenzofuran	2.50	5.00	2.50	1	U
Diethylphthalate	2.50	5.00	2.50	1	U
Dimethylphthalate	2.50	5.00	2.50	1	U
Fluoranthene	2.50	5.00	2.50	1	U
Fluorene	2.50	5.00	2.50	1	U
Hexachlorobenzene	2.50	5.00	2.50	1	U
Hexachlorobutadiene	2.50	5.00	2.50	1	U
Hexachlorocyclopentadiene	2.50	5.00	2.50	1	U
Hexachloroethane	2.50	5.00	2.50	1	U
Indeno(1,2,3-cd)pyrene	2.50	5.00	2.50	1	U
Isophorone	2.50	5.00	2.50	1	U
Diphenylamine/n-Nitrosodiphenylamine	2.50	5.00	2.50	1	U
Naphthalene	2.50	5.00	2.50	1	U
Nitrobenzene	2.50	5.00	2.50	1	U
Pentachlorophenol	12.5	25.0	12.5	1	U
Phenanthrene	2.50	5.00	2.50	1	U
Phenol	2.50	5.00	2.50	1	U
Pyrene	2.50	5.00	2.50	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
2,4,6-Tribromophenol	69.1	10	-	123	PASS
2-Fluorobiphenyl	57.2	43	-	116	PASS
2-Fluorophenol	35.4	21	-	100	PASS
Nitrobenzene-d5	60.3	35	-	114	PASS
p-Terphenyl-d14	101	33	-	141	PASS
Phenol-d5	24.6	10	-	94	PASS

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 5460100
18-SEP-2017 08:41

Login Number: L17081498 Run Date: 08/31/2017 Sample ID: WG627757-02
Instrument ID: HPMS12 Run Time: 10:44 Prep Method: 3510C
File ID: 12M64167 Analyst: SCB Method: 8270D
Workgroup (AAB#): WG627873 Matrix: Water Units: ug/L
QC Key: WATERLOO Lot#: STD82689 Cal ID: HPMS12-03-AUG-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,4-Dioxane	500	159	31.7	50 - 150	*
2,4,5-Trichlorophenol	500	512	102	35 - 120	
2,4,6-Trichlorophenol	500	504	101	30 - 120	
2,4-Dichlorophenol	500	438	87.7	20 - 110	
2,4-Dimethylphenol	500	441	88.2	20 - 120	
2,4-Dinitrophenol	500	455	91.0	20 - 140	
2,4-Dinitrotoluene	500	513	103	50 - 139	
2,6-Dinitrotoluene	500	519	104	50 - 120	
2-Chloronaphthalene	500	375	75.0	25 - 120	
2-Chlorophenol	500	316	63.1	25 - 110	
2-Methylnaphthalene	500	326	65.1	25 - 120	
2-Methylphenol	500	364	72.9	20 - 110	
2-Nitroaniline	500	554	111	45 - 115	
2-Nitrophenol	500	384	76.9	20 - 115	
3-Nitroaniline	500	477	95.4	40 - 120	
3,3'-Dichlorobenzidine	500	609	122	30 - 140	
3-,4-Methylphenol	500	346	69.2	20 - 110	
4-Bromophenyl-phenylether	500	459	91.7	40 - 115	
4-Chloroaniline	500	444	88.7	25 - 120	
4-Nitrophenol	500	261	52.3	10 - 132	
Acenaphthene	500	472	94.4	30 - 120	
Acenaphthylene	500	466	93.2	30 - 120	
Anthracene	500	487	97.5	55 - 130	
Benzo(a)anthracene	500	544	109	60 - 130	
Benzo(a)pyrene	500	531	106	55 - 135	
Benzo(b)fluoranthene	500	475	95.0	45 - 125	
Benzo(g,h,i)Perylene	500	595	119	45 - 140	
Benzo(k)fluoranthene	500	533	107	55 - 140	
Benzoic acid	500	272	54.5	10 - 100	
Benzyl alcohol	500	400	80.0	20 - 110	
Bis(2-Chloroethyl)ether	500	366	73.2	25 - 110	
Bis(2-Chloroethoxy)Methane	500	334	66.9	20 - 105	
bis(2-Ethylhexyl)phthalate	500	544	109	50 - 150	
Butylbenzylphthalate	500	512	102	55 - 150	
Carbazole	500	532	106	50 - 130	
Chrysene	500	580	116	55 - 130	
Di-N-Butylphthalate	500	480	95.9	55 - 118	
Di-n-octylphthalate	500	499	99.9	40 - 146	
Dibenzo(a,h)Anthracene	500	329	65.7	45 - 125	
Dibenzofuran	500	441	88.3	35 - 115	
Diethylphthalate	500	514	103	45 - 120	

LCS - Modified 03/06/2008
PDF File ID: 5460101
Report generated: 09/18/2017 08:41

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L17081498 Run Date: 08/31/2017 Sample ID: WG627757-02
Instrument ID: HPMS12 Run Time: 10:44 Prep Method: 3510C
File ID: 12M64167 Analyst: SCB Method: 8270D
Workgroup (AAB#): WG627873 Matrix: Water Units: ug/L
QC Key: WATERLOO Lot#: STD82689 Cal ID: HPMS12-03-AUG-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
Dimethylphthalate	500	516	103	25 - 112	
Fluoranthene	500	512	102	50 - 137	
Fluorene	500	484	96.9	40 - 120	
Hexachlorobenzene	500	574	115	50 - 130	
Hexachlorobutadiene	500	275	55.0	24 - 105	
Hexachlorocyclopentadiene	500	247	49.4	20 - 143	
Hexachloroethane	500	203	40.7	25 - 95	
Indeno(1,2,3-cd)pyrene	500	522	104	50 - 135	
Isophorone	500	488	97.5	30 - 110	
Diphenylamine/n-Nitrosodiphenylamine	500	507	101	40 - 110	
Naphthalene	500	305	61.1	25 - 110	
Nitrobenzene	500	384	76.8	30 - 110	
Pentachlorophenol	500	618	124	40 - 140	
Phenanthrene	500	501	100	55 - 120	
Phenol	500	167	33.3	10 - 120	
Pyrene	500	514	103	55 - 130	

Surrogates	% Recovery	Surrogate Limits	Qualifier
2,4,6-Tribromophenol	123	10 - 123	PASS
2-Fluorobiphenyl	94.9	43 - 116	PASS
2-Fluorophenol	42.8	21 - 100	PASS
Nitrobenzene-d5	87.0	35 - 114	PASS
p-Terphenyl-d14	115	33 - 141	PASS
Phenol-d5	32.8	10 - 94	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 5460101
Report generated: 09/18/2017 08:41

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L17081498 Analyst: MES Prep Method: 3510C
Instrument ID: HPMS19 Matrix: Water Method: 8270D
Workgroup (AAB#): WG628781 Units: ug/L
QC Key: WATERLOO Lot #: STD82691

Sample ID: WG628510-02 LCS File ID: 19M000504 Run Date: 09/12/2017 17:21
Sample ID: WG628510-03 LCS2 File ID: 19M000505 Run Date: 09/12/2017 17:51

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1'-Biphenyl	50.0	31.0	62.1	50.0	31.2	62.4	0.578	40 - 140	30	
1,4-Dioxane	50.0	13.4	26.9	50.0	12.9	25.8	4.02	50 - 150	30	*
2,4,5-Trichlorophenol	50.0	34.8	69.5	50.0	36.7	73.3	5.32	35 - 120	30	
2,4,6-Trichlorophenol	50.0	32.3	64.5	50.0	32.6	65.3	1.20	30 - 120	30	
2,4-Dichlorophenol	50.0	31.7	63.4	50.0	31.6	63.2	0.347	20 - 110	30	
2,4-Dimethylphenol	50.0	35.0	70.1	50.0	32.9	65.8	6.33	20 - 120	30	
2,4-Dinitrophenol	50.0	35.3	70.7	50.0	24.4	48.8	36.7	20 - 140	30	#
2,4-Dinitrotoluene	50.0	46.2	92.3	50.0	50.1	100	8.25	50 - 139	30	
2,6-Dinitrotoluene	50.0	38.5	77.0	50.0	43.6	87.1	12.4	50 - 120	30	
2-Chloronaphthalene	50.0	26.4	52.8	50.0	27.3	54.7	3.54	25 - 120	30	
2-Chlorophenol	50.0	26.4	52.9	50.0	26.5	52.9	0.0756	25 - 110	30	
2-Methylnaphthalene	50.0	25.7	51.5	50.0	26.9	53.8	4.44	25 - 120	30	
2-Methylphenol	50.0	26.2	52.4	50.0	26.2	52.3	0.191	20 - 110	30	
2-Nitroaniline	50.0	36.7	73.3	50.0	41.0	81.9	11.1	45 - 115	30	
2-Nitrophenol	50.0	30.0	60.0	50.0	30.0	59.9	0.100	20 - 115	30	
3,3'-Dichlorobenzidine	50.0	51.4	103	50.0	55.4	111	7.58	30 - 140	30	
3-,4-Methylphenol	50.0	23.9	47.8	50.0	24.1	48.3	1.00	20 - 110	30	
3-Nitroaniline	50.0	40.3	80.6	50.0	44.5	89.1	9.97	40 - 120	30	
4-Bromophenyl-phenylether	50.0	35.1	70.1	50.0	40.3	80.5	13.8	40 - 115	30	
4-Chloroaniline	50.0	28.9	57.7	50.0	28.5	57.0	1.25	25 - 120	30	
4-Nitrophenol	50.0	21.5	43.1	50.0	22.7	45.4	5.16	10 - 132	30	
Acenaphthene	50.0	33.0	66.0	50.0	33.7	67.4	2.01	30 - 120	30	
Acenaphthylene	50.0	31.5	63.1	50.0	32.4	64.8	2.72	30 - 120	30	
Anthracene	50.0	42.3	84.6	50.0	46.5	93.0	9.44	55 - 130	30	
Benzoic acid	50.0	11.7	23.4	50.0	10.7	21.4	9.01	10 - 100	30	
Benzo(a)anthracene	50.0	47.8	95.5	50.0	50.2	100	5.06	60 - 130	30	
Benzo(a)pyrene	50.0	49.4	98.8	50.0	51.3	103	3.85	55 - 135	30	
Benzo(b)fluoranthene	50.0	51.0	102	50.0	49.7	99.4	2.68	45 - 125	30	
Benzo(g,h,i)Perylene	50.0	52.7	105	50.0	54.7	109	3.78	45 - 140	30	
Benzo(k)fluoranthene	50.0	47.7	95.3	50.0	48.5	96.9	1.66	55 - 140	30	
Benzyl alcohol	50.0	26.8	53.5	50.0	26.4	52.9	1.20	20 - 110	30	
Bis(2-Chloroethoxy)Methane	50.0	24.5	49.1	50.0	24.6	49.2	0.244	20 - 105	30	
Bis(2-Chloroethyl)ether	50.0	26.1	52.3	50.0	26.7	53.3	1.97	25 - 110	30	
bis(2-Ethylhexyl)phthalate	50.0	51.8	104	50.0	54.3	109	4.86	50 - 150	30	
Butylbenzylphthalate	50.0	53.0	106	50.0	55.5	111	4.63	55 - 150	30	
Carbazole	50.0	49.7	99.4	50.0	51.9	104	4.25	50 - 130	30	
Chrysene	50.0	49.8	99.5	50.0	51.7	103	3.75	55 - 130	30	
Di-N-Butylphthalate	50.0	47.3	94.6	50.0	49.5	99.0	4.63	55 - 118	30	
Di-n-octylphthalate	50.0	53.6	107	50.0	55.6	111	3.61	40 - 146	30	
Dibenzofuran	50.0	31.7	63.5	50.0	34.2	68.4	7.49	35 - 115	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 5478106
Report generated: 09/18/2017 08:41

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L17081498 Analyst: MES Prep Method: 3510C
Instrument ID: HPMS19 Matrix: Water Method: 8270D
Workgroup (AAB#): WG628781 Units: ug/L
QC Key: WATERLOO Lot #: STD82691

Sample ID: WG628510-02 LCS File ID: 19M000504 Run Date: 09/12/2017 17:21
Sample ID: WG628510-03 LCS2 File ID: 19M000505 Run Date: 09/12/2017 17:51

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Dibenzo(a,h)Anthracene	50.0	40.9	81.7	50.0	42.4	84.7	3.65	45 - 125	30	
Diethylphthalate	50.0	39.0	78.0	50.0	43.5	87.0	11.0	45 - 120	30	
Dimethylphthalate	50.0	35.1	70.3	50.0	40.4	80.7	13.9	25 - 112	30	
Fluoranthene	50.0	47.4	94.8	50.0	49.3	98.5	3.83	50 - 137	30	
Fluorene	50.0	34.8	69.6	50.0	38.8	77.7	11.0	40 - 120	30	
Hexachlorobenzene	50.0	39.3	78.5	50.0	43.7	87.4	10.7	50 - 130	30	
Hexachlorobutadiene	50.0	19.8	39.7	50.0	22.2	44.3	11.1	24 - 105	30	
Hexachlorocyclopentadiene	50.0	18.6	37.2	50.0	20.4	40.8	9.27	20 - 143	30	
Hexachloroethane	50.0	16.7	33.4	50.0	19.0	38.0	13.0	25 - 95	30	
Indeno(1,2,3-cd)pyrene	50.0	48.2	96.4	50.0	50.1	100	3.89	50 - 135	30	
Isophorone	50.0	30.4	60.8	50.0	30.1	60.3	0.892	30 - 110	30	
Diphenylamine/n-Nitrosodiphenylamine	50.0	38.6	77.1	50.0	43.5	87.0	12.1	40 - 110	30	
Naphthalene	50.0	25.1	50.2	50.0	26.2	52.4	4.29	25 - 110	30	
Nitrobenzene	50.0	26.5	53.0	50.0	26.3	52.5	0.910	30 - 110	30	
Pentachlorophenol	50.0	55.8	112	50.0	46.8	93.6	17.5	40 - 140	30	
Phenanthrene	50.0	42.9	85.8	50.0	46.8	93.6	8.72	55 - 120	30	
Phenol	50.0	11.8	23.6	50.0	12.0	23.9	1.43	10 - 120	30	
Pyrene	50.0	47.7	95.5	50.0	50.5	101	5.72	55 - 130	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
2,4,6-Tribromophenol	93.8	103	10 - 123	PASS
2-Fluorobiphenyl	63.0	62.5	43 - 116	PASS
2-Fluorophenol	34.1	33.5	21 - 100	PASS
Nitrobenzene-d5	60.9	60.6	35 - 114	PASS
p-Terphenyl-d14	105	109	33 - 141	PASS
Phenol-d5	23.9	23.8	10 - 94	PASS

* EXCEEDS %REC LIMIT

EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 5478106
Report generated: 09/18/2017 08:41

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L17081498 Cal ID:HPMS12- 03-AUG-17 Worknum:WG627873

Instrument ID:HPMS12 Contract #: Prep Method:3510C

Parent ID:L17081498-03 File ID:12M64171 Dil:1 Method:8270D

Sample ID:L17081498-05 MS File ID:12M64172 Dil:1 Matrix:Water

Sample ID:L17081498-06 MSD File ID:12M64173 Dil:1 Units:ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
1,4-Dioxane	U	53.2	19.2	36.1	54.9	24.1	43.9	22.7	50 - 150	30	*
2,4,5-Trichlorophenol	U	53.2	53.8	101	54.9	57.9	105	7.30	35 - 120	30	
2,4,6-Trichlorophenol	U	53.2	52.6	98.8	54.9	57.1	104	8.36	30 - 120	30	
2,4-Dichlorophenol	U	53.2	48.5	91.1	54.9	55.8	102	14.1	20 - 110	30	
2,4-Dimethylphenol	U	53.2	49.6	93.3	54.9	53.7	97.8	7.99	20 - 120	30	
2,4-Dinitrophenol	U	53.2	27.9	52.5	54.9	30.2	54.9	7.63	20 - 140	30	
2,4-Dinitrotoluene	U	53.2	54.5	102	54.9	57.0	104	4.56	50 - 139	30	
2,6-Dinitrotoluene	U	53.2	54.9	103	54.9	58.0	106	5.58	50 - 120	30	
2-Chloronaphthalene	U	53.2	41.4	77.9	54.9	46.8	85.2	12.3	25 - 120	30	
2-Chlorophenol	U	53.2	36.7	69.1	54.9	43.3	78.9	16.5	25 - 110	30	
2-Methylnaphthalene	U	53.2	37.7	70.8	54.9	44.2	80.4	15.9	25 - 120	30	
2-Methylphenol	U	53.2	40.7	76.5	54.9	42.7	77.7	4.90	20 - 110	30	
2-Nitroaniline	U	53.2	59.9	113	54.9	51.5	93.7	15.2	45 - 115	30	
2-Nitrophenol	U	53.2	43.0	80.9	54.9	51.4	93.6	17.8	20 - 115	30	
3-Nitroaniline	U	53.2	51.0	95.9	54.9	54.2	98.6	6.03	40 - 120	30	
3,3'-Dichlorobenzidine	U	53.2	60.8	114	54.9	67.0	122	9.63	30 - 140	30	
3-,4-Methylphenol	U	53.2	38.3	72	54.9	39.6	72	3.28	20 - 110	30	
4-Bromophenyl-phenylether	U	53.2	50.9	95.6	54.9	53.6	97.6	5.33	40 - 115	30	
4-Chloroaniline	U	53.2	50.0	94.1	54.9	47.7	86.9	4.72	25 - 120	30	
4-Nitrophenol	U	53.2	28.1	52.9	54.9	23.7	43.1	17.0	10 - 132	30	
Acenaphthene	U	53.2	48.8	91.8	54.9	51.7	94.2	5.85	30 - 120	30	
Acenaphthylene	U	53.2	50.4	94.7	54.9	53.1	96.6	5.19	30 - 120	30	
Anthracene	U	53.2	52.1	97.9	54.9	54.4	99.1	4.43	55 - 130	30	
Benzo(a)anthracene	U	53.2	57.0	107	54.9	60.5	110	5.96	60 - 130	30	
Benzo(a)pyrene	U	53.2	56.2	106	54.9	59.9	109	6.43	55 - 135	30	
Benzo(b)fluoranthene	U	53.2	50.2	94.4	54.9	54.2	98.7	7.73	45 - 125	30	
Benzo(g,h,i)Perylene	U	53.2	59.0	111	54.9	63.0	115	6.65	45 - 140	30	
Benzo(k)fluoranthene	U	53.2	57.3	108	54.9	59.9	109	4.44	55 - 140	30	
Benzoic acid	U	53.2	24.3	45.6	54.9	34.6	62.9	35.0	10 - 100	30	#
Benzyl alcohol	U	53.2	43.6	81.9	54.9	45.8	83.4	5.02	20 - 110	30	
Bis(2-Chloroethyl)ether	U	53.2	41.9	78.7	54.9	40.6	74	2.99	25 - 110	30	
Bis(2-Chloroethoxy)Methane	U	53.2	37.3	70.1	54.9	37.4	68.1	0.374	20 - 105	30	
bis(2-Ethylhexyl)phthalate	U	53.2	56.2	106	54.9	59.3	108	5.28	50 - 150	30	
Butylbenzylphthalate	U	53.2	53.4	100	54.9	61.2	111	13.6	55 - 150	30	
Carbazole	U	53.2	56.6	106	54.9	58.9	107	3.89	50 - 130	30	
Chrysene	U	53.2	60.7	114	54.9	64.8	118	6.56	55 - 130	30	
Di-N-Butylphthalate	U	53.2	53.5	101	54.9	54.6	99.3	2.03	55 - 118	30	
Di-n-octylphthalate	U	53.2	52.7	99.2	54.9	56.8	103	7.36	40 - 146	30	
Dibenzo(a,h)Anthracene	U	53.2	33.4	62.7	54.9	35.9	65.3	7.32	45 - 125	30	
Dibenzofuran	U	53.2	48.4	91	54.9	52.0	94.6	7.15	35 - 115	30	
Diethylphthalate	U	53.2	55.3	104	54.9	54.1	98.5	2.22	45 - 120	30	

MS_MSD - Modified 03/06/2008

PDF File ID: 5460102

Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L17081498 Cal ID: HPMS12 03-AUG-17 Worknum:WG627873

Instrument ID:HPMS12 Contract #: Prep Method:3510C

Parent ID:L17081498-03 File ID:12M64171 Dil:1 Method:8270D

Sample ID:L17081498-05 MS File ID:12M64172 Dil:1 Matrix:Water

Sample ID:L17081498-06 MSD File ID:12M64173 Dil:1 Units:ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Dimethylphthalate	U	53.2	53.4	100	54.9	55.5	101	3.81	25 - 112	30	
Fluoranthene	U	53.2	56.2	106	54.9	54.6	99.4	2.97	50 - 137	30	
Fluorene	U	53.2	52.0	97.9	54.9	54.4	99.1	4.48	40 - 120	30	
Hexachlorobenzene	U	53.2	61.3	115	54.9	64.2	117	4.60	50 - 130	30	
Hexachlorobutadiene	U	53.2	33.5	63	54.9	41.7	75.9	21.8	24 - 105	30	
Hexachlorocyclopentadiene	U	53.2	24.2	45.6	54.9	29.1	53	18.4	20 - 143	30	
Hexachloroethane	U	53.2	26.8	50.3	54.9	30.4	55.2	12.5	25 - 95	30	
Indeno(1,2,3-cd)pyrene	U	53.2	53.2	100	54.9	56.9	104	6.74	50 - 135	30	
Isophorone	U	53.2	55.1	104	54.9	51.8	94.3	6.26	30 - 110	30	
Diphenylamine/n-Nitrosodiphenylamine	U	53.2	51.6	97	54.9	58.7	107	13.0	40 - 110	30	
Naphthalene	U	53.2	34.1	64.2	54.9	41.2	75	18.8	25 - 110	30	
Nitrobenzene	U	53.2	43.2	81.2	54.9	43.5	79.2	0.742	30 - 110	30	
Pentachlorophenol	U	53.2	61.5	116	54.9	64.7	118	5.15	40 - 140	30	
Phenanthrene	U	53.2	54.0	101	54.9	56.8	103	5.03	55 - 120	30	
Phenol	U	53.2	19.2	36.2	54.9	20.3	36.9	5.12	10 - 120	30	
Pyrene	U	53.2	53.0	99.6	54.9	56.6	103	6.64	55 - 130	30	

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008

PDF File ID: 5460102

Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L17081498 Cal ID:HPMS19- 15-AUG-17 Worknum:WG628781

Instrument ID:HPMS19 Contract #: Prep Method:3510C

Parent ID:L17081498-03 File ID:19M000545 Dil:1 Method:8270D

Sample ID:L17081498-05 MS File ID:19M000546 Dil:1 Matrix:Water

Sample ID:L17081498-06 MSD File ID:19M000547 Dil:1 Units:ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
1,1'-Biphenyl	U	54.9	36.7	66.8	53.8	36.6	68.1	0.187	40 - 140	30	

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008

PDF File ID: 5460102

Report generated 09/18/2017 08:41

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

DFTPP

Login Number: L17081498
Instrument: HPMS12
Analyst: SCB
Workgroup: WG621882

Tune ID: WG621882-01
Run Date: 07/14/2017
Run Time: 16:06
File ID: 12M63383
Cal ID: HPMS12-14-JUL-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	37.3	33025	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	44.8	39589	PASS
70.0	69.0	0	2.00	0.384	152	PASS
127	198	40.0	60.0	53.6	47445	PASS
197	198	0	1.00	0	0	PASS
198	198	100	100	100	88442	PASS
199	198	5.00	9.00	6.83	6044	PASS
275	198	10.0	30.0	26.7	23635	PASS
365	198	1.00	100	3.62	3201	PASS
441	443	0.0100	100	74.5	10879	PASS
442	198	40.0	100	84.7	74920	PASS
443	442	17.0	23.0	19.5	14603	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG621894-01	STD-CCV	01	07/14/2017 23:06	
WG621894-02	STD	01	07/14/2017 23:39	
WG621894-03	STD	01	07/15/2017 00:12	
WG621894-04	STD	01	07/15/2017 00:45	
WG621894-05	STD	01	07/15/2017 01:18	
WG621894-06	STD	01	07/15/2017 01:51	
WG621894-07	STD	01	07/15/2017 02:23	
WG621894-08	SSCV	01	07/15/2017 02:56	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5460105
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

DFTPP

Login Number: L17081498
Instrument: HPMS12
Analyst: MES
Workgroup: WG624321

Tune ID: WG624321-01
Run Date: 08/03/2017
Run Time: 09:00
File ID: 12M63784
Cal ID: HPMS12-03-AUG-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	41.7	34533	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	50.4	41696	PASS
70.0	69.0	0	2.00	0.525	219	PASS
127	198	40.0	60.0	56.8	47008	PASS
197	198	0	1.00	0	0	PASS
198	198	100	100	100	82792	PASS
199	198	5.00	9.00	6.83	5652	PASS
275	198	10.0	30.0	24.4	20210	PASS
365	198	1.00	100	2.72	2252	PASS
441	443	0.0100	100	72.7	8540	PASS
442	198	40.0	100	71.3	59042	PASS
443	442	17.0	23.0	19.9	11743	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG624321-02	STD-CCV	01	08/03/2017 09:18	
WG624321-03	STD	01	08/03/2017 09:51	
WG624321-04	STD	01	08/03/2017 10:24	
WG624321-05	STD	01	08/03/2017 10:57	
WG624321-06	STD	01	08/03/2017 11:29	
WG624321-07	STD	01	08/03/2017 12:02	
WG624321-08	STD	01	08/03/2017 12:35	
WG624321-09	STD	01	08/03/2017 13:08	
WG624321-10	STD	01	08/03/2017 13:41	
WG624321-12	SSCV	01	08/03/2017 14:58	
WG624321-11	SSCV	01	08/03/2017 15:28	
WG624321-13	SSCV	01	08/03/2017 16:00	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5460105
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

DFTPP

Login Number: L17081498
Instrument: HPMS12
Analyst: SCB
Workgroup: WG627960

Tune ID: WG627960-01
Run Date: 08/31/2017
Run Time: 09:21
File ID: 12M64164
Cal ID: HPMS12 - 03-AUG-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	44.4	36496	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	52.8	43341	PASS
70.0	69.0	0	2.00	0.888	385	PASS
127	198	40.0	60.0	55.5	45554	PASS
197	198	0	1.00	0	0	PASS
198	198	100	100	100	82136	PASS
199	198	5.00	9.00	6.82	5599	PASS
275	198	10.0	30.0	25.9	21299	PASS
365	198	1.00	100	2.89	2373	PASS
441	443	0.0100	100	79.4	6767	PASS
442	198	40.0	100	53.3	43746	PASS
443	442	17.0	23.0	19.5	8528	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG627960-02	CCV	01	08/31/2017 09:39	
WG627757-01	BLANK	01	08/31/2017 10:11	
WG627757-01	BLANK	01	08/31/2017 10:11	
WG627757-02	LCS	01	08/31/2017 10:44	
L17081498-01	MW07-082517	01	08/31/2017 12:22	
L17081498-03	MW06-082517	01	08/31/2017 12:54	
L17081498-05	MW06-082517-MS	01	08/31/2017 13:27	
L17081498-06	MW06-082517-MSD	01	08/31/2017 14:01	
L17081498-07	MW10-082517	01	08/31/2017 14:31	
L17081498-09	MW20-082517	01	08/31/2017 15:04	
WG627606-01	FBLK2	01	08/31/2017 16:09	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5460105
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

DFTPP

Login Number: L17081498
Instrument: HPMS19
Analyst: SCB
Workgroup: WG625881

Tune ID: WG625881-01
Run Date: 08/15/2017
Run Time: 16:11
File ID: 19M000306
Cal ID: HPMS19 - 15-AUG-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	36.6	20581	PASS
68.0	69.0	0	2.00	0.769	167	PASS
69.0	198	0	100	38.6	21704	PASS
70.0	69.0	0	2.00	0	0	PASS
127	198	40.0	60.0	51.8	29157	PASS
197	198	0	1.00	0.299	168	PASS
198	198	100	100	100	56240	PASS
199	198	5.00	9.00	6.87	3861	PASS
275	198	10.0	30.0	24.3	13643	PASS
365	198	1.00	100	3.01	1692	PASS
441	443	0.0100	100	76.2	7930	PASS
442	198	40.0	100	96.0	53973	PASS
443	442	17.0	23.0	19.3	10413	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG625881-02	STD-CCV	01	08/15/2017 16:29	
WG625881-03	STD	01	08/15/2017 16:59	
WG625881-04	STD	01	08/15/2017 17:30	
WG625881-05	STD	01	08/15/2017 18:00	
WG625881-06	STD	01	08/15/2017 18:30	
WG625881-07	STD	01	08/15/2017 19:00	
WG625881-08	STD	01	08/15/2017 19:30	
WG625881-09	STD	01	08/15/2017 20:00	
WG625881-10	STD	01	08/15/2017 20:30	
WG625881-11	SSCV	01	08/15/2017 21:00	
WG625881-12	SSCV	01	08/15/2017 21:30	
WG625881-13	SSCV	01	08/15/2017 22:01	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5460105
Report generated 09/18/2017 08:43

DFTPP

Login Number: L17081498
Instrument: HPMS19
Analyst: SCB
Workgroup: WG626039

Tune ID: WG626039-01
Run Date: 08/16/2017
Run Time: 11:56
File ID: 19M000322
Cal ID: HPMS19 - 16-AUG-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	36.7	21190	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	37.5	21660	PASS
70.0	69.0	0	2.00	0	0	PASS
127	198	40.0	60.0	51.7	29875	PASS
197	198	0	1.00	0	0	PASS
198	198	100	100	100	57789	PASS
199	198	5.00	9.00	6.60	3812	PASS
275	198	10.0	30.0	23.8	13771	PASS
365	198	1.00	100	3.20	1849	PASS
441	443	0.0100	100	76.1	8190	PASS
442	198	40.0	100	97.0	56045	PASS
443	442	17.0	23.0	19.2	10759	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG626039-02	STD-CCV	01	08/16/2017 12:14	
WG626039-03	STD	01	08/16/2017 12:44	
WG626039-04	STD	01	08/16/2017 13:14	
WG626039-05	STD	01	08/16/2017 13:45	
WG626039-06	STD	01	08/16/2017 14:15	
WG626039-07	STD	01	08/16/2017 14:45	
WG626039-08	STD	01	08/16/2017 15:15	
WG626039-09	SSCV	01	08/16/2017 15:45	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5460105
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

DFTPP

Login Number: L17081498
Instrument: HPMS19
Analyst: MES
Workgroup: WG629380

Tune ID: WG629380-01
Run Date: 09/12/2017
Run Time: 14:04
File ID: 19M000497
Cal ID: HPMS19 - 15-AUG-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	35.2	18386	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	35.2	18404	PASS
70.0	69.0	0	2.00	0	0	PASS
127	198	40.0	60.0	50.0	26140	PASS
197	198	0	1.00	0.331	173	PASS
198	198	100	100	100	52261	PASS
199	198	5.00	9.00	6.52	3406	PASS
275	198	10.0	30.0	24.1	12605	PASS
365	198	1.00	100	3.16	1649	PASS
441	443	0.0100	100	74.5	7412	PASS
442	198	40.0	100	96.3	50349	PASS
443	442	17.0	23.0	19.8	9954	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG629380-02	CCV	01	09/12/2017 14:21	
WG629382-01	CCV	01	09/12/2017 14:52	
WG628510-01	BLANK	01	09/12/2017 16:50	
WG628510-02	LCS	01	09/12/2017 17:21	
WG628510-03	LCS2	01	09/12/2017 17:51	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5460105
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

DFTPP

Login Number: L17081498
Instrument: HPMS19
Analyst: SCB
Workgroup: WG629552

Tune ID: WG629552-01
Run Date: 09/13/2017
Run Time: 13:36
File ID: 19M000539
Cal ID: HPMS19 - 15-AUG-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	41.1	23197	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	40.4	22795	PASS
70.0	69.0	0	2.00	0	0	PASS
127	198	40.0	60.0	53.2	30000	PASS
197	198	0	1.00	0	0	PASS
198	198	100	100	100	56403	PASS
199	198	5.00	9.00	6.62	3732	PASS
275	198	10.0	30.0	22.7	12776	PASS
365	198	1.00	100	2.83	1598	PASS
441	443	0.0100	100	76.5	6584	PASS
442	198	40.0	100	79.1	44592	PASS
443	442	17.0	23.0	19.3	8612	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG629552-02	CCV	01	09/13/2017 13:54	
WG629570-01	CCV	01	09/13/2017 14:25	
L17081498-01	MW07-082517	RE	09/13/2017 15:58	
L17081498-03	MW06-082517	RE	09/13/2017 16:28	
L17081498-05	MW06-082517-MS	RE	09/13/2017 16:58	
L17081498-06	MW06-082517-MSD	RE	09/13/2017 17:28	
L17081498-07	MW10-082517	RE	09/13/2017 17:59	
L17081498-09	MW20-082517	RE	09/13/2017 18:29	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5460105
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

Login Number: L17081498 **Instrument ID:** HPMS12

Analytical Method: 8270D **Initial Calibration Date:** 15-JUL-17 02:23

ICAL Workgroup: WG621894 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
1,1'-Biphenyl		1.619	9.27		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

Login Number: L17081498 **Instrument ID:** HPMS12
Analytical Method: 8270D **Initial Calibration Date:** 03-AUG-17 13:41
ICAL Workgroup: WG624321 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
2,4,6-Trichlorophenol	CCC	0.4172	8.82		
2,4-Dichlorophenol	CCC	0.2839	8.67		
2-Nitrophenol	CCC	0.1875	7.10		
Acenaphthene	CCC	1.283	9.50		
Benzo[a]pyrene	CCC	1.102	9.30		
Di-n-Octyl Phthalate	CCC	1.493	7.91		
Fluoranthene	CCC	1.219	8.24		
Hexachlorobutadiene	CCC	0.1901	3.79		
Pentachlorophenol	CCC	0.1314	19.0		1.00000
Phenol	CCC	1.583	4.24		
2,4-Dinitrophenol	SPCC	0.1923	34.6		1.00000
4-Nitrophenol	SPCC	0.3196	4.78		
Hexachlorocyclopentadiene	SPCC	0.2834	23.5		1.00000
n-Nitrosodipropylamine	SPCC	0.9885	3.86		
1,3-Dinitrobenzene		0.2517	8.64		
1,4-Dioxane		0.5234	8.84		
2,4,5-Trichlorophenol		0.4363	8.18		
2,4-Dimethylphenol		0.3123	6.63		
2,4-Dinitrotoluene		0.4723	10.3		
2,6-Dinitrotoluene		0.3437	6.86		
2-Chloronaphthalene		1.271	6.04		
2-Chlorophenol		1.330	4.89		
2-Methylnaphthalene		0.7212	7.99		
2-Methylphenol		1.137	5.45		
2-Nitroaniline		0.4106	2.47		
3,3'-Dichlorobenzidine		0.4066	7.01		
3-Nitroaniline		0.3526	6.01		
4-Bromophenyl Phenyl Ether		0.2097	9.62		
4-Chloroaniline		0.1468	5.86		
Acenaphthylene		2.010	7.40		
Anthracene		1.149	7.22		
Benzo[a]anthracene		1.184	6.72		
Benzo[b]fluoranthene		1.333	9.26		
Benzo[ghi]perylene		0.9589	10.2		
Benzo[k]fluoranthene		1.119	7.86		
Benzoic Acid		0.1555	51.9		0.99700
Benzyl Alcohol		0.8471	6.79		
Butyl Benzyl Phthalate		0.6277	4.25		
Carbazole		0.9903	8.57		
Chrysene		1.074	7.47		
Di-n-Butyl Phthalate		1.311	5.49		
Dibenz[ah]anthracene		1.030	14.1		
Dibenzofuran		1.807	6.31		
Diethylphthalate		1.524	2.87		
Dimethylphthalate		1.479	4.73		

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

Login Number: L17081498
Analytical Method: 8270D
ICAL Workgroup: WG624321
Instrument ID: HPMS12
Initial Calibration Date: 03-AUG-17 13:41
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Fluorene		1.534	8.70		
Hexachlorobenzene		0.2178	8.58		
Hexachloroethane		0.6222	4.03		
Indeno[1,2,3-cd]pyrene		1.208	12.1		
Isophorone		0.6860	3.02		
Naphthalene		1.062	5.21		
Nitrobenzene		0.3953	2.12		
Phenanthrene		1.104	6.44		
Pyrene		1.251	6.96		
Sym-Trinitrobenzene		0.2383	15.6	1.00000	
bis(2-Chloroethoxy)methane		0.5399	3.66		
bis(2-Chloroethyl)ether		0.9310	2.94		
bis(2-Ethylhexyl)phthalate		0.8057	8.93		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

Login Number: L17081498
Analytical Method: 8270D
ICAL Workgroup: WG625881
Instrument ID: HPMS19
Initial Calibration Date: 15-AUG-17 20:30
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
2,4,6-Trichlorophenol	CCC	0.3832	6.99		
2,4-Dichlorophenol	CCC	0.2621	4.82		
2-Nitrophenol	CCC	0.1812	7.91		
Acenaphthene	CCC	1.216	11.4		
Benzo[a]pyrene	CCC	1.066	7.39		
Di-n-Octyl Phthalate	CCC	1.443	10.3		
Fluoranthene	CCC	1.233	4.99		
Hexachlorobutadiene	CCC	0.1496	7.11		
Pentachlorophenol	CCC	0.1147	16.4		1.00000
Phenol	CCC	1.633	4.98		
2,4-Dinitrophenol	SPCC	0.1295	34.9		0.99900
4-Nitrophenol	SPCC	0.2496	6.65		
Hexachlorocyclopentadiene	SPCC	0.2232	12.9		
n-Nitrosodipropylamine	SPCC	0.8597	14.1		
1,3-Dinitrobenzene		0.2498	12.3		
1,4-Dioxane		0.5810	4.43		
2,4,5-Trichlorophenol		0.3945	6.64		
2,4-Dimethylphenol		0.3079	3.80		
2,4-Dinitrotoluene		0.4362	9.18		
2,6-Dinitrotoluene		0.3385	5.51		
2-Chloronaphthalene		1.288	9.04		
2-Chlorophenol		1.406	3.38		
2-Methylnaphthalene		0.7021	8.87		
2-Methylphenol		1.001	8.26		
2-Nitroaniline		0.3709	3.32		
3,3'-Dichlorobenzidine		0.3776	9.62		
3-Nitroaniline		0.3995	3.38		
4-Bromophenyl Phenyl Ether		0.2056	6.93		
4-Chloroaniline		0.1235	5.22		
Acenaphthylene		1.986	9.78		
Anthracene		1.165	7.07		
Benzo[a]anthracene		1.167	4.63		
Benzo[b]fluoranthene		1.153	6.35		
Benzo[ghi]perylene		0.9196	10.4		
Benzo[k]fluoranthene		1.112	2.85		
Benzoic Acid		0.1509	48.8		0.99700
Benzyl Alcohol		0.9023	4.07		
Butyl Benzyl Phthalate		0.5858	10.9		
Carbazole		1.070	5.47		
Chrysene		1.094	6.27		
Di-n-Butyl Phthalate		1.331	6.28		
Dibenz[ah]anthracene		0.9290	10.5		
Dibenzofuran		1.798	10.3		
Diethylphthalate		1.490	6.69		
Dimethylphthalate		1.451	6.59		

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

Login Number: L17081498 **Instrument ID:** HPMS19
Analytical Method: 8270D **Initial Calibration Date:** 15-AUG-17 20:30
ICAL Workgroup: WG625881 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Fluorene		1.371	13.5		
Hexachlorobenzene		0.2144	6.51		
Hexachloroethane		0.5807	3.42		
Indeno[1,2,3-cd]pyrene		1.101	10.1		
Isophorone		0.6277	4.10		
Naphthalene		1.053	7.69		
Nitrobenzene		0.3455	4.03		
Phenanthrene		1.134	8.65		
Pyrene		1.323	4.65		
Sym-Trinitrobenzene		0.1672	30.3	0.99500	
bis(2-Chloroethoxy)methane		0.4813	13.6		
bis(2-Chloroethyl)ether		1.037	9.04		
bis(2-Ethylhexyl)phthalate		0.7367	22.9	0.99600	

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

Login Number: L17081498 **Instrument ID:** HPMS19

Analytical Method: 8270D **Initial Calibration Date:** 16-AUG-17 15:15

ICAL Workgroup: WG626039 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
1,1'-Biphenyl		1.609	8.40		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS12
Initial Calibration Date: 15-JUL-17 02:23
Column ID: F

Analyte	WG621894-01			WG621894-02			WG621894-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1'-Biphenyl	50.0	857851.000	1.648	3.00	36040.0000	1.348	10.0	135309.000	1.544

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS12
Initial Calibration Date: 15-JUL-17 02:23
Column ID: F

Analyte	WG621894-04			WG621894-05			WG621894-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1'-Biphenyl	25.0	350812.000	1.554	80.0	1231389.00	1.716	100	1642731.00	1.756

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.
INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS12
Initial Calibration Date: 15-JUL-17 02:23
Column ID: F

Analyte	WG621894-07		
	CONC	RESP	RF
1,1'-Biphenyl	120	1846850.00	1.770

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D

Instrument ID: HPMS12
Initial Calibration Date: 03-AUG-17 13:41
Column ID: F

Analyte	WG624321-02			WG624321-03			WG624321-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
2,4,6-Trichlorophenol	50.0	143362.000	0.4249	NA	NA	NA	3.00	7106.00000	0.3620
2,4-Dichlorophenol	50.0	185798.000	0.2957	NA	NA	NA	3.00	9188.00000	0.2485
2-Nitrophenol	50.0	120740.000	0.1921	NA	NA	NA	3.00	6334.00000	0.1713
Acenaphthene	50.0	450451.000	1.335	NA	NA	NA	3.00	21850.0000	1.113
Benzo[a]pyrene	50.0	706002.000	1.132	NA	NA	NA	3.00	33109.0000	0.9498
Di-n-Octyl Phthalate	50.0	988911.000	1.586	NA	NA	NA	3.00	44091.0000	1.265
Fluoranthene	50.0	836164.000	1.261	NA	NA	NA	3.00	40884.0000	1.077
Hexachlorobutadiene	50.0	115415.000	0.1837	NA	NA	NA	3.00	6950.00000	0.1880
Pentachlorophenol	50.0	91214.0000	0.1376	NA	NA	NA	NA	NA	NA
Phenol	50.0	274165.000	1.654	NA	NA	NA	3.00	14334.0000	1.486
2,4-Dinitrophenol	50.0	71697.0000	0.2125	NA	NA	NA	NA	NA	NA
4-Nitrophenol	50.0	114976.000	0.3408	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	50.0	104360.000	0.3093	NA	NA	NA	3.00	2935.00000	0.1495
n-Nitrosodipropylamine	50.0	173365.000	1.046	NA	NA	NA	3.00	9633.00000	0.9984
1,3-Dinitrobenzene	50.0	87699.0000	0.2599	NA	NA	NA	3.00	4204.00000	0.2141
1,4-Dioxane	50.0	95861.0000	0.5782	NA	NA	NA	3.00	4188.00000	0.4341
2,4,5-Trichlorophenol	50.0	147452.000	0.4370	NA	NA	NA	3.00	7658.00000	0.3901
2,4-Dimethylphenol	50.0	204813.000	0.3259	NA	NA	NA	3.00	10270.0000	0.2777
2,4-Dinitrotoluene	50.0	164431.000	0.4873	NA	NA	NA	3.00	7615.00000	0.3879
2,6-Dinitrotoluene	50.0	118527.000	0.3513	NA	NA	NA	3.00	5860.00000	0.2985
2-Chloronaphthalene	50.0	432364.000	1.281	NA	NA	NA	3.00	23264.0000	1.185
2-Chlorophenol	50.0	226794.000	1.368	NA	NA	NA	3.00	11995.0000	1.243
2-Methylnaphthalene	50.0	465425.000	0.7407	NA	NA	NA	3.00	23619.0000	0.6388
2-Methylphenol	50.0	197075.000	1.189	NA	NA	NA	3.00	9985.00000	1.035
2-Nitroaniline	50.0	144557.000	0.4284	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	50.0	278281.000	0.4183	NA	NA	NA	3.00	13554.0000	0.3617
3-Nitroaniline	50.0	122315.000	0.3625	NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	50.0	140966.000	0.2126	NA	NA	NA	3.00	6944.00000	0.1829
4-Chloroaniline	50.0	98301.0000	0.1564	NA	NA	NA	3.00	4835.00000	0.1308
Acenaphthylene	50.0	696228.000	2.063	NA	NA	NA	3.00	35404.0000	1.803
Anthracene	50.0	786414.000	1.186	NA	NA	NA	3.00	40202.0000	1.059
Benzo[a]anthracene	50.0	809384.000	1.217	NA	NA	NA	3.00	40820.0000	1.089
Benzo[b]fluoranthene	50.0	827461.000	1.327	NA	NA	NA	3.00	41814.0000	1.200
Benzo[ghi]perylene	50.0	635912.000	1.020	NA	NA	NA	3.00	26929.0000	0.7725
Benzo[k]fluoranthene	50.0	683287.000	1.096	NA	NA	NA	3.00	34997.0000	1.004
Benzoic Acid	50.0	92829.0000	0.1477	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	50.0	147176.000	0.8876	NA	NA	NA	3.00	7277.00000	0.7542
Butyl Benzyl Phthalate	50.0	439238.000	0.6603	NA	NA	NA	3.00	21823.0000	0.5824
Carbazole	50.0	685230.000	1.033	NA	NA	NA	3.00	33531.0000	0.8832
Chrysene	50.0	728585.000	1.095	NA	NA	NA	3.00	36733.0000	0.9803
Di-n-Butyl Phthalate	50.0	912081.000	1.376	NA	NA	NA	3.00	45580.0000	1.201
Dibenz[ah]anthracene	50.0	683858.000	1.097	NA	NA	NA	3.00	27231.0000	0.7812

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS12
Initial Calibration Date: 03-AUG-17 13:41
Column ID: F

Analyte	WG624321-02			WG624321-03			WG624321-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Dibenzofuran	50.0	615103.000	1.823	NA	NA	NA	3.00	33190.0000	1.691
Diethylphthalate	50.0	522449.000	1.548	NA	NA	NA	3.00	28759.0000	1.465
Dimethylphthalate	50.0	500833.000	1.484	NA	NA	NA	3.00	26896.0000	1.370
Fluorene	50.0	537376.000	1.593	NA	NA	NA	3.00	25928.0000	1.321
Hexachlorobenzene	50.0	144458.000	0.2179	NA	NA	NA	3.00	7540.00000	0.1986
Hexachloroethane	50.0	106041.000	0.6395	NA	NA	NA	3.00	5656.00000	0.5862
Indeno[1,2,3-cd]pyrene	50.0	796452.000	1.277	NA	NA	NA	3.00	33233.0000	0.9534
Isophorone	50.0	452788.000	0.7206	NA	NA	NA	3.00	24521.0000	0.6632
Naphthalene	50.0	679118.000	1.081	NA	NA	NA	3.00	37572.0000	1.016
Nitrobenzene	50.0	254658.000	0.4053	NA	NA	NA	3.00	14824.0000	0.4009
Phenanthrene	50.0	747434.000	1.127	NA	NA	NA	3.00	39545.0000	1.042
Pyrene	50.0	861752.000	1.296	NA	NA	NA	3.00	42259.0000	1.128
Sym-Trinitrobenzene	50.0	175200.000	0.2642	NA	NA	NA	3.00	5937.00000	0.1564
bis(2-Chloroethoxy)methane	50.0	358779.000	0.5710	NA	NA	NA	3.00	19033.0000	0.5147
bis(2-Chloroethyl)ether	50.0	162035.000	0.9773	NA	NA	NA	3.00	8721.00000	0.9039
bis(2-Ethylhexyl)phthalate	50.0	580634.000	0.8729	1.00	8339.00000	0.6797	3.00	26984.0000	0.7201

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS12
Initial Calibration Date: 03-AUG-17 13:41
Column ID: F

Analyte	WG624321-05			WG624321-06			WG624321-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
2,4,6-Trichlorophenol	10.0	24942.0000	0.3759	15.0	39627.0000	0.4097	25.0	65340.0000	0.4033
2,4-Dichlorophenol	10.0	32496.0000	0.2564	15.0	49007.0000	0.2686	25.0	83977.0000	0.2777
2-Nitrophenol	10.0	21094.0000	0.1664	15.0	33472.0000	0.1834	25.0	56431.0000	0.1866
Acenaphthene	10.0	76074.0000	1.147	15.0	116647.000	1.206	25.0	201889.000	1.246
Benzo[a]pyrene	10.0	120278.000	0.9993	15.0	184441.000	1.041	25.0	321504.000	1.077
Di-n-Octyl Phthalate	10.0	166658.000	1.385	15.0	257918.000	1.455	25.0	450729.000	1.509
Fluoranthene	10.0	144887.000	1.100	15.0	222326.000	1.163	25.0	382018.000	1.196
Hexachlorobutadiene	10.0	22667.0000	0.1788	15.0	34509.0000	0.1891	25.0	57361.0000	0.1897
Pentachlorophenol	10.0	12346.0000	0.09370	15.0	20576.0000	0.1076	25.0	38379.0000	0.1201
Phenol	10.0	50320.0000	1.492	15.0	75803.0000	1.546	25.0	126901.000	1.604
2,4-Dinitrophenol	10.0	6281.00000	0.09470	15.0	12208.0000	0.1262	25.0	25403.0000	0.1568
4-Nitrophenol	10.0	19664.0000	0.2964	15.0	29343.0000	0.3033	25.0	52970.0000	0.3269
Hexachlorocyclopentadiene	10.0	15349.0000	0.2313	15.0	25858.0000	0.2673	25.0	47267.0000	0.2917
n-Nitrosodipropylamine	10.0	32730.0000	0.9707	15.0	49607.0000	1.012	25.0	81207.0000	1.026
1,3-Dinitrobenzene	10.0	15336.0000	0.2311	15.0	23201.0000	0.2399	25.0	40979.0000	0.2529
1,4-Dioxane	10.0	16774.0000	0.4975	15.0	24661.0000	0.5029	25.0	40699.0000	0.5144
2,4,5-Trichlorophenol	10.0	26581.0000	0.4006	15.0	40246.0000	0.4161	25.0	68652.0000	0.4237
2,4-Dimethylphenol	10.0	36775.0000	0.2901	15.0	56143.0000	0.3077	25.0	92342.0000	0.3054
2,4-Dinitrotoluene	10.0	28735.0000	0.4331	15.0	43591.0000	0.4506	25.0	75016.0000	0.4630
2,6-Dinitrotoluene	10.0	22035.0000	0.3321	15.0	32109.0000	0.3319	25.0	55193.0000	0.3406
2-Chloronaphthalene	10.0	78479.0000	1.183	15.0	119334.000	1.234	25.0	198280.000	1.224
2-Chlorophenol	10.0	41658.0000	1.235	15.0	63932.0000	1.304	25.0	105067.000	1.328
2-Methylnaphthalene	10.0	83107.0000	0.6557	15.0	125995.000	0.6905	25.0	213585.000	0.7064
2-Methylphenol	10.0	36290.0000	1.076	15.0	53599.0000	1.093	25.0	90392.0000	1.142
2-Nitroaniline	10.0	26193.0000	0.3948	15.0	39922.0000	0.4127	25.0	66562.0000	0.4108
3,3'-Dichlorobenzidine	10.0	48154.0000	0.3701	15.0	75253.0000	0.3971	25.0	131621.000	0.4103
3-Nitroaniline	10.0	21227.0000	0.3199	15.0	32030.0000	0.3311	25.0	56152.0000	0.3466
4-Bromophenyl Phenyl Ether	10.0	24786.0000	0.1881	15.0	37714.0000	0.1972	25.0	65494.0000	0.2050
4-Chloroaniline	10.0	17682.0000	0.1395	15.0	28345.0000	0.1553	25.0	46240.0000	0.1529
Acenaphthylene	10.0	122252.000	1.843	15.0	187076.000	1.934	25.0	316294.000	1.952
Anthracene	10.0	136818.000	1.038	15.0	208660.000	1.091	25.0	357363.000	1.119
Benzo[a]anthracene	10.0	140851.000	1.083	15.0	214524.000	1.132	25.0	370948.000	1.156
Benzo[b]fluoranthene	10.0	143249.000	1.190	15.0	217959.000	1.230	25.0	392919.000	1.316
Benzo[ghi]perylene	10.0	105513.000	0.8766	15.0	164207.000	0.9265	25.0	285468.000	0.9559
Benzo[k]fluoranthene	10.0	124540.000	1.035	15.0	192193.000	1.084	25.0	323520.000	1.083
Benzoic Acid	10.0	5734.00000	0.04520	15.0	13981.0000	0.07660	25.0	35220.0000	0.1165
Benzyl Alcohol	10.0	26096.0000	0.7739	15.0	40276.0000	0.8214	25.0	68050.0000	0.8600
Butyl Benzyl Phthalate	10.0	78452.0000	0.6030	15.0	117224.000	0.6185	25.0	205889.000	0.6418
Carbazole	10.0	116254.000	0.8824	15.0	178792.000	0.9351	25.0	309150.000	0.9678
Chrysene	10.0	126579.000	0.9728	15.0	193906.000	1.023	25.0	336236.000	1.048
Di-n-Butyl Phthalate	10.0	160503.000	1.218	15.0	243872.000	1.276	25.0	420683.000	1.317
Dibenz[ah]anthracene	10.0	107894.000	0.8964	15.0	169641.000	0.9571	25.0	303148.000	1.015

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D

Instrument ID: HPMS12
Initial Calibration Date: 03-AUG-17 13:41
Column ID: F

Analyte	WG624321-05			WG624321-06			WG624321-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Dibenzofuran	10.0	110919.000	1.672	15.0	167457.000	1.731	25.0	283516.000	1.750
Diethylphthalate	10.0	97099.0000	1.463	15.0	145730.000	1.507	25.0	244914.000	1.512
Dimethylphthalate	10.0	93063.0000	1.403	15.0	140820.000	1.456	25.0	237766.000	1.468
Fluorene	10.0	92662.0000	1.397	15.0	141214.000	1.460	25.0	244912.000	1.512
Hexachlorobenzene	10.0	26254.0000	0.1993	15.0	39198.0000	0.2050	25.0	65837.0000	0.2061
Hexachloroethane	10.0	19853.0000	0.5888	15.0	29642.0000	0.6045	25.0	51006.0000	0.6446
Indeno[1,2,3-cd]pyrene	10.0	129211.000	1.074	15.0	201995.000	1.140	25.0	355359.000	1.190
Isophorone	10.0	82831.0000	0.6535	15.0	125651.000	0.6886	25.0	210355.000	0.6957
Naphthalene	10.0	123398.000	0.9736	15.0	188456.000	1.033	25.0	315192.000	1.042
Nitrobenzene	10.0	48730.0000	0.3845	15.0	73203.0000	0.4012	25.0	121949.000	0.4033
Phenanthrene	10.0	133409.000	1.013	15.0	200128.000	1.047	25.0	341207.000	1.068
Pyrene	10.0	150104.000	1.154	15.0	226877.000	1.197	25.0	392433.000	1.223
Sym-Trinitrobenzene	10.0	28147.0000	0.2136	15.0	45475.0000	0.2378	25.0	81015.0000	0.2536
bis(2-Chloroethoxy)methane	10.0	64797.0000	0.5112	15.0	97594.0000	0.5349	25.0	164694.000	0.5447
bis(2-Chloroethyl)ether	10.0	30688.0000	0.9101	15.0	46577.0000	0.9499	25.0	75738.0000	0.9572
bis(2-Ethylhexyl)phthalate	10.0	97614.0000	0.7502	15.0	154290.000	0.8141	25.0	264664.000	0.8250

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

INITIAL CALIBRATION DATA

Login Number: L17081498 **Instrument ID:** HPMS12

Analytical Method: 8270D **Initial Calibration Date:** 03-AUG-17 13:41

Column ID: F

Analyte	WG624321-08			WG624321-09			WG624321-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
2,4,6-Trichlorophenol	80.0	233221.000	0.4395	100	307049.000	0.4576	120	371944.000	0.4649
2,4-Dichlorophenol	80.0	298122.000	0.3027	100	381144.000	0.3086	120	470852.000	0.3131
2-Nitrophenol	80.0	192421.000	0.1954	100	249412.000	0.2019	120	304533.000	0.2025
Acenaphthene	80.0	736001.000	1.387	100	948706.000	1.414	120	1135339.00	1.419
Benzo[a]pyrene	80.0	1184971.00	1.171	100	1525044.00	1.218	120	1889093.00	1.230
Di-n-Octyl Phthalate	80.0	1588303.00	1.569	100	2002193.00	1.598	120	2418483.00	1.575
Fluoranthene	80.0	1373799.00	1.287	100	1756636.00	1.332	120	2133959.00	1.335
Hexachlorobutadiene	80.0	189889.000	0.1928	100	248272.000	0.2010	120	297796.000	0.1980
Pentachlorophenol	80.0	154762.000	0.1450	100	205896.000	0.1561	120	255209.000	0.1596
Phenol	80.0	416281.000	1.601	100	535436.000	1.646	120	646442.000	1.635
2,4-Dinitrophenol	80.0	126383.000	0.2382	100	170019.000	0.2534	120	211589.000	0.2645
4-Nitrophenol	80.0	174395.000	0.3287	100	216670.000	0.3229	120	254402.000	0.3180
Hexachlorocyclopentadiene	80.0	176615.000	0.3329	100	229066.000	0.3414	120	275259.000	0.3441
n-Nitrosodipropylamine	80.0	250291.000	0.9626	100	312128.000	0.9596	120	368997.000	0.9335
1,3-Dinitrobenzene	80.0	142084.000	0.2678	100	181728.000	0.2708	120	221705.000	0.2771
1,4-Dioxane	80.0	141291.000	0.5434	100	182600.000	0.5614	120	219380.000	0.5550
2,4,5-Trichlorophenol	80.0	241798.000	0.4557	100	321114.000	0.4785	120	391150.000	0.4889
2,4-Dimethylphenol	80.0	319871.000	0.3248	100	412040.000	0.3336	120	501537.000	0.3335
2,4-Dinitrotoluene	80.0	266953.000	0.5031	100	347832.000	0.5184	120	428141.000	0.5352
2,6-Dinitrotoluene	80.0	189731.000	0.3576	100	244214.000	0.3639	120	299118.000	0.3739
2-Chloronaphthalene	80.0	698700.000	1.317	100	913688.000	1.362	120	1104447.00	1.381
2-Chlorophenol	80.0	354351.000	1.363	100	457587.000	1.407	120	550916.000	1.394
2-Methylnaphthalene	80.0	748466.000	0.7601	100	972575.000	0.7875	120	1187531.00	0.7897
2-Methylphenol	80.0	303953.000	1.169	100	390919.000	1.202	120	470883.000	1.191
2-Nitroaniline	80.0	219696.000	0.4141	100	273517.000	0.4076	120	324591.000	0.4057
3,3'-Dichlorobenzidine	80.0	456724.000	0.4200	100	590051.000	0.4387	120	724680.000	0.4365
3-Nitroaniline	80.0	190533.000	0.3591	100	249145.000	0.3713	120	302266.000	0.3778
4-Bromophenyl Phenyl Ether	80.0	235008.000	0.2202	100	308599.000	0.2340	120	380006.000	0.2377
4-Chloroaniline	80.0	144666.000	0.1469	100	182232.000	0.1475	120	217884.000	0.1449
Acenaphthylene	80.0	1127859.00	2.126	100	1443464.00	2.151	120	1765239.00	2.207
Anthracene	80.0	1284765.00	1.204	100	1646526.00	1.248	120	1992241.00	1.246
Benzo[a]anthracene	80.0	1345971.00	1.238	100	1725881.00	1.283	120	2112698.00	1.272
Benzo[b]fluoranthene	80.0	1450579.00	1.433	100	1878686.00	1.500	120	2261901.00	1.473
Benzo[ghi]perylene	80.0	1036703.00	1.024	100	1313171.00	1.048	120	1608025.00	1.047
Benzo[k]fluoranthene	80.0	1194591.00	1.180	100	1527748.00	1.220	120	1917662.00	1.249
Benzoic Acid	80.0	213353.000	0.2167	100	294992.000	0.2388	120	371653.000	0.2471
Benzyl Alcohol	80.0	228348.000	0.8782	100	293984.000	0.9039	120	354665.000	0.8972
Butyl Benzyl Phthalate	80.0	704392.000	0.6477	100	873713.000	0.6496	120	1026870.00	0.6185
Carbazole	80.0	1117866.00	1.047	100	1435053.00	1.088	120	1735866.00	1.086
Chrysene	80.0	1226809.00	1.128	100	1582651.00	1.177	120	1939193.00	1.168
Di-n-Butyl Phthalate	80.0	1443127.00	1.352	100	1824819.00	1.383	120	2185028.00	1.367
Dibenz[ah]anthracene	80.0	1144648.00	1.131	100	1478809.00	1.181	120	1821329.00	1.186

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS12
Initial Calibration Date: 03-AUG-17 13:41
Column ID: F

Analyte	WG624321-08			WG624321-09			WG624321-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Dibenzofuran	80.0	1004223.00	1.893	100	1290423.00	1.923	120	1582379.00	1.978
Diethylphthalate	80.0	824061.000	1.553	100	1052518.00	1.569	120	1257685.00	1.572
Dimethylphthalate	80.0	809883.000	1.526	100	1044551.00	1.557	120	1252629.00	1.566
Fluorene	80.0	876167.000	1.651	100	1116917.00	1.665	120	1340305.00	1.675
Hexachlorobenzene	80.0	244656.000	0.2292	100	317630.000	0.2408	120	392652.000	0.2456
Hexachloroethane	80.0	164882.000	0.6341	100	210355.000	0.6467	120	250408.000	0.6335
Indeno[1,2,3-cd]pyrene	80.0	1324916.00	1.309	100	1704851.00	1.361	120	2089990.00	1.361
Isophorone	80.0	676136.000	0.6866	100	860450.000	0.6967	120	1027349.00	0.6832
Naphthalene	80.0	1079380.00	1.096	100	1398291.00	1.132	120	1690525.00	1.124
Nitrobenzene	80.0	381673.000	0.3876	100	485640.000	0.3932	120	580807.000	0.3862
Phenanthrene	80.0	1228478.00	1.151	100	1562504.00	1.185	120	1919512.00	1.201
Pyrene	80.0	1422928.00	1.308	100	1825441.00	1.357	120	2227242.00	1.341
Sym-Trinitrobenzene	80.0	273650.000	0.2564	100	347629.000	0.2635	120	417417.000	0.2611
bis(2-Chloroethoxy)methane	80.0	540595.000	0.5490	100	683354.000	0.5533	120	812727.000	0.5405
bis(2-Chloroethyl)ether	80.0	235911.000	0.9073	100	302382.000	0.9297	120	360745.000	0.9126
bis(2-Ethylhexyl)phthalate	80.0	932962.000	0.8579	100	1178977.00	0.8766	120	1419936.00	0.8552

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498 **Instrument ID:** HPMS19

Analytical Method: 8270D **Initial Calibration Date:** 15-AUG-17 20:30

Column ID: F

Analyte	WG625881-02			WG625881-03			WG625881-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
2,4,6-Trichlorophenol	50.0	118127.000	0.4024	NA	NA	NA	3.00	5947.00000	0.3306
2,4-Dichlorophenol	50.0	161539.000	0.2662	NA	NA	NA	3.00	8873.00000	0.2477
2-Nitrophenol	50.0	115041.000	0.1896	NA	NA	NA	3.00	5375.00000	0.1500
Acenaphthene	50.0	358371.000	1.221	NA	NA	NA	3.00	24151.0000	1.343
Benzo[a]pyrene	50.0	650040.000	1.140	NA	NA	NA	3.00	28426.0000	0.8911
Di-n-Octyl Phthalate	50.0	869473.000	1.525	NA	NA	NA	3.00	43518.0000	1.364
Fluoranthene	50.0	695741.000	1.251	NA	NA	NA	3.00	41077.0000	1.249
Hexachlorobutadiene	50.0	90961.0000	0.1499	NA	NA	NA	3.00	5786.00000	0.1615
Pentachlorophenol	50.0	70894.0000	0.1275	NA	NA	NA	NA	NA	NA
Phenol	50.0	243434.000	1.649	NA	NA	NA	3.00	15783.0000	1.687
2,4-Dinitrophenol	50.0	42427.0000	0.1445	NA	NA	NA	NA	NA	NA
4-Nitrophenol	50.0	78549.0000	0.2676	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	50.0	73140.0000	0.2492	NA	NA	NA	3.00	2915.00000	0.1621
n-Nitrosodipropylamine	50.0	127824.000	0.8656	NA	NA	NA	3.00	8842.00000	0.9450
1,3-Dinitrobenzene	50.0	78248.0000	0.2666	NA	NA	NA	3.00	3225.00000	0.1793
1,4-Dioxane	50.0	86076.0000	0.5829	NA	NA	NA	3.00	5585.00000	0.5969
2,4,5-Trichlorophenol	50.0	122894.000	0.4187	NA	NA	NA	3.00	6215.00000	0.3455
2,4-Dimethylphenol	50.0	191562.000	0.3157	NA	NA	NA	3.00	10829.0000	0.3022
2,4-Dinitrotoluene	50.0	135994.000	0.4633	NA	NA	NA	3.00	6188.00000	0.3440
2,6-Dinitrotoluene	50.0	101957.000	0.3474	NA	NA	NA	3.00	5391.00000	0.2997
2-Chloronaphthalene	50.0	374509.000	1.276	NA	NA	NA	3.00	25715.0000	1.430
2-Chlorophenol	50.0	212760.000	1.441	NA	NA	NA	3.00	12531.0000	1.339
2-Methylnaphthalene	50.0	420981.000	0.6937	NA	NA	NA	3.00	28431.0000	0.7935
2-Methylphenol	50.0	149301.000	1.011	NA	NA	NA	3.00	9636.00000	1.030
2-Nitroaniline	50.0	111402.000	0.3795	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	50.0	216683.000	0.3968	NA	NA	NA	3.00	9684.00000	0.3061
3-Nitroaniline	50.0	120595.000	0.4109	NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	50.0	114289.000	0.2055	NA	NA	NA	3.00	7241.00000	0.2202
4-Chloroaniline	50.0	77976.0000	0.1285	NA	NA	NA	3.00	4228.00000	0.1180
Acenaphthylene	50.0	585835.000	1.996	NA	NA	NA	3.00	38681.0000	2.151
Anthracene	50.0	657464.000	1.182	NA	NA	NA	3.00	40131.0000	1.221
Benzo[a]anthracene	50.0	645088.000	1.181	NA	NA	NA	3.00	37369.0000	1.181
Benzo[b]fluoranthene	50.0	666796.000	1.170	NA	NA	NA	3.00	38662.0000	1.212
Benzo[ghi]perylene	50.0	592378.000	1.039	NA	NA	NA	3.00	23491.0000	0.7364
Benzo[k]fluoranthene	50.0	658547.000	1.155	NA	NA	NA	3.00	34909.0000	1.094
Benzoic Acid	50.0	90098.0000	0.1485	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	50.0	137299.000	0.9298	NA	NA	NA	3.00	7856.00000	0.8396
Butyl Benzyl Phthalate	50.0	329213.000	0.6029	NA	NA	NA	3.00	17643.0000	0.5577
Carbazole	50.0	609038.000	1.095	NA	NA	NA	3.00	35676.0000	1.085
Chrysene	50.0	596956.000	1.093	NA	NA	NA	3.00	36914.0000	1.167
Di-n-Butyl Phthalate	50.0	783963.000	1.410	NA	NA	NA	3.00	39750.0000	1.209
Dibenz[ah]anthracene	50.0	590228.000	1.035	NA	NA	NA	3.00	23403.0000	0.7337

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS19
Initial Calibration Date: 15-AUG-17 20:30
Column ID: F

Analyte	WG625881-02			WG625881-03			WG625881-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Dibenzofuran	50.0	525331.000	1.790	NA	NA	NA	3.00	36300.0000	2.018
Diethylphthalate	50.0	441506.000	1.504	NA	NA	NA	3.00	27174.0000	1.511
Dimethylphthalate	50.0	428108.000	1.459	NA	NA	NA	3.00	27739.0000	1.542
Fluorene	50.0	395361.000	1.347	NA	NA	NA	3.00	28022.0000	1.558
Hexachlorobenzene	50.0	118995.000	0.2140	NA	NA	NA	3.00	7550.00000	0.2296
Hexachloroethane	50.0	89952.0000	0.6091	NA	NA	NA	3.00	5373.00000	0.5743
Indeno[1,2,3-cd]pyrene	50.0	696835.000	1.222	NA	NA	NA	3.00	28295.0000	0.8870
Isophorone	50.0	390325.000	0.6432	NA	NA	NA	3.00	22617.0000	0.6313
Naphthalene	50.0	635125.000	1.047	NA	NA	NA	3.00	41231.0000	1.151
Nitrobenzene	50.0	212927.000	0.3509	NA	NA	NA	3.00	12832.0000	0.3582
Phenanthrene	50.0	627565.000	1.129	NA	NA	NA	3.00	41420.0000	1.260
Pyrene	50.0	722814.000	1.324	NA	NA	NA	3.00	42599.0000	1.347
Sym-Trinitrobenzene	50.0	104956.000	0.1887	NA	NA	NA	3.00	2204.00000	0.06700
bis(2-Chloroethoxy)methane	50.0	291615.000	0.4805	NA	NA	NA	3.00	19987.0000	0.5579
bis(2-Chloroethyl)ether	50.0	153297.000	1.038	NA	NA	NA	3.00	10700.0000	1.144
bis(2-Ethylhexyl)phthalate	50.0	467962.000	0.8570	1.00	3442.00000	0.3472	3.00	18812.0000	0.5947

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498 **Instrument ID:** HPMS19

Analytical Method: 8270D **Initial Calibration Date:** 15-AUG-17 20:30

Column ID: F

Analyte	WG625881-05			WG625881-06			WG625881-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
2,4,6-Trichlorophenol	10.0	22916.0000	0.3720	15.0	36276.0000	0.4073	25.0	65769.0000	0.4144
2,4-Dichlorophenol	10.0	33753.0000	0.2653	15.0	51947.0000	0.2749	25.0	91431.0000	0.2832
2-Nitrophenol	10.0	21875.0000	0.1719	15.0	34256.0000	0.1813	25.0	62827.0000	0.1946
Acenaphthene	10.0	82085.0000	1.333	15.0	119698.000	1.344	25.0	207188.000	1.306
Benzo[a]pyrene	10.0	113675.000	1.021	15.0	176975.000	1.092	25.0	326083.000	1.123
Di-n-Octyl Phthalate	10.0	127108.000	1.142	15.0	218357.000	1.348	25.0	439639.000	1.513
Fluoranthene	10.0	146526.000	1.280	15.0	218768.000	1.302	25.0	377135.000	1.293
Hexachlorobutadiene	10.0	20298.0000	0.1596	15.0	29486.0000	0.1560	25.0	50512.0000	0.1564
Pentachlorophenol	10.0	9291.00000	0.08120	15.0	16253.0000	0.09670	25.0	33400.0000	0.1145
Phenol	10.0	52196.0000	1.647	15.0	83112.0000	1.744	25.0	139713.000	1.710
2,4-Dinitrophenol	10.0	3566.00000	0.05790	15.0	7316.00000	0.08220	25.0	18719.0000	0.1180
4-Nitrophenol	10.0	14495.0000	0.2353	15.0	23202.0000	0.2605	25.0	42619.0000	0.2685
Hexachlorocyclopentadiene	10.0	12555.0000	0.2038	15.0	20948.0000	0.2352	25.0	39304.0000	0.2477
n-Nitrosodipropylamine	10.0	31053.0000	0.9800	15.0	46767.0000	0.9814	25.0	76932.0000	0.9414
1,3-Dinitrobenzene	10.0	14400.0000	0.2338	15.0	22724.0000	0.2552	25.0	42689.0000	0.2690
1,4-Dioxane	10.0	17912.0000	0.5653	15.0	30285.0000	0.6355	25.0	46240.0000	0.5658
2,4,5-Trichlorophenol	10.0	23511.0000	0.3817	15.0	36905.0000	0.4144	25.0	67517.0000	0.4254
2,4-Dimethylphenol	10.0	39442.0000	0.3100	15.0	59733.0000	0.3161	25.0	105582.000	0.3270
2,4-Dinitrotoluene	10.0	26949.0000	0.4375	15.0	40454.0000	0.4543	25.0	75172.0000	0.4737
2,6-Dinitrotoluene	10.0	20418.0000	0.3314	15.0	31486.0000	0.3536	25.0	57433.0000	0.3619
2-Chloronaphthalene	10.0	83444.0000	1.355	15.0	124239.000	1.395	25.0	217415.000	1.370
2-Chlorophenol	10.0	44163.0000	1.394	15.0	69697.0000	1.463	25.0	119874.000	1.467
2-Methylnaphthalene	10.0	92087.0000	0.7239	15.0	141704.000	0.7499	25.0	240481.000	0.7448
2-Methylphenol	10.0	34273.0000	1.082	15.0	52397.0000	1.100	25.0	87173.0000	1.067
2-Nitroaniline	10.0	21650.0000	0.3514	15.0	33644.0000	0.3778	25.0	61593.0000	0.3881
3,3'-Dichlorobenzidine	10.0	42785.0000	0.3824	15.0	67918.0000	0.4104	25.0	121174.000	0.4248
3-Nitroaniline	10.0	23231.0000	0.3771	15.0	36636.0000	0.4114	25.0	65577.0000	0.4132
4-Bromophenyl Phenyl Ether	10.0	24077.0000	0.2104	15.0	37342.0000	0.2222	25.0	63146.0000	0.2165
4-Chloroaniline	10.0	16312.0000	0.1282	15.0	24654.0000	0.1305	25.0	41975.0000	0.1300
Acenaphthylene	10.0	129772.000	2.107	15.0	195625.000	2.197	25.0	339271.000	2.138
Anthracene	10.0	139607.000	1.220	15.0	209698.000	1.248	25.0	362095.000	1.242
Benzo[a]anthracene	10.0	135384.000	1.210	15.0	204349.000	1.235	25.0	346044.000	1.213
Benzo[b]fluoranthene	10.0	130926.000	1.176	15.0	194178.000	1.198	25.0	364263.000	1.254
Benzo[ghi]perylene	10.0	99708.0000	0.8958	15.0	158805.000	0.9800	25.0	290870.000	1.001
Benzo[k]fluoranthene	10.0	121756.000	1.094	15.0	183966.000	1.135	25.0	327986.000	1.129
Benzoic Acid	10.0	5556.00000	0.04370	15.0	14390.0000	0.07610	25.0	41396.0000	0.1282
Benzyl Alcohol	10.0	27507.0000	0.8681	15.0	44488.0000	0.9336	25.0	77520.0000	0.9486
Butyl Benzyl Phthalate	10.0	72885.0000	0.6514	15.0	109754.000	0.6632	25.0	184748.000	0.6476
Carbazole	10.0	126051.000	1.101	15.0	190084.000	1.131	25.0	330797.000	1.134
Chrysene	10.0	127322.000	1.138	15.0	191109.000	1.155	25.0	328248.000	1.151
Di-n-Butyl Phthalate	10.0	154633.000	1.351	15.0	238276.000	1.418	25.0	416737.000	1.429
Dibenz[ah]anthracene	10.0	101289.000	0.9100	15.0	160352.000	0.9896	25.0	296414.000	1.020

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS19
Initial Calibration Date: 15-AUG-17 20:30
Column ID: F

Analyte	WG625881-05			WG625881-06			WG625881-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Dibenzofuran	10.0	119186.000	1.935	15.0	174239.000	1.957	25.0	302517.000	1.906
Diethylphthalate	10.0	95968.0000	1.558	15.0	145072.000	1.629	25.0	249700.000	1.573
Dimethylphthalate	10.0	91708.0000	1.489	15.0	137955.000	1.549	25.0	244487.000	1.541
Fluorene	10.0	92932.0000	1.509	15.0	140949.000	1.583	25.0	233387.000	1.471
Hexachlorobenzene	10.0	25908.0000	0.2264	15.0	37936.0000	0.2257	25.0	65197.0000	0.2236
Hexachloroethane	10.0	18311.0000	0.5779	15.0	28494.0000	0.5979	25.0	49193.0000	0.6019
Indeno[1,2,3-cd]pyrene	10.0	121010.000	1.087	15.0	191637.000	1.183	25.0	351203.000	1.209
Isophorone	10.0	80863.0000	0.6356	15.0	122301.000	0.6472	25.0	214400.000	0.6640
Naphthalene	10.0	141926.000	1.116	15.0	211995.000	1.122	25.0	354206.000	1.097
Nitrobenzene	10.0	44194.0000	0.3474	15.0	67381.0000	0.3566	25.0	116411.000	0.3605
Phenanthrene	10.0	138049.000	1.206	15.0	202889.000	1.207	25.0	348397.000	1.195
Pyrene	10.0	152959.000	1.367	15.0	231929.000	1.401	25.0	393698.000	1.380
Sym-Trinitrobenzene	10.0	14025.0000	0.1225	15.0	25862.0000	0.1539	20.0	51656.0000	0.2214
bis(2-Chloroethoxy)methane	10.0	67806.0000	0.5330	15.0	99680.0000	0.5275	25.0	170426.000	0.5278
bis(2-Chloroethyl)ether	10.0	34332.0000	1.084	15.0	54185.0000	1.137	25.0	89514.0000	1.095
bis(2-Ethylhexyl)phthalate	10.0	88740.0000	0.7931	15.0	141763.000	0.8566	25.0	250175.000	0.8770

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D

Instrument ID: HPMS19
Initial Calibration Date: 15-AUG-17 20:30
Column ID: F

Analyte	WG625881-08			WG625881-09			WG625881-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
2,4,6-Trichlorophenol	80.0	187757.000	0.3851	100	232920.000	0.3852	120	261885.000	0.3689
2,4-Dichlorophenol	80.0	252020.000	0.2564	100	313872.000	0.2546	120	355414.000	0.2485
2-Nitrophenol	80.0	184928.000	0.1882	100	233949.000	0.1898	120	263268.000	0.1840
Acenaphthene	80.0	541485.000	1.111	100	644779.000	1.066	120	711670.000	1.003
Benzo[a]pyrene	80.0	974666.000	1.088	100	1203576.00	1.097	120	1359129.00	1.074
Di-n-Octyl Phthalate	80.0	1387156.00	1.548	100	1735983.00	1.582	120	1929750.00	1.525
Fluoranthene	80.0	1083917.00	1.175	100	1333062.00	1.166	120	1511346.00	1.147
Hexachlorobutadiene	80.0	138819.000	0.1412	100	171078.000	0.1388	120	190284.000	0.1330
Pentachlorophenol	80.0	117930.000	0.1278	100	146591.000	0.1283	120	167155.000	0.1268
Phenol	80.0	385846.000	1.547	100	477107.000	1.561	120	525810.000	1.523
2,4-Dinitrophenol	80.0	78859.0000	0.1617	100	104518.000	0.1729	120	120317.000	0.1695
4-Nitrophenol	80.0	121150.000	0.2485	100	145498.000	0.2406	120	160371.000	0.2259
Hexachlorocyclopentadiene	80.0	114169.000	0.2342	100	141283.000	0.2337	120	155880.000	0.2196
n-Nitrosodipropylamine	80.0	186718.000	0.7487	100	221976.000	0.7261	120	237956.000	0.6891
1,3-Dinitrobenzene	80.0	129619.000	0.2658	100	160724.000	0.2658	120	186430.000	0.2626
1,4-Dioxane	80.0	137803.000	0.5525	100	174344.000	0.5703	120	199910.000	0.5789
2,4,5-Trichlorophenol	80.0	194329.000	0.3986	100	238126.000	0.3938	120	268203.000	0.3778
2,4-Dimethylphenol	80.0	294695.000	0.2998	100	372952.000	0.3025	120	414221.000	0.2896
2,4-Dinitrotoluene	80.0	217015.000	0.4451	100	268988.000	0.4449	120	302736.000	0.4264
2,6-Dinitrotoluene	80.0	165497.000	0.3394	100	205833.000	0.3404	120	237016.000	0.3339
2-Chloronaphthalene	80.0	580981.000	1.192	100	699812.000	1.157	120	800442.000	1.128
2-Chlorophenol	80.0	343312.000	1.377	100	429598.000	1.405	120	469284.000	1.359
2-Methylnaphthalene	80.0	646258.000	0.6575	100	795878.000	0.6456	120	868964.000	0.6075
2-Methylphenol	80.0	227674.000	0.9129	100	279589.000	0.9146	120	309119.000	0.8952
2-Nitroaniline	80.0	180549.000	0.3703	100	222968.000	0.3688	120	255997.000	0.3606
3,3'-Dichlorobenzidine	80.0	331513.000	0.3722	100	401964.000	0.3672	120	452680.000	0.3605
3-Nitroaniline	80.0	194547.000	0.3990	100	239750.000	0.3965	120	275623.000	0.3883
4-Bromophenyl Phenyl Ether	80.0	177824.000	0.1928	100	220152.000	0.1926	120	242853.000	0.1842
4-Chloroaniline	80.0	117810.000	0.1199	100	146582.000	0.1189	120	163203.000	0.1141
Acenaphthylene	80.0	892257.000	1.830	100	1074983.00	1.778	120	1200314.00	1.691
Anthracene	80.0	1007768.00	1.093	100	1231984.00	1.078	120	1371262.00	1.040
Benzo[a]anthracene	80.0	991993.000	1.114	100	1217408.00	1.112	120	1371083.00	1.092
Benzo[b]fluoranthene	80.0	938726.000	1.047	100	1204861.00	1.098	120	1354184.00	1.070
Benzo[ghi]perylene	80.0	852389.000	0.9511	100	972324.000	0.8862	120	1096717.00	0.8667
Benzo[k]fluoranthene	80.0	945314.000	1.055	100	1240451.00	1.131	120	1395598.00	1.103
Benzoic Acid	80.0	201828.000	0.2054	100	279489.000	0.2267	120	325594.000	0.2276
Benzyl Alcohol	80.0	222510.000	0.8922	100	280234.000	0.9167	120	307277.000	0.8899
Butyl Benzyl Phthalate	80.0	479098.000	0.5378	100	572058.000	0.5226	120	631515.000	0.5030
Carbazole	80.0	947101.000	1.027	100	1153777.00	1.010	120	1287389.00	0.9767
Chrysene	80.0	918001.000	1.031	100	1109002.00	1.013	120	1260047.00	1.004
Di-n-Butyl Phthalate	80.0	1202279.00	1.303	100	1464832.00	1.282	120	1643869.00	1.247
Dibenz[ah]anthracene	80.0	859895.000	0.9594	100	994710.000	0.9066	120	1109966.00	0.8772

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS19
Initial Calibration Date: 15-AUG-17 20:30
Column ID: F

Analyte	WG625881-08			WG625881-09			WG625881-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Dibenzofuran	80.0	799726.000	1.640	100	972318.000	1.608	120	1084902.00	1.528
Diethylphthalate	80.0	683944.000	1.403	100	852755.000	1.410	120	947356.000	1.335
Dimethylphthalate	80.0	666398.000	1.367	100	816092.000	1.350	120	931470.000	1.312
Fluorene	80.0	587154.000	1.204	100	713082.000	1.179	120	792761.000	1.117
Hexachlorobenzene	80.0	186209.000	0.2019	100	227244.000	0.1988	120	256988.000	0.1950
Hexachloroethane	80.0	138910.000	0.5570	100	173015.000	0.5660	120	193785.000	0.5612
Indeno[1,2,3-cd]pyrene	80.0	1009928.00	1.127	100	1167043.00	1.064	120	1306679.00	1.033
Isophorone	80.0	599486.000	0.6100	100	744913.000	0.6043	120	837783.000	0.5857
Naphthalene	80.0	965916.000	0.9828	100	1202362.00	0.9753	120	1332777.00	0.9317
Nitrobenzene	80.0	328758.000	0.3345	100	411123.000	0.3335	120	460650.000	0.3220
Phenanthrene	80.0	967468.000	1.049	100	1174987.00	1.028	120	1313881.00	0.9968
Pyrene	80.0	1119332.00	1.257	100	1381650.00	1.262	120	1560652.00	1.243
Sym-Trinitrobenzene	80.0	176517.000	0.1914	100	227395.000	0.1990	120	255558.000	0.1939
bis(2-Chloroethoxy)methane	80.0	422661.000	0.4300	100	502632.000	0.4077	120	551856.000	0.3858
bis(2-Chloroethyl)ether	80.0	238068.000	0.9545	100	287172.000	0.9394	120	311494.000	0.9021
bis(2-Ethylhexyl)phthalate	80.0	701137.000	0.7871	100	845441.000	0.7723	120	935703.000	0.7452

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS19
Initial Calibration Date: 16-AUG-17 15:15
Column ID: F

Analyte	WG626039-02			WG626039-03			WG626039-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1'-Biphenyl	50.0	565831.000	1.610	3.00	30046.0000	1.697	10.0	105578.000	1.819

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS19
Initial Calibration Date: 16-AUG-17 15:15
Column ID: F

Analyte	WG626039-05			WG626039-06			WG626039-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1'-Biphenyl	25.0	255889.000	1.691	80.0	756779.000	1.512	100	913418.000	1.447

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D
Instrument ID: HPMS19
Initial Calibration Date: 16-AUG-17 15:15
Column ID: F

Analyte	WG626039-08		
	CONC	RESP	RF
1,1'-Biphenyl	120	1017858.00	1.485

INT_CAL - Modified 03/06/2008
PDF File ID: 5460103
Report generated 09/18/2017 08:41

Calibration Table Report
Method: TCL.M
Title: OVD MSS01 827-TCL INITIAL CALIBRATION 07/14/17
Last Calibration: Mon Jul 17 10:36:52 2017
Curve: WG621894
Calibration Files

Compound	3 12M63397.D	10 12M63398.D	25 12M63399.D	50 12M63396.D	80 12M63400.D	100 12M63401.D	120 12M63402.D	Avg	%RSD
1,4-Dichlorobenzene-d4	ISTD								
Benzaldehyde	0.852	0.983	0.983	1.011	1.055	1.060	1.079	1.003	7.652
Naphthalene-d8	ISTD								
Alpha-Terpineol	0.213	0.239	0.236	0.241	0.243	0.243	0.248	0.238	4.848
Caprolactam	0.090	0.109	0.111	0.114	0.117	0.117	0.121	0.111	9.083
Acenaphthene-d10	ISTD								
1,1'-Biphenyl	1.348	1.544	1.554	1.648	1.716	1.756	1.770	1.619	9.265
Phenanthrene-d10	ISTD								
Atrazine	0.181	0.216	0.223	0.235	0.244	0.249	0.255	0.229	10.982

Mon Jul 17 10:38:37 2017

Calibration Table Report
Method: MEGAMIX.M
Title: OVD MSS01 8270/625 ICAL 08/3/17
Last Calibration: Fri Aug 04 07:07:19 2017
Curve:WG624321
Calibration Files

Compound	3 12M63787.D	10 12M63788.D	15 12M63789.D	25 12M63790.D	50 12M63785.D	80 12M63791.D	100 12M63792.D	120 12M63793.D	1 12M63786.D	Avg	%RSD	Linear	Quadratic
1,4-Dichlorobenzene-d4	ISTD												
1,4-Dioxane	0.434	0.497	0.503	0.514	0.578	0.543	0.561	0.555		0.523	8.844		
n-Nitrosodimethylamine	0.636	0.676	0.712	0.743	0.775	0.739	0.763	0.756		0.725	6.559		
Pyridine	1.158	1.259	1.335	1.367	1.429	1.333	1.364	1.356		1.325	6.207		
2-Picoline	1.345	1.346	1.433	1.470	1.503	1.432	1.482	1.453		1.433	4.114		
n-Nitrosomethylethylamine	0.538	0.532	0.566	0.595	0.622	0.577	0.595	0.593		0.577	5.315		
Methyl Methanesulfonate	0.916	0.886	0.907	0.953	0.967	0.918	0.936	0.915		0.925	2.812		
2-Fluorophenol	1.127	1.134	1.204	1.232	1.280	1.227	1.279	1.262		1.218	4.953		
n-Nitrosodiethylamine	0.555	0.565	0.587	0.626	0.644	0.621	0.644	0.635		0.610	5.847		
Ethyl Methanesulfonate	0.912	0.903	0.956	1.001	1.025	0.964	0.990	0.974		0.966	4.353		
Aniline	0.755	0.765	0.808	0.845	0.867	0.810	0.825	0.809		0.811	4.593		
Phenol-d5	1.456	1.424	1.523	1.572	1.629	1.600	1.629	1.628		1.557	5.226		
Phenol	1.486	1.492	1.546	1.604	1.654	1.601	1.646	1.635		1.583	4.241		
bis(2-Chloroethyl)ether	0.904	0.910	0.950	0.957	0.977	0.907	0.930	0.913		0.931	2.943		
Pentachloroethane	0.505	0.520	0.506	0.540	0.534	0.531	0.550	0.540		0.528	3.118		
2-Chlorophenol	1.243	1.235	1.304	1.328	1.368	1.363	1.407	1.394		1.330	4.892		
1,3-Dichlorobenzene	1.399	1.346	1.388	1.471	1.477	1.483	1.550	1.537		1.456	4.964		
1,4-Dichlorobenzene	1.427	1.373	1.452	1.468	1.484	1.515	1.559	1.567		1.481	4.451		
Benzyl Alcohol	0.754	0.774	0.821	0.860	0.888	0.878	0.904	0.897		0.847	6.790		
1,2-Dichlorobenzene	1.296	1.274	1.341	1.397	1.443	1.465	1.526	1.519		1.408	6.898		
2-Methylphenol	1.035	1.076	1.093	1.142	1.189	1.169	1.202	1.191		1.137	5.453		
bis(2-Chloroisopropyl)ether	1.152	1.091	1.129	1.141	1.185	1.103	1.115	1.102		1.127	2.762		
3-,4-Methylphenol	1.354	1.332	1.387	1.451	1.496	1.457	1.526	1.499		1.438	5.000		
n-Nitrosopyrrolidine	0.551	0.571	0.592	0.616	0.659	0.649	0.662	0.637		0.617	6.778		
n-Nitrosodipropylamine	0.998	0.971	1.012	1.026	1.046	0.963	0.960	0.933		0.989	3.856		
Acetophenone	1.956	1.851	1.902	1.978	2.031	1.959	1.984	1.927		1.949	2.827		
n-Nitrosomorpholine	0.791	0.766	0.791	0.804	0.797	0.739	0.735	0.702		0.766	4.773		
o-Toluidine	2.055	2.012	2.075	2.146	2.221	2.148	2.215	2.168		2.130	3.559		
Hexachloroethane	0.586	0.589	0.604	0.645	0.640	0.634	0.647	0.633		0.622	4.030		
Naphthalene-d8	ISTD												
Nitrobenzene-d5	0.381	0.389	0.405	0.406	0.416	0.398	0.402	0.396		0.399	2.723		
Nitrobenzene	0.401	0.384	0.401	0.403	0.405	0.388	0.393	0.386		0.395	2.123		
n-Nitrosopiperidine	0.164	0.160	0.165	0.166	0.178	0.175	0.180	0.179		0.171	4.628		
Isophorone	0.663	0.654	0.689	0.696	0.721	0.687	0.697	0.683		0.686	3.016		
2-Nitrophenol	0.171	0.166	0.183	0.187	0.192	0.195	0.202	0.203		0.187	7.104		
2,4-Dimethylphenol	0.278	0.290	0.308	0.305	0.326	0.325	0.334	0.334		0.312	6.629		
0,0,0-Triethyl Phosphorothioate	0.165	0.167	0.177	0.180	0.185	0.194	0.200	0.198		0.183	7.318		
bis(2-Chloroethoxy)methane	0.515	0.511	0.535	0.545	0.571	0.549	0.553	0.540		0.540	3.658		
Benzoic Acid		0.045	0.077	0.116	0.148	0.217	0.239	0.247		0.156	51.869		0.997
2,4-Dichlorophenol	0.248	0.256	0.269	0.278	0.296	0.303	0.309	0.313		0.284	8.670		
a,a-Dimethylphenethylamine	0.554	0.612	0.661	0.679	0.718	0.693	0.709	0.703		0.666	8.495		
1,2,4-Trichlorobenzene	0.311	0.3	0.322	0.322	0.327	0.338	0.354	0.353		0.32834	5.75818		
Naphthalene	1.016	0.974	1.033	1.042	1.081	1.096	1.132	1.124		1.06227	5.21269		
4-Chloroaniline	0.131	0.14	0.155	0.153	0.156	0.147	0.148	0.145		0.14679	5.86089		
2,6-Dichlorophenol	0.246	0.241	0.251	0.26	0.265	0.27	0.278	0.278		0.26125	5.40404		
Hexachloropropene	0.22	0.226	0.239	0.245	0.243	0.253	0.259	0.258		0.24307	5.89328		
Hexachlorobutadiene	0.188	0.179	0.189	0.19	0.184	0.193	0.201	0.198		0.19015	3.78951		
n-Nitrosodi-n-Butylamine	0.306	0.31	0.328	0.331	0.346	0.334	0.336	0.275		0.32104	7.12234		
p-Phenylenediamine		0.227	0.247	0.264	0.247	0.236	0.232	0.223		0.23932	5.9242		
4-Chloro-3-Methylphenol	0.326	0.334	0.35	0.358	0.373	0.362	0.368	0.363		0.35423	4.6635		
Safrole	0.248	0.249	0.261	0.27	0.28	0.288	0.298	0.298		0.27382	7.43586		
2-Methylnaphthalene	0.639	0.656	0.691	0.706	0.741	0.76	0.787	0.79		0.72116	7.98682		
1-Methylnaphthalene	0.607	0.59	0.632	0.643	0.676	0.694	0.719	0.715		0.65961	7.43146		
Acenaphthene-d10	ISTD												
1,2,4,5-Tetrachlorobenzene	0.583	0.569	0.604	0.618	0.64	0.673	0.696	0.708		0.63639	8.1409		
Hexachlorocyclopentadiene	0.15	0.231	0.267	0.292	0.309	0.333	0.341	0.344		0.28343	23.5263		1.000
2,4,6-Trichlorophenol	0.362	0.376	0.41	0.403	0.425	0.44	0.458	0.465		0.41722	8.81701		
2,4,5-Trichlorophenol	0.39	0.401	0.416	0.424	0.437	0.456	0.479	0.489		0.43633	8.176		
2-Fluorobiphenyl	1.32	1.286	1.337	1.348	1.389	1.441	1.48	1.508		1.38873	5.76593		
Isosafrole	0.465	0.467	0.493	0.501	0.507	0.523	0.535	0.545		0.50466	5.79725		
2-Chloronaphthalene	1.185	1.183	1.234	1.224	1.281	1.317	1.362	1.381		1.27071	6.03856		
1-Chloronaphthalene	1.137	1.119	1.16	1.196	1.236	1.286	1.301	1.324		1.21965	6.4382		
2-Nitroaniline		0.395	0.413	0.411	0.428	0.414	0.408	0.406		0.41059	2.47073		
1,4-Naphthoquinone	0.327	0.38	0.402	0.398	0.358	0.32	0.294	0.283		0.34549	13.3187		
Dimethylphthalate	1.37	1.403	1.456	1.467	1.484	1.526	1.557	1.566		1.47862	4.72789		
1,3-Dinitrobenzene	0.214	0.231	0.24	0.253	0.26	0.268	0.271	0.277		0.25171	8.64344		
2,6-Dinitrotoluene	0.298	0.332	0.332	0.341	0.351	0.358	0.364	0.374		0.34374	6.86411		
Acenaphthylene	1.803	1.843	1.934	1.952	2.063	2.126	2.151	2.206		2.00985	7.3946		
3-Nitroaniline		0.32	0.331	0.347	0.363	0.359	0.371	0.378		0.35262	6.00611		
2,4-Dinitrophenol		0.095	0.126	0.157	0.212	0.238	0.253	0.264		0.19231	34.6328		1.000
Acenaphthene	1.113	1.147	1.206	1.246	1.335	1.387	1.414	1.419		1.28332	9.49923		
4-Nitrophenol		0.296	0.303	0.327	0.341	0.329	0.323	0.318		0.31957	4.78173		
2,4-Dinitrotoluene	0.388	0.433	0.451	0.463	0.487	0.503	0.518	0.535		0.47232	10.269		
Pentachlorobenzene	0.462	0.472	0.487	0.501	0.502	0.541	0.56	0.581		0.5133	8.34677		
Dibenzofuran	1.691	1.672	1.731	1.75	1.823	1.893	1.923	1.978		1.8075	6.31277		
2,3,4,6-Tetrachlorophenol	0.293	0.326	0.341	0.36	0.387	0.423	0.434	0.441		0.37567	14.4786		
1-Naphthylamine	1.121	1.154	1.194	1.228	1.303	1.352	1.375	1.403		1.2663	8.40991		
2-Naphthylamine	1.228	1.13	1.144	1.211	1.333	1.429	1.456	1.459		1.29885	10.6456		
Diethylphthalate	1.465	1.463	1.507	1.512	1.548	1.553	1.569	1.572		1.52357	2.86636		
Thionazin	0.229	0.228	0.244	0.244	0.264	0.258	0.262	0.263		0.24911	5.89687		

Fluorene	1.321	1.397	1.46	1.512	1.593	1.651	1.665	1.675		1.53406	8.6963		
4-Chlorophenyl Phenyl Ether	0.7	0.696	0.726	0.744	0.758	0.803	0.814	0.84		0.76017	7.06974		
4-Nitroaniline		0.343	0.368	0.38	0.408	0.414	0.414	0.419		0.39248	7.45493		
5-Nitro-o-Toluidine	0.363	0.384	0.416	0.439	0.465	0.49	0.494	0.5		0.44363	11.774		
1,2-Diphenylhydrazine	1.525	1.549	1.599	1.601	1.637	1.577	1.552	1.539		1.57213	2.41328		
2,4,6-Tribromophenol	0.167	0.188	0.193	0.202	0.212	0.231	0.241	0.251		0.21068	13.5748		
Phenanthrene-d10	ISTD												
4,6-Dinitro-2-Methylphenol		0.101	0.12	0.131	0.153	0.158	0.169	0.174		0.14349	18.8742	0.998	
Diphenylamine/n-Nitrosodiphenylar	0.603	0.61	0.63	0.652	0.687	0.698	0.736	0.734		0.66873	7.89807		
Sulfotepp	0.114	0.117	0.121	0.126	0.133	0.141	0.151	0.152		0.13195	11.3261		
Sym-Trinitrobenzene	0.156	0.214	0.238	0.254	0.264	0.256	0.264	0.261		0.23833	15.6245	1.000	
Diallate	0.267	0.274	0.286	0.287	0.301	0.283	0.285	0.279		0.28282	3.56706		
Phenacetin	0.36	0.401	0.419	0.429	0.446	0.432	0.439	0.428		0.41926	6.58857		
Phorate	0.431	0.434	0.463	0.462	0.478	0.442	0.442	0.433		0.44814	3.86058		
4-Bromophenyl Phenyl Ether	0.183	0.188	0.197	0.205	0.213	0.22	0.234	0.238		0.20971	9.61861		
Hexachlorobenzene	0.199	0.199	0.205	0.206	0.218	0.229	0.241	0.246		0.2178	8.57662		
Dimethoate	0.271	0.287	0.292	0.293	0.289	0.248	0.234	0.22		0.26669	10.8624		
4-Aminobiphenyl	0.708	0.698	0.749	0.777	0.825	0.84	0.858	0.86		0.78929	8.32435		
Pentachlorophenol		0.094	0.108	0.12	0.138	0.145	0.156	0.16		0.13139	19.0062		1.000
Pronamide	0.306	0.32	0.334	0.345	0.356	0.357	0.372	0.365		0.34439	6.65559		
Pentachloronitrobenzene	0.087	0.091	0.097	0.105	0.102	0.103	0.108	0.107		0.10001	7.53889		
Disulfoton	0.34	0.344	0.357	0.367	0.388	0.366	0.371	0.364		0.36202	4.20943		
Phenanthrene	1.042	1.013	1.047	1.068	1.127	1.151	1.185	1.2		1.10402	6.43755		
Anthracene	1.059	1.038	1.091	1.119	1.186	1.204	1.248	1.246		1.14891	7.2217		
Carbazole	0.883	0.882	0.935	0.968	1.033	1.047	1.088	1.086		0.99034	8.56765		
Parathion Methyl	0.212	0.243	0.25	0.266	0.263	0.242	0.229	0.223		0.24107	7.80365		
Di-n-Butyl Phthalate	1.201	1.218	1.275	1.317	1.376	1.352	1.383	1.367		1.31109	5.49021		
Parathion Ethyl	0.128	0.151	0.159	0.169	0.179	0.17	0.173	0.169		0.16238	10.0045		
4-Nitroquinoline 1-Oxide	0.015	0.044	0.056	0.074	0.085	0.093	0.096	0.098		0.07002	42.111		0.999
Methapyrilene	0.394	0.426	0.456	0.441	0.365	0.301	0.261	0.238		0.36032	23.3582		0.998
Isodrin	0.119	0.117	0.123	0.126	0.129	0.13	0.134	0.133		0.12638	5.03183		
Fluoranthene	1.077	1.1	1.163	1.196	1.261	1.287	1.332	1.335		1.21871	8.23986		
Chrysene-d12	ISTD												
Benzidine		0.416	0.459	0.499	0.549	0.543	0.519	0.507		0.49892	9.48278		
Pyrene	1.128	1.154	1.197	1.223	1.295	1.308	1.357	1.341		1.25055	6.96262		
Aramite	0.068	0.073	0.077	0.079	0.083	0.078	0.079	0.075		0.07654	5.81569		
p-Terphenyl-d14	0.782	0.777	0.814	0.834	0.882	0.912	0.953	0.935		0.86112	7.97685		
p-(Dimethylamino)azobenzene	0.194	0.22	0.238	0.243	0.257	0.264	0.274	0.273		0.24538	11.271		
Chlorobenzilate	0.308	0.312	0.335	0.339	0.351	0.355	0.37	0.37		0.34265	6.95398		
Famphur					0.079					0.07891	0		
Butyl Benzyl Phthalate	0.582	0.603	0.619	0.642	0.66	0.648	0.65	0.618		0.62772	4.24879		
3,3'-Dimethylbenzidine	0.903	0.945	1.09	1.146	1.156	1.161	1.148	1.108		1.08205	9.35731		
2-Acetylaminofluorene	0.388	0.455	0.5	0.535	0.579	0.576	0.6	0.584		0.52704	14.1511		
bis(2-Ethylhexyl)phthalate	0.72	0.75	0.814	0.825	0.873	0.858	0.877	0.855	0.68	0.80575	8.93068		
3,3'-Dichlorobenzidine	0.362	0.37	0.397	0.41	0.418	0.42	0.439	0.436		0.40658	7.01312		
Benzo[a]anthracene	1.089	1.083	1.132	1.156	1.217	1.238	1.283	1.272		1.18378	6.7233		
Chrysene	0.98	0.973	1.023	1.048	1.095	1.128	1.177	1.168		1.07405	7.46673		
Perylene-d12	ISTD												
Di-n-Octyl Phthalate	1.265	1.385	1.455	1.509	1.586	1.569	1.598	1.575		1.49277	7.91423		
7,12-Dimethylbenz[a]anthracene	0.54	0.54	0.568	0.59	0.632	0.664	0.682	0.682		0.61222	9.89647		
Benzo[b]fluoranthene	1.2	1.19	1.23	1.316	1.327	1.433	1.5	1.473		1.33348	9.25564		
Benzo[k]fluoranthene	1.004	1.035	1.084	1.083	1.096	1.18	1.22	1.249		1.11883	7.8548		
Benzo[a]pyrene	0.95	0.999	1.041	1.077	1.132	1.171	1.218	1.23		1.10209	9.29818		
3-Methylcholanthrene	0.487	0.51	0.544	0.567	0.598	0.614	0.629	0.631		0.57241	9.58766		
Indeno[1,2,3-cd]pyrene	0.953	1.073	1.14	1.19	1.277	1.309	1.361	1.361		1.20807	12.1054		
Dibenz[ah]anthracene	0.781	0.896	0.957	1.015	1.097	1.131	1.181	1.186		1.03048	14.0582		
Benzo[ghi]perylene	0.773	0.877	0.926	0.956	1.02	1.024	1.048	1.047		0.95886	10.1504		

Fri Aug 04 08:41:54 2017

Calibration Table Report
Method: MEGAMIX.M
Title: OVD MSS01 8270/625 ICAL 08/15/17
Last Calibration: Fri Aug 18 14:13:48 2017
Curve: WG625881
Calibration Files

Compound	3 19M000309.D	10 19M000310.D	15 19M000311.D	25 19M000312.D	50 19M000307.D	80 19M000313.D	100 19M000314.D	120 19M000315.D	1 19M000308.D	Avg	%RSD	Linear	Quadratic
1,4-Dichlorobenzene-d4	ISTD												
1,4-Dioxane	0.597	0.565	0.636	0.566	0.583	0.553	0.570	0.579		0.581	4.430		
n-Nitrosodimethylamine	0.766	0.809	0.840	0.834	0.845	0.807	0.835	0.838		0.822	3.252		
Pyridine	1.432	1.471	1.470	1.462	1.493	1.409	1.457	1.464		1.457	1.773		
2-Picoline	1.533	1.523	1.545	1.536	1.570	1.483	1.528	1.521		1.530	1.600		
n-Nitrosomethylethylamine	0.584	0.618	0.669	0.656	0.670	0.655	0.691	0.686		0.654	5.524		
Methyl Methanesulfonate	0.799	0.791	0.789	0.798	0.808	0.761	0.785	0.787		0.790	1.752		
2-Fluorophenol	1.239	1.290	1.313	1.327	1.321	1.275	1.319	1.312		1.300	2.301		
n-Nitrosodiethylamine	0.602	0.646	0.665	0.680	0.670	0.655	0.678	0.677		0.659	3.917		
Ethyl Methanesulfonate	0.985	1.012	1.042	1.032	1.020	0.984	1.013	1.014		1.013	1.993		
Aniline	0.763	0.766	0.828	0.816	0.792	0.763	0.774	0.752		0.782	3.502		
Phenol-d5	1.452	1.514	1.618	1.612	1.556	1.482	1.508	1.473		1.527	4.102		
Phenol	1.687	1.647	1.744	1.710	1.648	1.547	1.561	1.523		1.633	4.980		
bis(2-Chloroethyl)ether	1.144	1.083	1.137	1.095	1.038	0.955	0.939	0.902		1.037	9.039		
Pentachloroethane	0.496	0.493	0.516	0.506	0.495	0.459	0.463	0.448		0.485	5.035		
2-Chlorophenol	1.339	1.394	1.463	1.467	1.441	1.377	1.405	1.359		1.406	3.378		
1,3-Dichlorobenzene	1.605	1.538	1.614	1.572	1.526	1.433	1.453	1.403		1.518	5.260		
1,4-Dichlorobenzene	1.644	1.543	1.603	1.557	1.524	1.423	1.442	1.393		1.516	5.890		
Benzyl Alcohol	0.840	0.868	0.934	0.949	0.930	0.892	0.917	0.890		0.902	4.068		
1,2-Dichlorobenzene	1.509	1.499	1.495	1.439	1.358	1.219	1.214	1.190		1.365	10.201		
2-Methylphenol	1.030	1.082	1.100	1.067	1.011	0.913	0.915	0.895		1.001	8.258		
bis(2-Chloroisopropyl)ether	1.792	1.782	1.790	1.748	1.629	1.537	1.552	1.525		1.669	7.242		
3-,4-Methylphenol	1.320	1.400	1.441	1.450	1.418	1.340	1.367	1.362		1.387	3.430		
n-Nitrosopyrrolidine	0.598	0.631	0.657	0.660	0.617	0.567	0.562	0.545		0.605	7.253		
n-Nitrosodipropylamine	0.945	0.980	0.981	0.941	0.866	0.749	0.726	0.689		0.860	14.078		
Acetophenone	1.944	1.871	1.908	1.833	1.714	1.473	1.439	1.394		1.697	13.422		
n-Nitrosomorpholine	0.856	0.833	0.831	0.800	0.730	0.631	0.613	0.586		0.735	15.033		0.999
o-Toluidine	2.065	2.161	2.209	2.193	2.195	1.984	2.014	1.987		2.101	4.702		
Hexachloroethane	0.574	0.578	0.598	0.602	0.609	0.557	0.566	0.561		0.581	3.424		
Naphthalene-d8	ISTD												
Nitrobenzene-d5	0.313	0.322	0.340	0.349	0.340	0.330	0.333	0.321		0.331	3.564		
Nitrobenzene	0.358	0.347	0.357	0.361	0.351	0.335	0.333	0.322		0.345	4.029		
n-Nitrosopiperidine	0.168	0.172	0.177	0.186	0.182	0.175	0.175	0.170		0.176	3.349		
Isophorone	0.631	0.636	0.647	0.664	0.643	0.610	0.604	0.586		0.628	4.102		
2-Nitrophenol	0.150	0.172	0.181	0.195	0.190	0.188	0.190	0.184		0.181	7.907		
2,4-Dimethylphenol	0.302	0.310	0.316	0.327	0.316	0.300	0.303	0.290		0.308	3.798		
0,0,0-Triethyl Phosphorothioate	0.169	0.166	0.167	0.167	0.153	0.142	0.137	0.132		0.154	9.898		
bis(2-Chloroethoxy)methane	0.558	0.533	0.527	0.528	0.481	0.430	0.408	0.386		0.481	13.600		
Benzoic Acid		0.044	0.076	0.128	0.148	0.205	0.227	0.228		0.151	48.557		0.997
2,4-Dichlorophenol	0.248	0.265	0.275	0.283	0.266	0.256	0.255	0.248		0.262	4.820		
a,a-Dimethylphenethylamine	0.493	0.796	0.841	0.901	0.863	0.852	0.882	0.875		0.813	16.371	1.000	
1,2,4-Trichlorobenzene	0.325	0.313	0.31	0.311	0.296	0.281	0.277	0.266		0.29739	6.95845		
Naphthalene	1.151	1.116	1.122	1.097	1.047	0.983	0.975	0.932		1.0527	7.68927		
4-Chloroaniline	0.118	0.128	0.13	0.13	0.128	0.12	0.119	0.114		0.12351	5.21849		
2,6-Dichlorophenol	0.248	0.265	0.275	0.283	0.266	0.256	0.255	0.248		0.26209	4.8195		
Hexachloropropene	0.154	0.174	0.178	0.187	0.184	0.18	0.18	0.171		0.17576	5.83209		
Hexachlorobutadiene	0.161	0.16	0.156	0.156	0.15	0.141	0.139	0.133		0.14956	7.10512		
n-Nitrosodi-n-Butylamine	0.278	0.286	0.301	0.306	0.288	0.265	0.261	0.25		0.27951	7.04444		
p-Phenylenediamine		0.279	0.315	0.32	0.299	0.272	0.252	0.229		0.2809	11.8677		
4-Chloro-3-Methylphenol	0.273	0.279	0.299	0.307	0.302	0.286	0.285	0.272		0.28783	4.62548		
Safrole	0.278	0.272	0.282	0.284	0.272	0.258	0.255	0.242		0.26771	5.51687		
2-Methylnaphthalene	0.794	0.724	0.75	0.745	0.694	0.658	0.646	0.607		0.70204	8.86869		
1-Methylnaphthalene	0.716	0.67	0.69	0.69	0.638	0.612	0.593	0.562		0.64633	8.38669		
Acenaphthene-d10	ISTD												
1,2,4,5-Tetrachlorobenzene	0.627	0.593	0.628	0.594	0.556	0.511	0.513	0.476		0.5623	10.1741		
Hexachlorocyclopentadiene	0.162	0.204	0.235	0.248	0.249	0.234	0.234	0.22		0.22317	12.8705		
2,4,6-Trichlorophenol	0.331	0.372	0.407	0.414	0.402	0.385	0.385	0.369		0.38326	6.9944		
2,4,5-Trichlorophenol	0.346	0.382	0.414	0.425	0.419	0.399	0.394	0.378		0.39449	6.6365		
2-Fluorobiphenyl	1.548	1.446	1.504	1.467	1.389	1.286	1.265	1.194		1.38745	9.1078		
Isosafrole	0.551	0.554	0.586	0.586	0.56	0.532	0.522	0.503		0.54906	5.31393		
2-Chloronaphthalene	1.43	1.355	1.395	1.37	1.276	1.192	1.157	1.128		1.28771	9.04286		
1-Chloronaphthalene	1.331	1.24	1.282	1.247	1.159	1.067	1.039	0.99		1.16912	10.6903		
2-Nitroaniline		0.351	0.378	0.388	0.38	0.37	0.369	0.361		0.37094	3.3152		
1,4-Naphthoquinone	0.329	0.412	0.464	0.474	0.44	0.38	0.341			0.4058	14.2339		
Dimethylphthalate	1.542	1.489	1.549	1.541	1.459	1.367	1.35	1.312		1.45095	6.59378		
1,3-Dinitrobenzene	0.179	0.234	0.255	0.269	0.267	0.266	0.266	0.263		0.24976	12.2808		
2,6-Dinitrotoluene	0.3	0.331	0.354	0.362	0.347	0.339	0.34	0.334		0.33846	5.50793		
Acenaphthylene	2.15	2.107	2.197	2.138	1.996	1.83	1.778	1.691		1.98576	9.77783		
3-Nitroaniline		0.377	0.411	0.413	0.411	0.399	0.397	0.388		0.39948	3.38184		
2,4-Dinitrophenol		0.058	0.082	0.118	0.145	0.162	0.173	0.169		0.12952	34.8845		0.999
Acenaphthene	1.343	1.332	1.344	1.306	1.221	1.111	1.066	1.002		1.21564	11.3452		
4-Nitrophenol		0.235	0.261	0.269	0.268	0.248	0.241	0.226		0.24957	6.64547		
2,4-Dinitrotoluene	0.344	0.437	0.454	0.474	0.463	0.445	0.445	0.426		0.43614	9.17681		
Pentachlorobenzene	0.535	0.499	0.509	0.5	0.476	0.442	0.445	0.425		0.47887	8.02342		
Dibenzofuran	2.018	1.935	1.957	1.906	1.79	1.64	1.608	1.528		1.79773	10.2521		
2,3,4,6-Tetrachlorophenol	0.245	0.304	0.323	0.316	0.307	0.285	0.285	0.269		0.29168	8.92305		
1-Naphthylamine	1.299	1.437	1.498	1.455	1.395	1.297	1.281	1.222		1.36043	7.26045		
2-Naphthylamine	1.404	1.505	1.521	1.429	1.31	1.209	1.18	1.106		1.33296	11.6912		
Diethylphthalate	1.511	1.558	1.629	1.573	1.504	1.403	1.41	1.334		1.49034	6.69347		
Thionazin	0.205	0.238	0.26	0.252	0.243	0.228	0.227	0.215		0.23349	7.96478		

Fluorene	1.558	1.509	1.583	1.471	1.347	1.204	1.179	1.117	1.37088	13.4612			
4-Chlorophenyl Phenyl Ether	0.764	0.746	0.769	0.745	0.702	0.649	0.641	0.611	0.70329	8.82355			
4-Nitroaniline		0.383	0.417	0.399	0.377	0.35	0.349	0.335	0.37277	7.92514			
5-Nitro-o-Toluidine	0.372	0.417	0.453	0.435	0.403	0.368	0.361	0.345	0.3943	9.80306			
1,2-Diphenylhydrazine	1.508	1.527	1.641	1.534	1.495	1.384	1.386	1.309	1.47289	7.20721			
2,4,6-Tribromophenol	0.117	0.16	0.174	0.172	0.172	0.17	0.176	0.17	0.1638	11.8701			
Phenanthrene-d10	ISTD												
4,6-Dinitro-2-Methylphenol		0.071	0.096	0.117	0.13	0.136	0.142	0.142	0.11931	22.4178	1		
Diphenylamine/n-Nitrosodiphenylar	0.735	0.738	0.756	0.731	0.683	0.635	0.629	0.602	0.68852	8.66497			
Sulfotepp	0.105	0.118	0.122	0.12	0.117	0.111	0.115	0.112	0.11519	4.79521			
Sym-Trinitrobenzene	0.067	0.123	0.154	0.221	0.189	0.191	0.199	0.194	0.16722	30.2511	0.995		
Diallate	0.322	0.321	0.351	0.327	0.305	0.275	0.268	0.251	0.30243	11.3589			
Phenacetin	0.269	0.366	0.404	0.407	0.4	0.37	0.364	0.345	0.36574	12.2976			
Phorate	0.464	0.499	0.524	0.506	0.468	0.433	0.427	0.403	0.46558	9.14098			
4-Bromophenyl Phenyl Ether	0.22	0.21	0.222	0.217	0.206	0.193	0.193	0.184	0.20556	6.92933			
Hexachlorobenzene	0.23	0.226	0.226	0.224	0.214	0.202	0.199	0.195	0.21436	6.51308			
Dimethoate	0.262	0.308	0.319	0.31	0.27	0.231	0.215	0.197	0.26397	17.6999		0.999	
4-Aminobiphenyl	0.777	0.867	0.907	0.917	0.889	0.836	0.811	0.801	0.85056	6.12089			
Pentachlorophenol		0.081	0.097	0.115	0.127	0.128	0.128	0.127	0.11469	16.3679			1
Pronamide	0.28	0.328	0.344	0.351	0.344	0.322	0.317	0.309	0.3245	7.16685			
Pentachloronitrobenzene	0.067	0.076	0.081	0.083	0.083	0.079	0.078	0.076	0.0777	6.87485			
Disulfoton	0.363	0.408	0.424	0.433	0.409	0.382	0.376	0.362	0.39464	6.9327			
Phenanthrene	1.26	1.206	1.207	1.195	1.129	1.049	1.028	0.997	1.13373	8.65445			
Anthracene	1.22	1.22	1.248	1.242	1.182	1.092	1.078	1.04	1.16532	7.06777			
Carbazole	1.085	1.101	1.131	1.134	1.095	1.027	1.009	0.977	1.06997	5.46651			
Parathion Methyl	0.143	0.226	0.249	0.266	0.256	0.236	0.224	0.216	0.22686	16.7827	0.992		
Di-n-Butyl Phthalate	1.209	1.351	1.418	1.429	1.41	1.303	1.282	1.247	1.33107	6.27861			
Parathion Ethyl	0.071	0.124	0.141	0.155	0.162	0.155	0.155	0.152	0.1394	21.6567	0.999		
4-Nitroquinoline 1-Oxide		0.027	0.04	0.063	0.075	0.089	0.091	0.09	0.06781	38.162		0.999	
Methapyrilene		0.532	0.563	0.55	0.46	0.386	0.341	0.322	0.45042	22.507		0.997	
Isodrin	0.128	0.129	0.131	0.132	0.129	0.121	0.122	0.119	0.12642	3.99485			
Fluoranthene	1.249	1.28	1.302	1.293	1.251	1.175	1.166	1.147	1.23293	4.98457			
Chrysene-d12	ISTD												
Benzidine		0.473	0.557	0.617	0.644	0.643	0.64	0.62	0.59928	10.5407			
Pyrene	1.347	1.367	1.401	1.38	1.324	1.257	1.262	1.243	1.32256	4.64607			
Aramite	0.029	0.062	0.069	0.076	0.08	0.081	0.081	0.081	0.06984	25.8224	1		
p-Terphenyl-d14	0.871	0.85	0.854	0.844	0.8	0.751	0.758	0.745	0.80908	6.41542			
p-(Dimethylamino)azobenzene	0.168	0.228	0.249	0.266	0.261	0.254	0.259	0.257	0.24285	13.313			
Chlorobenzilate	0.24	0.302	0.322	0.339	0.335	0.325	0.337	0.331	0.31642	10.4991			
Famphur					0.154				0.15433	0			
Butyl Benzyl Phthalate	0.558	0.651	0.663	0.648	0.603	0.538	0.523	0.503	0.58577	10.8655			
3,3'-Dimethylbenzidine	0.75	0.928	1.068	1.119	1.009	0.917	0.889	0.849	0.94116	12.7697			
2-Acetylaminofluorene	0.159	0.336	0.41	0.486	0.522	0.525	0.526	0.523	0.43607	30.1401	0.999		
bis(2-Ethylhexyl)phthalate	0.595	0.793	0.857	0.877	0.857	0.787	0.772	0.745	0.347	0.73668	22.8898	0.996	
3,3'-Dichlorobenzidine	0.306	0.382	0.41	0.425	0.397	0.372	0.367	0.361	0.37754	9.61978			
Benzo[a]anthracene	1.181	1.21	1.235	1.213	1.181	1.114	1.112	1.092	1.16726	4.63198			
Chrysene	1.167	1.138	1.155	1.151	1.093	1.031	1.013	1.004	1.09382	6.26791			
Perylene-d12	ISTD												
Di-n-Octyl Phthalate	1.364	1.142	1.348	1.513	1.525	1.548	1.582	1.525	1.44341	10.3012			
7,12-Dimethylbenz[a]anthracene	0.488	0.529	0.555	0.542	0.522	0.5	0.507	0.501	0.51811	4.44032			
Benzo[b]fluoranthene	1.212	1.176	1.198	1.254	1.17	1.047	1.098	1.07	1.15324	6.35221			
Benzo[k]fluoranthene	1.094	1.094	1.135	1.129	1.155	1.055	1.131	1.103	1.112	2.85328			
Benzo[a]pyrene	0.891	1.021	1.092	1.123	1.14	1.087	1.097	1.074	1.06573	7.39412			
3-Methylcholanthrene	0.352	0.461	0.518	0.537	0.57	0.555	0.553	0.53	0.5095	14.0968			
Indeno[1,2,3-cd]pyrene	0.887	1.087	1.183	1.209	1.222	1.127	1.064	1.033	1.10141	10.0501			
Dibenz[ah]anthracene	0.734	0.91	0.99	1.02	1.035	0.959	0.907	0.877	0.92902	10.4493			
Benzo[ghi]perylene	0.736	0.896	0.98	1.001	1.039	0.951	0.886	0.867	0.91958	10.3688			

Fri Aug 18 14:31:58 2017

Calibration Table Report
Method: TCL.M
Title: OVD MSS01 827-TCL/A-TERP ICAL 08/16/17
Last Calibration: Thu Aug 17 10:56:35 2017
Curve: WG626039
Calibration Files

Compound	3 19M000324.D	10 19M000325.D	25 19M000326.D	50 19M000323.D	80 19M000327.D	100 19M000328.D	120 19M000329.D	Avg	%RSD	Linear
1,4-Dichlorobenzene-d4	ISTD									
Benzaldehyde	0.889	1.009	0.980	0.993	0.951	0.933	0.922	0.954	4.467	
Naphthalene-d8	ISTD									
Alpha-Terpineol	0.241	0.278	0.273	0.276	0.253	0.245	0.246	0.259	6.231	
Caprolactam	0.078	0.125	0.138	0.149	0.142	0.141	0.149	0.132	19.028	0.999
Acenaphthene-d10	ISTD									
1,1'-Biphenyl	1.696	1.819	1.691	1.610	1.512	1.447	1.485	1.609	8.395	
Phenanthrene-d10	ISTD									
Atrazine	0.159	0.207	0.213	0.217	0.209	0.201	0.201	0.201	9.681	

Thu Aug 17 10:58:31 2017

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 07/15/2017 Sample ID: WG621894-08
Instrument ID: HPMS12 Run Time: 02:56 Method: 8270D
File ID: 12M63403 Analyst: SCB QC Key: WATERLOO
ICal Workgroup: WG621894 Cal ID: HPMS12 - 15-JUL-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1'-Biphenyl		50000	51500	ug/L	1.67	3.00	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/03/2017 Sample ID: WG624321-12
Instrument ID: HPMS12 Run Time: 14:58 Method: 8270D
File ID: 12M63795 Analyst: MES QC Key: WATERLOO
ICal Workgroup: WG624321 Cal ID: HPMS12 - 03-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,4-Dioxane		50000	55000	ug/L	0.576	10.0	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/03/2017 Sample ID: WG624321-11
Instrument ID: HPMS12 Run Time: 15:28 Method: 8270D
File ID: 12M63796 Analyst: MES QC Key: WATERLOO
ICal Workgroup: WG624321 Cal ID: HPMS12 - 03-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
2,4,6-Trichlorophenol	CCC	50000	51200	ug/L	0.427	2.40	25	
2,4-Dichlorophenol	CCC	50000	51400	ug/L	0.292	2.80	25	
2-Nitrophenol	CCC	50000	52800	ug/L	0.198	5.50	25	
Acenaphthene	CCC	50000	53400	ug/L	1.37	6.70	25	
Benzo[a]pyrene	CCC	50000	50000	ug/L	1.10	0	25	
Di-n-Octyl Phthalate	CCC	50000	52200	ug/L	1.56	4.30	25	
Fluoranthene	CCC	50000	50400	ug/L	1.23	0.800	25	
Hexachlorobutadiene	CCC	50000	57500	ug/L	0.219	15.1	25	
Diphenylamine/n-Nitrosodiphenylamine	CCC	50000	52400	ug/L	0.700	4.70	25	
Pentachlorophenol	CCC	50000	62100	ug/L	0.175	24.2	25	
Phenol	CCC	50000	50700	ug/L	1.61	1.40	25	
n-Nitrosodipropylamine	SPCC	50000	49700	ug/L	0.983	0.600	25	
2,4-Dinitrophenol	SPCC	50000	54500	ug/L	0.233	9.00	25	
4-Nitrophenol	SPCC	50000	51500	ug/L	0.329	3.10	25	
Hexachlorocyclopentadiene	SPCC	50000	54200	ug/L	0.340	8.40	25	
1,3-Dinitrobenzene		50000	47900	ug/L	0.241	4.20	25	
2,4,5-Trichlorophenol		50000	47800	ug/L	0.417	4.40	25	
2,4-Dimethylphenol		50000	54500	ug/L	0.341	9.10	25	
2,4-Dinitrotoluene		50000	50200	ug/L	0.475	0.500	25	
2,6-Dinitrotoluene		50000	50100	ug/L	0.344	0.100	25	
2-Chloronaphthalene		50000	57900	ug/L	1.47	15.8	25	
2-Chlorophenol		50000	52000	ug/L	1.38	4.10	25	
2-Methylnaphthalene		50000	49600	ug/L	0.715	0.800	25	
2-Methylphenol		50000	50600	ug/L	1.15	1.10	25	
2-Nitroaniline		50000	51700	ug/L	0.424	3.40	25	
3-Nitroaniline		50000	50300	ug/L	0.355	0.500	25	
3-,4-Methylphenol		50000	52000	ug/L	1.49	3.90	25	
4-Bromophenyl Phenyl Ether		50000	52400	ug/L	0.220	4.90	25	
4-Chloroaniline		50000	51400	ug/L	0.151	2.70	25	
Acenaphthylene		50000	50400	ug/L	2.03	0.900	25	
Anthracene		50000	50000	ug/L	1.15	0	25	
Benzo[a]anthracene		50000	49600	ug/L	1.17	0.900	25	
Benzo[b]fluoranthene		50000	51400	ug/L	1.37	2.80	25	
Benzo[ghi]perylene		50000	50800	ug/L	0.975	1.70	25	
Benzo[k]fluoranthene		50000	50300	ug/L	1.13	0.700	25	
Benzoic Acid		50000	64200	ug/L	0.237	28.4	25	*
Benzyl Alcohol		50000	52900	ug/L	0.896	5.70	25	
bis(2-Chloroethyl)ether		50000	51400	ug/L	0.957	2.70	25	
bis(2-Chloroethoxy)methane		50000	54700	ug/L	0.591	9.40	25	
bis(2-Ethylhexyl)phthalate		50000	52400	ug/L	0.844	4.70	25	
Butyl Benzyl Phthalate		50000	51400	ug/L	0.645	2.80	25	
Carbazole		50000	52900	ug/L	1.05	5.80	25	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/03/2017 Sample ID: WG624321-11
Instrument ID: HPMS12 Run Time: 15:28 Method: 8270D
File ID: 12M63796 Analyst: MES QC Key: WATERLOO
ICal Workgroup: WG624321 Cal ID: HPMS12 - 03-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chrysene		50000	51900	ug/L	1.12	3.90	25	
Di-n-Butyl Phthalate		50000	53900	ug/L	1.41	7.80	25	
Dibenz[ah]anthracene		50000	51000	ug/L	1.05	2.10	25	
Dibenzofuran		50000	50400	ug/L	1.82	0.900	25	
Diethylphthalate		50000	52300	ug/L	1.59	4.60	25	
Dimethylphthalate		50000	51800	ug/L	1.53	3.60	25	
Fluorene		50000	50900	ug/L	1.56	1.70	25	
Hexachlorobenzene		50000	51700	ug/L	0.225	3.50	25	
Hexachloroethane		50000	50100	ug/L	0.624	0.200	25	
Indeno[1,2,3-cd]pyrene		50000	50300	ug/L	1.21	0.500	25	
Isophorone		50000	52400	ug/L	0.719	4.80	25	
Naphthalene		50000	51200	ug/L	1.09	2.30	25	
Nitrobenzene		50000	52500	ug/L	0.415	5.00	25	
Phenanthrene		50000	50500	ug/L	1.12	1.10	25	
Pyrene		50000	50200	ug/L	1.26	0.500	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/03/2017 Sample ID: WG624321-13
Instrument ID: HPMS12 Run Time: 16:00 Method: 8270D
File ID: 12M63797 Analyst: MES QC Key: WATERLOO
ICal Workgroup: WG624321 Cal ID: HPMS12 - 03-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
3,3'-Dichlorobenzidine		50000	57100	ug/L	0.464	14.2	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number:L17081498 Run Date:08/15/2017 Sample ID:WG625881-11
Instrument ID:HPMS19 Run Time:21:00 Method:8270D
File ID:19M000316 Analyst:SCB QC Key:WATERLOO
ICal Workgroup:WG625881 Cal ID:HPMS19 - 15-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
2,4,6-Trichlorophenol	CCC	50000	53100	ug/L	0.407	6.10	25	
2,4-Dichlorophenol	CCC	50000	54000	ug/L	0.283	8.00	25	
2-Nitrophenol	CCC	50000	54000	ug/L	0.196	8.00	25	
Acenaphthene	CCC	50000	54000	ug/L	1.31	8.00	25	
Benzo[a]pyrene	CCC	50000	51400	ug/L	1.10	2.70	25	
Di-n-Octyl Phthalate	CCC	50000	56200	ug/L	1.62	12.5	25	
Fluoranthene	CCC	50000	49700	ug/L	1.23	0.600	25	
Hexachlorobutadiene	CCC	50000	55500	ug/L	0.166	11.1	25	
Diphenylamine/n-Nitrosodiphenylamine	CCC	50000	50800	ug/L	0.700	1.70	25	
Pentachlorophenol	CCC	50000	62200	ug/L	0.159	24.3	25	
Phenol	CCC	50000	51500	ug/L	1.68	3.00	25	
n-Nitrosodipropylamine	SPCC	50000	52600	ug/L	0.905	5.30	25	
2,4-Dinitrophenol	SPCC	50000	64700	ug/L	0.203	29.5	25	*
4-Nitrophenol	SPCC	50000	55600	ug/L	0.277	11.1	25	
Hexachlorocyclopentadiene	SPCC	50000	62000	ug/L	0.277	23.9	25	
1,3-Dinitrobenzene		50000	52700	ug/L	0.263	5.40	25	
2,4,5-Trichlorophenol		50000	51600	ug/L	0.407	3.20	25	
2,4-Dimethylphenol		50000	53600	ug/L	0.330	7.20	25	
2,4-Dinitrotoluene		50000	53600	ug/L	0.467	7.10	25	
2,6-Dinitrotoluene		50000	52800	ug/L	0.358	5.70	25	
2-Chloronaphthalene		50000	56200	ug/L	1.45	12.3	25	
2-Chlorophenol		50000	52700	ug/L	1.48	5.40	25	
2-Methylnaphthalene		50000	48500	ug/L	0.680	3.10	25	
2-Methylphenol		50000	50600	ug/L	1.01	1.30	25	
2-Nitroaniline		50000	54600	ug/L	0.405	9.30	25	
3-Nitroaniline		50000	52400	ug/L	0.418	4.70	25	
3-,4-Methylphenol		50000	52100	ug/L	1.45	4.20	25	
4-Bromophenyl Phenyl Ether		50000	51500	ug/L	0.212	3.00	25	
4-Chloroaniline		50000	50800	ug/L	0.126	1.70	25	
Acenaphthylene		50000	50200	ug/L	1.99	0.400	25	
Anthracene		50000	50000	ug/L	1.16	0.100	25	
Benzo[a]anthracene		50000	49600	ug/L	1.16	0.700	25	
Benzo[b]fluoranthene		50000	53300	ug/L	1.23	6.70	25	
Benzo[ghi]perylene		50000	53400	ug/L	0.981	6.70	25	
Benzo[k]fluoranthene		50000	48500	ug/L	1.08	3.10	25	
Benzoic Acid		50000	58900	ug/L	0.212	17.8	25	
Benzyl Alcohol		50000	53100	ug/L	0.958	6.20	25	
bis(2-Chloroethyl)ether		50000	50400	ug/L	1.04	0.700	25	
bis(2-Chloroethoxy)methane		50000	52500	ug/L	0.505	4.90	25	
bis(2-Ethylhexyl)phthalate		50000	58000	ug/L	0.912	15.9	25	
Butyl Benzyl Phthalate		50000	55800	ug/L	0.654	11.7	25	
Carbazole		50000	53200	ug/L	1.14	6.30	25	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/15/2017 Sample ID: WG625881-11
Instrument ID: HPMS19 Run Time: 21:00 Method: 8270D
File ID: 19M000316 Analyst: SCB QC Key: WATERLOO
ICal Workgroup: WG625881 Cal ID: HPMS19 - 15-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chrysene		50000	51000	ug/L	1.12	2.00	25	
Di-n-Butyl Phthalate		50000	55200	ug/L	1.47	10.4	25	
Dibenz[ah]anthracene		50000	54600	ug/L	1.01	9.10	25	
Dibenzofuran		50000	49900	ug/L	1.80	0.100	25	
Diethylphthalate		50000	51200	ug/L	1.53	2.50	25	
Dimethylphthalate		50000	52500	ug/L	1.52	5.00	25	
Fluorene		50000	51800	ug/L	1.42	3.50	25	
Hexachlorobenzene		50000	50000	ug/L	0.214	0	25	
Hexachloroethane		50000	49900	ug/L	0.580	0.200	25	
Indeno[1,2,3-cd]pyrene		50000	53300	ug/L	1.18	6.70	25	
Isophorone		50000	52600	ug/L	0.660	5.20	25	
Naphthalene		50000	50200	ug/L	1.06	0.400	25	
Nitrobenzene		50000	52600	ug/L	0.363	5.10	25	
Phenanthrene		50000	49700	ug/L	1.13	0.500	25	
Pyrene		50000	49500	ug/L	1.31	1.00	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/15/2017 Sample ID: WG625881-12
Instrument ID: HPMS19 Run Time: 21:30 Method: 8270D
File ID: 19M000317 Analyst: SCB QC Key: WATERLOO
ICal Workgroup: WG625881 Cal ID: HPMS19 - 15-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,4-Dioxane		50000	47400	ug/L	0.551	5.10	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/15/2017 Sample ID: WG625881-13
Instrument ID: HPMS19 Run Time: 22:01 Method: 8270D
File ID: 19M000318 Analyst: SCB QC Key: WATERLOO
ICal Workgroup: WG625881 Cal ID: HPMS19 - 15-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
3,3'-Dichlorobenzidine		50000	60800	ug/L	0.459	21.6	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 08/16/2017 Sample ID: WG626039-09
Instrument ID: HPMS19 Run Time: 15:45 Method: 8270D
File ID: 19M000330 Analyst: SCB QC Key: WATERLOO
ICal Workgroup: WG626039 Cal ID: HPMS19 - 16-AUG-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1'-Biphenyl		50000	50700	ug/L	1.63	1.30	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5460104
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 08/31/2017 Sample ID: WG627960-02

Instrument ID: HPMS12 Run Time: 09:39 Method: 8270D

File ID: 12M64165 Analyst: SCB QC Key: WATERLOO

Workgroup (AAB#): WG627873 Cal ID: HPMS12 - 03-AUG-17

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,4-Dichlorobenzene	CCC	50000	51500	ug/L	1.52	2.95	20	
4-Chloro-3-Methylphenol	CCC	50000	53300	ug/L	0.377	6.52	20	
2,4,6-Trichlorophenol	CCC	50000	52100	ug/L	0.435	4.23	20	
2,4-Dichlorophenol	CCC	50000	52900	ug/L	0.300	5.75	20	
2-Nitrophenol	CCC	50000	50300	ug/L	0.189	0.596	20	
Acenaphthene	CCC	50000	55600	ug/L	1.43	11.3	20	
Benzo[a]pyrene	CCC	50000	54500	ug/L	1.20	8.99	20	
Di-n-Octyl Phthalate	CCC	50000	50700	ug/L	1.51	1.46	20	
Fluoranthene	CCC	50000	51000	ug/L	1.24	2.03	20	
Hexachlorobutadiene	CCC	50000	53400	ug/L	0.203	6.80	20	
Diphenylamine/n-Nitrosodiphenylamine	CCC	50000	52200	ug/L	0.698	4.34	20	
Pentachlorophenol	CCC	50000	49400	ug/L	0.134	1.29	20	
Phenol	CCC	50000	56500	ug/L	1.79	12.9	20	
n-Nitrosodipropylamine	SPCC	50000	57900	ug/L	1.14	15.8	20	
2,4-Dinitrophenol	SPCC	50000	56800	ug/L	0.245	13.6	20	
4-Nitrophenol	SPCC	50000	60900	ug/L	0.389	21.8	20	*
Hexachlorocyclopentadiene	SPCC	50000	52600	ug/L	0.328	5.11	20	
Sym-Trinitrobenzene		50000	54300	ug/L	0.281	8.59	20	
1,3-Dinitrobenzene		50000	49400	ug/L	0.249	1.24	20	
1,4-Dioxane		50000	51500	ug/L	0.539	2.97	20	
2,4,5-Trichlorophenol		50000	51700	ug/L	0.451	3.37	20	
2,4-Dimethylphenol		50000	48800	ug/L	0.305	2.41	20	
2,4-Dinitrotoluene		50000	52200	ug/L	0.493	4.46	20	
2,6-Dinitrotoluene		50000	50600	ug/L	0.348	1.26	20	
2-Chloronaphthalene		50000	51300	ug/L	1.30	2.64	20	
2-Chlorophenol		50000	49300	ug/L	1.31	1.44	20	
2-Methylnaphthalene		50000	52100	ug/L	0.752	4.25	20	
2-Methylphenol		50000	54600	ug/L	1.24	9.18	20	
2-Nitroaniline		50000	56800	ug/L	0.466	13.5	20	
3-Nitroaniline		50000	48900	ug/L	0.345	2.19	20	
3,3'-Dichlorobenzidine		50000	55400	ug/L	0.451	10.8	20	
3-,4-Methylphenol		50000	51800	ug/L	1.49	3.62	20	
4-Bromophenyl Phenyl Ether		50000	53100	ug/L	0.223	6.11	20	
4-Chloroaniline		50000	57100	ug/L	0.168	14.2	20	
Acenaphthylene		50000	53800	ug/L	2.16	7.68	20	
Anthracene		50000	51400	ug/L	1.18	2.75	20	
Benzo[a]anthracene		50000	54400	ug/L	1.29	8.83	20	
Benzo[b]fluoranthene		50000	55900	ug/L	1.49	11.8	20	
Benzo[ghi]perylene		50000	57700	ug/L	1.11	15.4	20	
Benzo[k]fluoranthene		50000	53100	ug/L	1.19	6.23	20	
Benzoic Acid		50000	30800	ug/L	0.0799	38.5	20	*
Benzyl Alcohol		50000	54500	ug/L	0.924	9.07	20	

CCV - Modified 03/05/2008

PDF File ID: 5460106

Report generated 09/18/2017 08:43

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 08/31/2017 Sample ID: WG627960-02

Instrument ID: HPMS12 Run Time: 09:39 Method: 8270D

File ID: 12M64165 Analyst: SCB QC Key: WATERLOO

Workgroup (AAB#): WG627873 Cal ID: HPMS12 - 03-AUG-17

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
bis(2-Chloroethyl)ether		50000	56600	ug/L	1.05	13.3	20	
bis(2-Chloroethoxy)methane		50000	56300	ug/L	0.608	12.7	20	
bis(2-Ethylhexyl)phthalate		50000	55800	ug/L	0.899	11.6	20	
Butyl Benzyl Phthalate		50000	57700	ug/L	0.725	15.5	20	
Carbazole		50000	50700	ug/L	1.00	1.38	20	
Chrysene		50000	54500	ug/L	1.17	8.92	20	
Di-n-Butyl Phthalate		50000	51800	ug/L	1.36	3.58	20	
Dibenz[ah]anthracene		50000	55700	ug/L	1.15	11.4	20	
Dibenzofuran		50000	51900	ug/L	1.87	3.71	20	
Diethylphthalate		50000	53200	ug/L	1.62	6.31	20	
Dimethylphthalate		50000	51500	ug/L	1.52	2.91	20	
Fluorene		50000	56300	ug/L	1.73	12.6	20	
Hexachlorobenzene		50000	50800	ug/L	0.221	1.61	20	
Hexachloroethane		50000	53200	ug/L	0.662	6.46	20	
Indeno[1,2,3-cd]pyrene		50000	58500	ug/L	1.41	17.1	20	
Isophorone		50000	54700	ug/L	0.750	9.38	20	
Naphthalene		50000	48700	ug/L	1.04	2.51	20	
Nitrobenzene		50000	56000	ug/L	0.442	11.9	20	
Phenanthrene		50000	50900	ug/L	1.12	1.87	20	
Pyrene		50000	52000	ug/L	1.30	3.92	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 5460106
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/12/2017 Sample ID: WG629380-02

Instrument ID: HPMS19 Run Time: 14:21 Method: 8270D

File ID: 19M000498 Analyst: MES QC Key: WATERLOO

Workgroup (AAB#): WG628781 Cal ID: HPMS19 - 15-AUG-17

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,4-Dichlorobenzene	CCC	50000	50400	ug/L	1.53	0.707	20	
4-Chloro-3-Methylphenol	CCC	50000	53800	ug/L	0.310	7.55	20	
2,4,6-Trichlorophenol	CCC	50000	53000	ug/L	0.407	6.07	20	
2,4-Dichlorophenol	CCC	50000	52200	ug/L	0.274	4.38	20	
2-Nitrophenol	CCC	50000	55300	ug/L	0.200	10.5	20	
Acenaphthene	CCC	50000	48900	ug/L	1.19	2.16	20	
Benzo[a]pyrene	CCC	50000	52100	ug/L	1.11	4.16	20	
Di-n-Octyl Phthalate	CCC	50000	54300	ug/L	1.57	8.63	20	
Fluoranthene	CCC	50000	50700	ug/L	1.25	1.31	20	
Hexachlorobutadiene	CCC	50000	50700	ug/L	0.152	1.40	20	
Diphenylamine/n-Nitrosodiphenylamine	CCC	50000	48700	ug/L	0.671	2.60	20	
Pentachlorophenol	CCC	50000	54000	ug/L	0.137	7.90	20	
Phenol	CCC	50000	50800	ug/L	1.66	1.61	20	
n-Nitrosodipropylamine	SPCC	50000	49300	ug/L	0.847	1.45	20	
2,4-Dinitrophenol	SPCC	50000	55700	ug/L	0.170	11.4	20	
4-Nitrophenol	SPCC	50000	55000	ug/L	0.275	10.1	20	
Hexachlorocyclopentadiene	SPCC	50000	57200	ug/L	0.256	14.5	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 5460106
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/12/2017 Sample ID: WG629382-01
Instrument ID: HPMS19 Run Time: 14:52 Method: 8270D
File ID: 19M000499 Analyst: MES QC Key: WATERLOO
Workgroup (AAB#): WG628781 Cal ID: HPMS19 - 16-AUG-17
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1'-Biphenyl		50000	49100	ug/L	1.58	1.83	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 5460106
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/13/2017 Sample ID: WG629552-02

Instrument ID: HPMS19 Run Time: 13:54 Method: 8270D

File ID: 19M000540 Analyst: SCB QC Key: WATERLOO

Workgroup (AAB#): WG628781 Cal ID: HPMS19 - 15-AUG-17

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,4-Dichlorobenzene	CCC	50000	49800	ug/L	1.51	0.369	20	
4-Chloro-3-Methylphenol	CCC	50000	52900	ug/L	0.304	5.72	20	
2,4,6-Trichlorophenol	CCC	50000	52600	ug/L	0.403	5.25	20	
2,4-Dichlorophenol	CCC	50000	51800	ug/L	0.272	3.70	20	
2-Nitrophenol	CCC	50000	55600	ug/L	0.202	11.2	20	
Acenaphthene	CCC	50000	49100	ug/L	1.20	1.70	20	
Benzo[a]pyrene	CCC	50000	53200	ug/L	1.13	6.48	20	
Di-n-Octyl Phthalate	CCC	50000	54900	ug/L	1.59	9.82	20	
Fluoranthene	CCC	50000	50200	ug/L	1.24	0.491	20	
Hexachlorobutadiene	CCC	50000	50400	ug/L	0.151	0.821	20	
Diphenylamine/n-Nitrosodiphenylamine	CCC	50000	48500	ug/L	0.668	2.95	20	
Pentachlorophenol	CCC	50000	50500	ug/L	0.128	0.959	20	
Phenol	CCC	50000	50700	ug/L	1.66	1.34	20	
n-Nitrosodipropylamine	SPCC	50000	49700	ug/L	0.854	0.688	20	
2,4-Dinitrophenol	SPCC	50000	58100	ug/L	0.179	16.3	20	
4-Nitrophenol	SPCC	50000	53700	ug/L	0.268	7.34	20	
Hexachlorocyclopentadiene	SPCC	50000	56100	ug/L	0.251	12.3	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 5460106
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/13/2017 Sample ID: WG629570-01
Instrument ID: HPMS19 Run Time: 14:25 Method: 8270D
File ID: 19M000541 Analyst: SCB QC Key: WATERLOO
Workgroup (AAB#): WG628781 Cal ID: HPMS19 - 16-AUG-17
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1'-Biphenyl		50000	49300	ug/L	1.59	1.47	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 5460106
Report generated 09/18/2017 08:43

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L17081498 CCV Number: WG627960-02

Instrument ID: HPMS12 CAL ID: HPMS12-03-AUG-17

Workgroup (AAB#): WG627873 Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG627960-02	NA	NA	137292	287085	573212	531324	583182	579985
Upper Limit	NA	NA	274584	574170	1146424	1062648	1166364	1159970
Lower Limit	NA	NA	68646	143543	286606	265662	291591	289993
L17081498-01	1.00	01	115676	239487	466744	436665	456067	469328
L17081498-03	1.00	01	114778	233685	453295	427416	445545	459769
L17081498-05	1.00	01	111413	231920	480940	428837	471710	465541
L17081498-06	1.00	01	115694	241376	468159	433111	463625	480962
L17081498-07	1.00	01	115184	242570	423053	436007	451067	472753
L17081498-09	1.00	01	110599	227163	434404	417493	428688	447437
WG627606-01	1.00	01	116438	243920	474721	440703	458100	481758
WG627757-01	1.00	01	113492	234091	453669	422424	447901	459520
WG627757-02	1.00	01	114110	235754	483676	447012	482650	482943

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 5460107
Report generated 09/18/2017 08:44

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L17081498 **CCV Number:** WG629380-02
Instrument ID: HPMS19 **CAL ID:** HPMS19-15-AUG-17
Workgroup (AAB#): WG628781 **Matrix:** WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG629380-02	NA	NA	147011	292133	539546	578835	558287	559727
Upper Limit	NA	NA	294022	584266	1079092	1157670	1116574	1119454
Lower Limit	NA	NA	73506	146067	269773	289418	279144	279864
WG628510-01	1.00	01	123066	245282	446471	486933	431214	468068
WG628510-02	1.00	01	129029	261851	479844	515616	487876	494122
WG628510-03	1.00	01	127753	258686	465325	513517	473550	486981

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-d8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 5460107
Report generated 09/18/2017 08:44

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L17081498 **CCV Number:** WG629552-02
Instrument ID: HPMS19 **CAL ID:** HPMS19-15-AUG-17
Workgroup (AAB#): WG628781 **Matrix:** WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG629552-02	NA	NA	138971	277971	510914	550473	535804	531657
Upper Limit	NA	NA	277942	555942	1021828	1100946	1071608	1063314
Lower Limit	NA	NA	69486	138986	255457	275237	267902	265829
L17081498-01	1.00	RE	121442	240637	437688	481437	437122	455377
L17081498-03	1.00	RE	161387	314188	571967	629020	574385	594735
L17081498-05	1.00	RE	120302	239817	438018	481961	453661	458774
L17081498-06	1.00	RE	121278	242023	440490	487227	455167	456277
L17081498-07	1.00	RE	119540	236665	431825	472874	425560	448448
L17081498-09	1.00	RE	117682	232799	422530	467895	411441	439483

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 5460107
Report generated 09/18/2017 08:44

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number:L17081498 CCV Number:WG627960-02
Instrument ID:HPMS12 CAL ID: HPMS12-03-AUG-17
Workgroup (AAB#):WG627873 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG627960-02	NA	NA	7.83	10.93	16.24	9.12	19.09	12.55
Upper Limit	NA	NA	8.33	11.43	16.74	9.62	19.59	13.05
Lower Limit	NA	NA	7.33	10.43	15.74	8.62	18.59	12.05
L17081498-01	1.00	01	7.828	10.932	16.237	9.121	19.084	12.546
L17081498-03	1.00	01	7.829	10.932	16.237	9.121	19.079	12.546
L17081498-05	1.00	01	7.828	10.932	16.242	9.121	19.085	12.546
L17081498-06	1.00	01	7.829	10.932	16.243	9.121	19.085	12.546
L17081498-07	1.00	01	7.828	10.932	16.237	9.121	19.085	12.546
L17081498-09	1.00	01	7.828	10.932	16.237	9.121	19.084	12.546
WG627606-01	1.00	01	7.829	10.932	16.237	9.121	19.085	12.546
WG627757-01	1.00	01	7.828	10.932	16.237	9.121	19.085	12.546
WG627757-02	1.00	01	7.829	10.932	16.243	9.121	19.09	12.546

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 5460109
Report generated 09/18/2017 08:44

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L17081498 CCV Number: WG629380-02

Instrument ID: HPMS19 CAL ID: HPMS19 - 15-AUG-17

Workgroup (AAB#): WG628781 Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG629380-02	NA	NA	7.68	10.78	16.02	8.97	18.69	12.37
Upper Limit	NA	NA	8.18	11.28	16.52	9.47	19.19	12.87
Lower Limit	NA	NA	7.18	10.28	15.52	8.47	18.19	11.87
WG628510-01	1.00	01	7.681	10.78	16.021	8.969	18.686	12.369
WG628510-02	1.00	01	7.681	10.781	16.022	8.969	18.686	12.363
WG628510-03	1.00	01	7.681	10.781	16.021	8.969	18.686	12.363

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-d8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 5460109
Report generated 09/18/2017 08:44

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L17081498 CCV Number: WG629552-02

Instrument ID: HPMS19 CAL ID: HPMS19-15-AUG-17

Workgroup (AAB#): WG628781 Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG629552-02	NA	NA	7.68	10.78	16.03	8.97	18.69	12.37
Upper Limit	NA	NA	8.18	11.28	16.53	9.47	19.19	12.87
Lower Limit	NA	NA	7.18	10.28	15.53	8.47	18.19	11.87
L17081498-01	1.00	RE	7.681	10.78	16.015	8.969	18.686	12.369
L17081498-03	1.00	RE	7.681	10.781	16.015	8.969	18.686	12.363
L17081498-05	1.00	RE	7.681	10.78	16.021	8.969	18.686	12.369
L17081498-06	1.00	RE	7.681	10.781	16.016	8.969	18.686	12.369
L17081498-07	1.00	RE	7.681	10.775	16.015	8.969	18.686	12.363
L17081498-09	1.00	RE	7.681	10.78	16.015	8.969	18.686	12.363

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 5460109
Report generated 09/18/2017 08:44

2.2 Semivolatiles Data

2.2.2 Semivolatiles GC/MS Data (827-PAHL)

2.2.2.1 Summary Data

Login Number: L17081498
Department: Semivolatiles
Analyst: Lacey Hendershot

METHOD

Preparation 3510C

Analysis SW-846 8270 SIM

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: There were no MS/MSD results associated with this sample delivery group, due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac recommends site specific MS/MSD samples to avoid possible data qualification.

SAMPLES

Samples: All acceptance criteria were met.

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peakcompletely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low areacounts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene andbenzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

Narrative ID: 129010
Approved By: Mary Schilling

Certificate of Analysis

Sample #: L17081498-01 | **PrePrep Method:** N/A | **Instrument:** HPMS15
Client ID: MW07-082517 | **Prep Method:** 3510C | **Prep Date:** 08/31/2017 16:00
Matrix: Water | **Analytical Method:** 8270D_SIM | **Cal Date:** 09/02/2017 12:13
Workgroup #: WG628159 | **Analyst:** LJH/SCB | **Run Date:** 09/02/2017 17:22
Collect Date: 08/25/2017 10:34 | **Dilution:** 1 | **File ID:** 15M21962
Sample Tag: 01 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	0.0510	0.0255
Acenaphthene	83-32-9		U	0.0510	0.0255
Acenaphthylene	208-96-8		U	0.0510	0.0255
Anthracene	120-12-7		U	0.0510	0.0255
Benzo(a)anthracene	56-55-3		U	0.0510	0.0255
Benzo(a)pyrene	50-32-8		U	0.0510	0.0255
Benzo(b)fluoranthene	205-99-2		U	0.0510	0.0255
Benzo(g,h,i)perylene	191-24-2		U	0.0510	0.0255
Benzo(k)fluoranthene	207-08-9		U	0.0510	0.0255
Chrysene	218-01-9		U	0.0510	0.0255
Dibenzo(a,h)anthracene	53-70-3		U	0.0510	0.0255
Fluoranthene	206-44-0		U	0.0510	0.0255
Fluorene	86-73-7		U	0.0510	0.0255
Indeno(1,2,3-cd)pyrene	193-39-5		U	0.0510	0.0255
Naphthalene	91-20-3	0.0414	J	0.0510	0.0255
Phenanthrene	85-01-8		U	0.0510	0.0255
Pyrene	129-00-0		U	0.0510	0.0255

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2-Fluorobiphenyl	78.4	43	116	
Nitrobenzene-d5	84.2	35	114	
p-Terphenyl-d14	95.2	33	141	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03 | **PrePrep Method:** N/A | **Instrument:** HPMS15
Client ID: MW06-082517 | **Prep Method:** 3510C | **Prep Date:** 08/31/2017 16:00
Matrix: Water | **Analytical Method:** 8270D_SIM | **Cal Date:** 09/02/2017 12:13
Workgroup #: WG628159 | **Analyst:** LJH/SCB | **Run Date:** 09/02/2017 15:58
Collect Date: 08/25/2017 13:54 | **Dilution:** 1 | **File ID:** 15M21959
Sample Tag: 01 | **Units:** ug/L

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	0.0521	0.0260

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Acenaphthene	83-32-9		U	0.0521	0.0260
Acenaphthylene	208-96-8		U	0.0521	0.0260
Anthracene	120-12-7		U	0.0521	0.0260
Benzo(a)anthracene	56-55-3		U	0.0521	0.0260
Benzo(a)pyrene	50-32-8		U	0.0521	0.0260
Benzo(b)fluoranthene	205-99-2		U	0.0521	0.0260
Benzo(g,h,i)perylene	191-24-2		U	0.0521	0.0260
Benzo(k)fluoranthene	207-08-9		U	0.0521	0.0260
Chrysene	218-01-9		U	0.0521	0.0260
Dibenzo(a,h)anthracene	53-70-3		U	0.0521	0.0260
Fluoranthene	206-44-0		U	0.0521	0.0260
Fluorene	86-73-7		U	0.0521	0.0260
Indeno(1,2,3-cd)pyrene	193-39-5		U	0.0521	0.0260
Naphthalene	91-20-3		U	0.0521	0.0260
Phenanthrene	85-01-8		U	0.0521	0.0260
Pyrene	129-00-0		U	0.0521	0.0260

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2-Fluorobiphenyl	77.6	43	116	
Nitrobenzene-d5	81.0	35	114	
p-Terphenyl-d14	96.7	33	141	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-07
Client ID: MW10-082517
Matrix: Water
Workgroup #: WG628159
Collect Date: 08/25/2017 10:20
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D_SIM
Analyst: LJH/SCB
Dilution: 1
Units: ug/L

Instrument: HPMS15
Prep Date: 08/31/2017 16:00
Cal Date: 09/02/2017 12:13
Run Date: 09/02/2017 16:26
File ID: 15M21960

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	0.0532	0.0266
Acenaphthene	83-32-9		U	0.0532	0.0266
Acenaphthylene	208-96-8		U	0.0532	0.0266
Anthracene	120-12-7		U	0.0532	0.0266
Benzo(a)anthracene	56-55-3		U	0.0532	0.0266
Benzo(a)pyrene	50-32-8		U	0.0532	0.0266
Benzo(b)fluoranthene	205-99-2		U	0.0532	0.0266
Benzo(g,h,i)perylene	191-24-2		U	0.0532	0.0266
Benzo(k)fluoranthene	207-08-9		U	0.0532	0.0266
Chrysene	218-01-9		U	0.0532	0.0266

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Dibenzo(a,h)anthracene	53-70-3		U	0.0532	0.0266
Fluoranthene	206-44-0		U	0.0532	0.0266
Fluorene	86-73-7		U	0.0532	0.0266
Indeno(1,2,3-cd)pyrene	193-39-5		U	0.0532	0.0266
Naphthalene	91-20-3		U	0.0532	0.0266
Phenanthrene	85-01-8		U	0.0532	0.0266
Pyrene	129-00-0		U	0.0532	0.0266

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2-Fluorobiphenyl	75.8	43	116	
Nitrobenzene-d5	85.2	35	114	
p-Terphenyl-d14	90.4	33	141	

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09
Client ID: MW20-082517
Matrix: Water
Workgroup #: WG628159
Collect Date: 08/25/2017 14:10
Sample Tag: 01

PrePrep Method: N/A
Prep Method: 3510C
Analytical Method: 8270D_SIM
Analyst: LJH/SCB
Dilution: 1
Units: ug/L

Instrument: HPMS15
Prep Date: 08/31/2017 16:00
Cal Date: 09/02/2017 12:13
Run Date: 09/02/2017 16:54
File ID: 15M21961

Analyte	CAS #	Result	Qual	RL	MDL
2-Methylnaphthalene	91-57-6		U	0.0500	0.0250
Acenaphthene	83-32-9		U	0.0500	0.0250
Acenaphthylene	208-96-8		U	0.0500	0.0250
Anthracene	120-12-7		U	0.0500	0.0250
Benzo(a)anthracene	56-55-3		U	0.0500	0.0250
Benzo(a)pyrene	50-32-8		U	0.0500	0.0250
Benzo(b)fluoranthene	205-99-2		U	0.0500	0.0250
Benzo(g,h,i)perylene	191-24-2		U	0.0500	0.0250
Benzo(k)fluoranthene	207-08-9		U	0.0500	0.0250
Chrysene	218-01-9		U	0.0500	0.0250
Dibenzo(a,h)anthracene	53-70-3		U	0.0500	0.0250
Fluoranthene	206-44-0		U	0.0500	0.0250
Fluorene	86-73-7		U	0.0500	0.0250
Indeno(1,2,3-cd)pyrene	193-39-5		U	0.0500	0.0250
Naphthalene	91-20-3	0.0342	J	0.0500	0.0250
Phenanthrene	85-01-8		U	0.0500	0.0250
Pyrene	129-00-0		U	0.0500	0.0250

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2-Fluorobiphenyl	87.9	43	116	

Certificate of Analysis

Nitrobenzene-d5	98.1	35	114	
p-Terphenyl-d14	61.0	33	141	

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

2.2.2.2 QC Summary Data

Example 8270 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	1261197
Cis = Concentration of the specific internal standard (ug/mL)	40
Ais = Area of the characteristic ion of the specific internal standard	608044
Cx = Concentration of the compound in the standard being measured (ug/mL)	50
RF = Calculated Response Factor	**1.65935**

2.0 Calculating the concentration (C) of a compound in water using the data from the prep log and quantitation report: *

Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Vi)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Vi = Initial volume of sample extracted from prep log (mL)	1021
Cx = Concentration of the compound in the sample being measured (ug/mL)	0.016947
Cx = Concentration of the compound in the sample being measured (ug/L)	**16.947**

3.0 Calculating the concentration (C) of a compound in soil using the data from the prep log and quantitation report: *

Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Wi)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Wi = Initial weight of sample extracted (g) from prep log	30
Cx = Concentration of the compound in the sample being measured (ug/g)	0.576763
Cx = Concentration of the compound in the sample being measured (ug/kg)	**576.7627**

Dry weight correction:

Percent solids (PCT_S)	50
Cd = (Cx) (100)/PCT_S	**1153.525** ug/kg

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

x = (y - b)/m = [(0.02139 -(- 0.0435)]/ 0.0783 = 0.829

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.829) = 20.72 ug/L

Example Spreadsheet Calculation:

Slope from curve, m:	0.0783	
Intercept from curve, b:	-0.0435	
Area of analyte, Ax:	16790	
Area of Internal Standard , Ais:	784484	
Concentration of IS, Cis	25.00	ug/L
Response Ratio (y) :	0.021403	
Amount Ratio:	0.828897	
Concentration (Cx):	20.72241	ug/L

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**0.0259**	
Value of B from plot:	**0.0596**	
Value of C from plot:	**-0.0165**	
Area of analyte from quantitation report:	**203233**	
Area of IS from quantiation report:	**1425653**	
Response ratio, y:	**0.142554**	
C - y:	**-0.15905**	
Root 1 - Computed amount ratio , X1:	**-3.88278**	
Root 2 - Computed amount ratio , X2:	**1.581623**	use this solution
Concentration of IS, Cis:	**40.00**	
Concentration of analyte, Cx:	**63.26**	ug/L

Microbac Laboratories Inc.
Sample Extract Log

Workgroup: WG627788
Analyst: JDH
Spike Analyst: JDH
Method: 3510C
Run Date: 08/31/2017 16:00
SOP: EXA01 Revision 19
Spike Witness: JLD
Surr Solution: STD81997

METHYLENE CHLORIDE Lot #: COA19844
Sodium Sulfate , Anhydrous , Granul Lot # COA19381

	SAMPLE #	Type	Reference	pH	Prod	Init Amnt	Surr Amnt	Spike Amnt	Spike Sol	Final Vol	Color
1	L17081498-01	SAMP		N	827-PAHL	980 mL	.25 mL			1 mL	Transparent
2	L17081498-03	RS01		N	827-PAHL	960 mL	.25 mL			1 mL	Transparent
3	L17081498-07	SAMP		N	827-PAHL	940 mL	.25 mL			1 mL	Transparent
4	L17081498-09	SAMP		N	827-PAHL	1000 mL	.25 mL			1 mL	Transparent
5	L17081555-01	SAMP		N	625-PAHL	980 mL	.25 mL			1 mL	Transparent
6	L17081589-17	SAMP		N	827-PAHL	980 mL	.25 mL			1 mL	Transparent
7	L17081592-18	SAMP		N	827-PAHL	980 mL	.25 mL			1 mL	Transparent
8	L17081644-01	SAMP		N	827-PAHL-SPI	1000 mL	.25 mL			1 mL	Transparent
9	WG627788-01	BLANK		N	827-PAHL	1000 mL	.25 mL			1 mL	Transparent
10	WG627788-02	LCS		N	827-PAHL	1000 mL	.25 mL	1 mL	STD82773	1 mL	Transparent
11	WG627788-03	LCS2		N	827-PAHL	1000 mL	.25 mL	1 mL	STD82773	1 mL	Transparent
12	WG627788-04	QCMRL		N	827-PAHL		.25 mL			1 mL	Transparent

Due to insufficient sample volume, this preparation batch failed to include the method prescribed MS and MSD.

Analyst: Justin Hesson

Reviewer: Jessica DeLong

EXTRACT - Modified 10/22/2008
PDF ID: 5460305
Report generated: 09/05/2017 08:34

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS15 Dataset: 090217
Analyst1: LJH Analyst2: NA
Method: 8270L SOP: MSS03 Rev: 14
Method: OVAP SOP: MSS03 Rev: 0

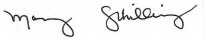
Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Workgroups: Column 1 ID: RXI-5MS Column 2 ID: NA
WG628015, WG628159, WG628243
Internal STD: STD83647 Surrogate STD: NA Calibration STD
CCV STD: STD83583 LCS STD: MS/MSD STD:

Comments: Files 15M21975-15M21998 were uploaded but need re-ran due to the ending CCV failing high and failed low for internal standards.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	15M21939	FULL SCAN	1	1		09/02/17 06:40
2	15M21940	WG628279-01 5PPM DFTPP STD	1	1	STD80383	09/02/17 07:13
3	15M21941	WG628279-01 5PPM DFTPP STD	1	1	STD80383	09/02/17 07:31
4	15M21942	WG628279-01 5PPM DFTPP STD	1	1	STD80383	09/02/17 07:55
5	15M21943	WG628279-02 1PPM PAHL STD	1	1	STD83583	09/02/17 08:11
6	15M21944	WG628279-03 10PPM PAHL STD	1	1	STD83583	09/02/17 08:57
7	15M21945	WG628279-04 5PPM PAHL STD	1	1	STD83583	09/02/17 09:25
8	15M21946	WG628279-05 2.5PPM PAHL STD	1	1	STD83583	09/02/17 09:53
9	15M21947	WG628279-06 0.5PPM PAHL STD	1	1	STD83583	09/02/17 10:22
10	15M21948	WG628279-07 0.1PPM PAHL STD	1	1	STD83583	09/02/17 10:49
11	15M21949	WG628279-08 0.05PPM PAHL STD	1	1	STD83583	09/02/17 11:17
12	15M21950	WG628279-02 1PPM PAHL STD	1	1	STD83583	09/02/17 11:45
13	15M21951	WG628279-03 10PPM PAHL STD	1	1	STD83583	09/02/17 12:13
14	15M21952	WG628279-09 1PPM PAHL ALT SRC	1	1	STD80988	09/02/17 12:41
15	15M21953	WG627788-01 BLANK 9/1	1	1		09/02/17 13:09
16	15M21954	WG627788-02 LCS 9/1	1	1		09/02/17 13:37
17	15M21955	WG627788-03 LCS2 9/1	1	1		09/02/17 14:06
18	15M21956	WG627876-01 BLANK 8/30	7	1	SOIL	09/02/17 14:34
19	15M21957	WG627876-02 LCS 8/30	7	1	SOIL	09/02/17 15:02
20	15M21958	L17081644-01	1	1		09/02/17 15:30
21	15M21959	L17081498-03 827-PAHL	1	1		09/02/17 15:58
22	15M21960	L17081498-07 827-PAHL	1	1		09/02/17 16:26
23	15M21961	L17081498-09 827-PAHL	1	1		09/02/17 16:54
24	15M21962	L17081498-01 827-PAHL	1	1		09/02/17 17:22
25	15M21963	L17081589-17 827-PAHL	1	1		09/02/17 17:50
26	15M21964	L17081592-18 827-PAHL	1	1		09/02/17 18:18
27	15M21965	L17081586-11 100X	7	100	SOIL	09/02/17 18:46
28	15M21966	L17081586-12 100X	7	100	SOIL	09/02/17 19:14
29	15M21967	L17081586-15 100X	7	100	SOIL	09/02/17 19:42
66	15M21968	WG627788-04 ENDING CCV	1	1	SOIL	09/02/17 20:20
31	15M21969	L17081555-01	2	1		09/02/17 20:48
32	15M21970	BAKE OUT	1	1		09/02/17 21:16
33	15M21971	bake out	1	1		09/02/17 22:07

Page: 1 Approved: 05-SEP-17



Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS15 Dataset: 090217
Analyst1: LJH Analyst2: NA
Method: 8270L SOP: MSS03 Rev: 14
Method: OVAP SOP: MSS03 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG628015, WG628159, WG628243

Internal STD: STD83647 Surrogate STD: NA
CCV STD: STD83583 LCS STD:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
34	15M21972	WG628279-01 5PPM DFTPP STD	1	1	STD80383	09/02/17 22:43
67	15M21973	WG628449-01 5PPM DFTPP STD	1	1	STD80383	09/02/17 23:00
68	15M21974	WG628449-02 1PPM PAHL STD	1	1	STD83583	09/02/17 23:16
37	15M21975	WG627988-01 BLANK	7	1	SOIL	09/02/17 23:44
38	15M21976	WG627988-02 LCS	7	1	SOIL	09/03/17 00:12
39	15M21977	L17081594-15 827-PAHL	7	1	SOIL	09/03/17 00:40
40	15M21978	L17081595-03 10X 827-PALH	7	10	SOIL	09/03/17 01:08
41	15M21979	L17081595-02 10X 827-PALH	7	10	SOIL	09/03/17 01:36
42	15M21980	L17081594-18 10X 827-PAHL	7	10	SOIL	09/03/17 02:04
43	15M21981	L17081594-16 10X 827-PAHL	7	10	SOIL	09/03/17 02:32
44	15M21982	L17081594-12 10X 827-PAHL	7	10	SOIL	09/03/17 03:00
45	15M21983	L17081594-11 10X 827-PAHL	7	10	SOIL	09/03/17 03:28
46	15M21984	L17081594-19 20X 827-PAHL	7	20	SOIL	09/03/17 03:56
47	15M21985	L17081594-07 20X 827-PAHL	7	20	SOIL	09/03/17 04:23
48	15M21986	L17081594-08 20X 827-PAHL	7	20	SOIL	09/03/17 04:52
49	15M21987	L17081594-14 20X 827-PAHL	7	20	SOIL	09/03/17 05:19
50	15M21988	L17081594-20 20X 827-PAHL	7	20	SOIL	09/03/17 05:47
65	15M21989	L17081594-04 REF 20X 827-PAHL	7	20	SOIL	09/03/17 06:15
52	15M21990	WG627988-04 MS 20X 827-PAHL	7	20	SOIL	09/03/17 06:43
53	15M21991	WG627988-05 MSD 20X 827-PAHL	7	20	SOIL	09/03/17 07:11
54	15M21992	L17081594-10 20X 827-PAHL	7	20	SOIL	09/03/17 07:39
55	15M21993	L17081594-05 20X 827-PAHL	7	20	SOIL	09/03/17 08:07
56	15M21994	L17081594-06 20X 827-PAHL	7	20	SOIL	09/03/17 08:35
57	15M21995	L17081594-09 20X 827-PAHL	7	20	SOIL	09/03/17 09:03
58	15M21996	L17081594-13 20X 827-PAHL	7	20	SOIL	09/03/17 09:31
59	15M21997	L17081594-17 20X 827-PAHL	7	20	SOIL	09/03/17 09:58
60	15M21998	WG627876-07 ENDING CCV	7	1	SOIL	09/03/17 10:26
61	15M21999	bake out	1	1		09/03/17 10:54
62	15M22000	bake out	1	1		09/03/17 11:22
63	15M22001	bake out	1	1		09/03/17 11:50
64	15M22002	BAKE OUT	1	1		09/05/17 11:24

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2				
	WG628279-01 5PPM DFTPP STD Ion failure, RR, NR.			

Page: 2 Approved: 05-SEP-17

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS15 Dataset: 090217
Analyst1: LJH Analyst2: NA
Method: 8270L SOP: MSS03 Rev: 14
Method: OVAP SOP: MSS03 Rev: 0

Maintenance Log ID: Syringe Filter Lot#:
Eluent ID#:

Workgroups: Column 1 ID: RXI-5MS Column 2 ID: NA
WG628015, WG628159, WG628243
Internal STD: STD83647 Surrogate STD: NA
CCV STD: STD83583 LCS STD:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3				
	WG628279-01 5PPM DFTPP STD Ion failure, run quicktune, NR.			
5				
	WG628279-02 1PPM PAHL STD NR, RR.			
6				
	WG628279-03 10PPM PAHL STD NR, RR.			
66				
	WG627876-07 ENDING CCV failed tune time, document in Narrative.			
31			Surrogate standard failure	3
	L17081555-01			
34				
	WG628279-01 5PPM DFTPP STD Ion failure, RR, NR.			

Page: 3 Approved: 05-SEP-17

Microbac Laboratories Inc.

Data Checklist

Date: 02-SEP-2017
Analyst: LJH
Analyst: NA
Method: 8270L
Instrument: HPMS15
Curve Workgroup: WG628279
Runlog ID: 84371
Analytical Workgroups: L17081644, -1498, -1589, -1592, -1586, -1555, -1594

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	NA
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	LJH
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MES

Primary Reviewer:
05-SEP-2017

Secondary Reviewer:
05-SEP-2017

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-05-2017 15:10:30

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8270D_SIM **AAB#:** WG628159

Login Number: L17081498

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW07-082517	01	08/25/17					08/31/2017	6.2	7		09/02/17	2.1	40	
MW06-082517	03	08/25/17					08/31/2017	6.1	7		09/02/17	2	40	
MW10-082517	07	08/25/17					08/31/2017	6.2	7		09/02/17	2	40	
MW20-082517	09	08/25/17					08/31/2017	6.1	7		09/02/17	2	40	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5461824
Report generated 09/06/2017 09:44

Login Number: L17081498
Instrument Id: HPMS15
Workgroup (AAB#): WG628159

Method: 8270L
CAL ID: HPMS15-02-SEP-17
Matrix: Water

Sample Number	Dilution	Tag	1	2	3
L17081498-01	1.00	01	78.4	84.2	95.2
L17081498-03	1.00	01	77.6	81.0	96.7
L17081498-07	1.00	01	75.8	85.2	90.4
L17081498-09	1.00	01	87.9	98.1	61.0
WG627788-01	1.00	01	79.7	79.7	91.8
WG627788-02	1.00	01	85.2	88.9	93.0
WG627788-03	1.00	01	79.3	83.3	84.9
WG627788-04	1.00	01	92.0	99.2	92.0

Surrogates	Surrogate Limits		
1 - 2-Fluorobiphenyl	43	-	116
2 - Nitrobenzene-d5	35	-	114
3 - p-Terphenyl-d14	33	-	141

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 5461833
Report generated: 09/06/2017 09:44

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L17081498
Work Group: WG628159
Blank File ID: 15M21953
Blank Sample ID: WG627788-01
Prep Date: 08/31/17 16:00
Instrument ID: HPMS15
Analyzed Date: 09/02/17 13:09
Method: 8270D_SIM
Analyst: LJH/SCB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG627788-02	15M21954	09/02/17 13:37	01
LCS2	WG627788-03	15M21955	09/02/17 14:06	01
MW06-082517	L17081498-03	15M21959	09/02/17 15:58	01
MW10-082517	L17081498-07	15M21960	09/02/17 16:26	01
MW20-082517	L17081498-09	15M21961	09/02/17 16:54	01
MW07-082517	L17081498-01	15M21962	09/02/17 17:22	01
QCMRL	WG627788-04	15M21968	09/02/17 20:20	01

Report Name: BLANK_SUMMARY
PDF File ID: 5461825
Report generated 09/06/2017 09:44

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L17081498 Prep Date: 08/31/17 16:00 Sample ID: WG627788-01
Instrument ID: HPMS15 Run Date: 09/02/17 13:09 Prep Method: 3510C
File ID: 15M21953 Analyst: LJH/SCB Method: 8270D SIM
Workgroup (AAB#): WG628159 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS15-02-SEP-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
2-Methylnaphthalene	0.0250	0.0500	0.0250	1	U
Acenaphthene	0.0250	0.0500	0.0250	1	U
Acenaphthylene	0.0250	0.0500	0.0250	1	U
Anthracene	0.0250	0.0500	0.0250	1	U
Benzo(a)anthracene	0.0250	0.0500	0.0250	1	U
Benzo(a)pyrene	0.0250	0.0500	0.0250	1	U
Benzo(b)fluoranthene	0.0250	0.0500	0.0250	1	U
Benzo(g,h,i)perylene	0.0250	0.0500	0.0250	1	U
Benzo(k)fluoranthene	0.0250	0.0500	0.0250	1	U
Chrysene	0.0250	0.0500	0.0250	1	U
Dibenzo(a,h)anthracene	0.0250	0.0500	0.0250	1	U
Fluoranthene	0.0250	0.0500	0.0250	1	U
Fluorene	0.0250	0.0500	0.0250	1	U
Indeno(1,2,3-cd)pyrene	0.0250	0.0500	0.0250	1	U
Naphthalene	0.0250	0.0500	0.0250	1	U
Phenanthrene	0.0250	0.0500	0.0250	1	U
Pyrene	0.0250	0.0500	0.0250	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
2-Fluorobiphenyl	79.7	43	-	116	PASS
Nitrobenzene-d5	79.7	35	-	114	PASS
p-Terphenyl-d14	91.8	33	-	141	PASS

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 5461826
06-SEP-2017 09:44

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L17081498 Analyst: LJH/SCB Prep Method: 3510C
Instrument ID: HPMS15 Matrix: Water Method: 8270D SIM
Workgroup (AAB#): WG628159 Units: ug/L
QC Key: WATERLOO Lot #: STD82773

Sample ID: WG627788-02 LCS File ID: 15M21954 Run Date: 09/02/2017 13:37
Sample ID: WG627788-03 LCS2 File ID: 15M21955 Run Date: 09/02/2017 14:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Naphthalene	1.00	0.837	83.7	1.00	0.794	79.4	5.26	30 - 100	30	
2-Methylnaphthalene	1.00	0.854	85.4	1.00	0.814	81.4	4.77	30 - 105	30	
Acenaphthylene	1.00	0.922	92.2	1.00	0.915	91.5	0.773	30 - 115	30	
Acenaphthene	1.00	0.919	91.9	1.00	0.890	89.0	3.16	30 - 110	30	
Fluorene	1.00	0.960	96.0	1.00	0.936	93.6	2.54	30 - 120	30	
Phenanthrene	1.00	1.02	102	1.00	0.990	99.0	3.47	30 - 130	30	
Anthracene	1.00	0.972	97.2	1.00	0.946	94.6	2.71	30 - 130	30	
Fluoranthene	1.00	1.10	110	1.00	1.05	105	4.50	40 - 150	30	
Pyrene	1.00	1.10	110	1.00	1.05	105	4.43	50 - 150	30	
Benzo(a)anthracene	1.00	1.11	111	1.00	1.04	104	6.01	50 - 150	30	
Chrysene	1.00	1.04	104	1.00	0.971	97.1	6.82	45 - 145	30	
Benzo(b)fluoranthene	1.00	0.996	99.6	1.00	0.916	91.6	8.41	40 - 150	30	
Benzo(k)fluoranthene	1.00	0.932	93.2	1.00	0.872	87.2	6.69	40 - 150	30	
Benzo(a)pyrene	1.00	0.991	99.1	1.00	0.925	92.5	6.89	50 - 140	30	
Indeno(1,2,3-cd)pyrene	1.00	0.884	88.4	1.00	0.790	79.0	11.2	35 - 150	30	
Dibenzo(a,h)anthracene	1.00	0.719	71.9	1.00	0.592	59.2	19.3	25 - 155	30	
Benzo(g,h,i)perylene	1.00	0.717	71.7	1.00	0.722	72.2	0.709	30 - 150	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Nitrobenzene-d5	88.9	83.3	35 - 114	PASS
2-Fluorobiphenyl	85.2	79.3	43 - 116	PASS
p-Terphenyl-d14	93.0	84.9	33 - 141	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 5461827
Report generated: 09/06/2017 09:44

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

DFTPP

Login Number: L17081498
Instrument: HPMS15
Analyst: LJH/SCB
Workgroup: WG628279

Tune ID: WG628279-01
Run Date: 09/02/2017
Run Time: 07:55
File ID: 15M21942
Cal ID: HPMS15-02-SEP-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	50.6	62569	PASS
68.0	69.0	0	2.00	1.86	1086	PASS
69.0	198	0	100	47.2	58334	PASS
70.0	69.0	0	2.00	0	0	PASS
127	198	40.0	60.0	55.7	68848	PASS
197	198	0	1.00	0.480	593	PASS
198	198	100	100	100	123624	PASS
199	198	5.00	9.00	7.01	8671	PASS
275	198	10.0	30.0	24.3	30019	PASS
365	198	1.00	100	2.75	3394	PASS
441	443	0.0100	100	73.3	13785	PASS
442	198	40.0	100	76.6	94757	PASS
443	442	17.0	23.0	19.9	18814	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG628279-04	STD	01	09/02/2017 09:25	
WG628279-05	STD	01	09/02/2017 09:53	
WG628279-06	STD	01	09/02/2017 10:22	
WG628279-07	STD	01	09/02/2017 10:49	
WG628279-08	STD	01	09/02/2017 11:17	
WG628279-02	STD-CCV	01	09/02/2017 11:45	
WG628279-03	STD	01	09/02/2017 12:13	
WG628279-09	SSCV	01	09/02/2017 12:41	
WG627788-01	BLANK	01	09/02/2017 13:09	
WG627788-02	LCS	01	09/02/2017 13:37	
WG627788-03	LCS2	01	09/02/2017 14:06	
L17081498-03	MW06-082517	01	09/02/2017 15:58	
L17081498-07	MW10-082517	01	09/02/2017 16:26	
L17081498-09	MW20-082517	01	09/02/2017 16:54	
L17081498-01	MW07-082517	01	09/02/2017 17:22	
WG627788-04	QCMRL	01	09/02/2017 20:20	*

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 5461830
Report generated 09/06/2017 09:44

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

Login Number: L17081498 **Instrument ID:** HPMS15
Analytical Method: 8270D_SIM **Initial Calibration Date:** 02-SEP-17 12:13
ICAL Workgroup: WG628279 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Acenaphthene	CCC	1.185	1.71		
Benzo[a]pyrene	CCC	1.078	10.2		
Fluoranthene	CCC	1.155	4.80		
2-Methylnaphthalene		0.7046	1.72		
Acenaphthylene		1.917	8.87		
Anthracene		1.099	5.47		
Benzo[a]anthracene		1.081	4.60		
Benzo[b]fluoranthene		1.197	4.84		
Benzo[ghi]perylene		1.114	5.26		
Benzo[k]fluoranthene		1.222	10.3		
Chrysene		1.085	0.890		
Dibenz[ah]anthracene		1.094	5.66		
Fluorene		1.423	3.84		
Indeno[1,2,3-cd]pyrene		1.156	6.23		
Naphthalene		1.016	1.09		
Phenanthrene		1.144	1.17		
Pyrene		1.226	2.15		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 5461828
Report generated 09/06/2017 09:44

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D SIM

Instrument ID: HPMS15
Initial Calibration Date: 02-SEP-17 12:13
Column ID: F

Analyte	WG628279-02			WG628279-03			WG628279-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Acenaphthene	1.00	89733.0000	1.186	10.0	1088745.00	1.207	5.00	501010.000	1.196
Benzo[a]pyrene	1.00	129764.000	1.071	10.0	1718266.00	1.226	5.00	781678.000	1.153
Fluoranthene	1.00	158193.000	1.162	10.0	1942908.00	1.212	5.00	889988.000	1.192
2-Methylnaphthalene	1.00	106371.000	0.7031	10.0	1313517.00	0.7154	5.00	598929.000	0.7122
Acenaphthylene	1.00	141454.000	1.869	10.0	1911946.00	2.120	5.00	875961.000	2.092
Anthracene	1.00	147693.000	1.085	10.0	1878173.00	1.172	5.00	863881.000	1.157
Benzo[a]anthracene	1.00	145497.000	1.074	10.0	1801624.00	1.131	5.00	825648.000	1.128
Benzo[b]fluoranthene	1.00	145150.000	1.198	10.0	1778616.00	1.269	5.00	818459.000	1.207
Benzo[ghi]perylene	1.00	137814.000	1.138	10.0	1681787.00	1.200	5.00	765075.000	1.129
Benzo[k]fluoranthene	1.00	150521.000	1.243	10.0	1894484.00	1.352	5.00	846729.000	1.249
Chrysene	1.00	146176.000	1.079	10.0	1733805.00	1.088	5.00	793898.000	1.085
Dibenz[ah]anthracene	1.00	131603.000	1.086	10.0	1691075.00	1.207	5.00	759742.000	1.121
Fluorene	1.00	107644.000	1.422	10.0	1337815.00	1.483	5.00	612249.000	1.462
Indeno[1,2,3-cd]pyrene	1.00	151241.000	1.249	10.0	1728018.00	1.233	5.00	780415.000	1.151
Naphthalene	1.00	153454.000	1.014	10.0	1849127.00	1.007	5.00	845863.000	1.006
Phenanthrene	1.00	156243.000	1.148	10.0	1848312.00	1.153	5.00	850932.000	1.139
Pyrene	1.00	164612.000	1.215	10.0	1995209.00	1.253	5.00	916114.000	1.252

INT_CAL - Modified 03/06/2008
PDF File ID: 5461828
Report generated 09/06/2017 09:44

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498
Analytical Method: 8270D SIM

Instrument ID: HPMS15
Initial Calibration Date: 02-SEP-17 12:13
Column ID: F

Analyte	WG628279-05			WG628279-06			WG628279-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Acenaphthene	2.50	227646.000	1.193	0.500	43934.0000	1.199	0.100	8572.00000	1.161
Benzo[a]pyrene	2.50	352642.000	1.134	0.500	62378.0000	1.067	0.100	12059.0000	1.001
Fluoranthene	2.50	408377.000	1.189	0.500	77151.0000	1.178	0.100	14435.0000	1.088
2-Methylnaphthalene	2.50	269107.000	0.7127	0.500	52238.0000	0.7133	0.100	10190.0000	0.6872
Acenaphthylene	2.50	387975.000	2.033	0.500	68937.0000	1.882	0.100	12629.0000	1.711
Anthracene	2.50	390676.000	1.138	0.500	71577.0000	1.093	0.100	13494.0000	1.017
Benzo[a]anthracene	2.50	377299.000	1.111	0.500	70553.0000	1.096	0.100	13106.0000	1.017
Benzo[b]fluoranthene	2.50	387999.000	1.248	0.500	69525.0000	1.190	0.100	14156.0000	1.175
Benzo[ghi]perylene	2.50	350996.000	1.129	0.500	65974.0000	1.129	0.100	12339.0000	1.025
Benzo[k]fluoranthene	2.50	397420.000	1.278	0.500	73316.0000	1.254	0.100	14717.0000	1.222
Chrysene	2.50	367638.000	1.083	0.500	71155.0000	1.105	0.100	13919.0000	1.080
Dibenz[ah]anthracene	2.50	344491.000	1.108	0.500	62784.0000	1.074	0.100	12136.0000	1.008
Fluorene	2.50	277897.000	1.456	0.500	52704.0000	1.439	0.100	10058.0000	1.363
Indeno[1,2,3-cd]pyrene	2.50	352176.000	1.133	0.500	69406.0000	1.188	0.100	12931.0000	1.074
Naphthalene	2.50	381902.000	1.011	0.500	76052.0000	1.039	0.100	15134.0000	1.021
Phenanthrene	2.50	392136.000	1.142	0.500	76352.0000	1.166	0.100	15007.0000	1.131
Pyrene	2.50	420512.000	1.239	0.500	79952.0000	1.242	0.100	15395.0000	1.194

INT_CAL - Modified 03/06/2008
PDF File ID: 5461828
Report generated 09/06/2017 09:44

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L17081498 **Instrument ID:** HPMS15

Analytical Method: 8270D_SIM **Initial Calibration Date:** 02-SEP-17 12:13

Column ID: F

Analyte	WG628279-08		
	CONC	RESP	RF
Acenaphthene	0.0500	4701.00000	1.152
Benzo[a]pyrene	0.0500	5710.00000	0.8900
Fluoranthene	0.0500	7874.00000	1.068
2-Methylnaphthalene	0.0500	5200.00000	0.6884
Acenaphthylene	0.0500	6979.00000	1.711
Anthracene	0.0500	7604.00000	1.031
Benzo[a]anthracene	0.0500	7209.00000	1.012
Benzo[b]fluoranthene	0.0500	6985.00000	1.089
Benzo[ghi]perylene	0.0500	6741.00000	1.051
Benzo[k]fluoranthene	0.0500	6113.00000	0.9528
Chrysene	0.0500	7674.00000	1.077
Dibenz[ah]anthracene	0.0500	6768.00000	1.055
Fluorene	0.0500	5446.00000	1.335
Indeno[1,2,3-cd]pyrene	0.0500	6835.00000	1.065
Naphthalene	0.0500	7667.00000	1.015
Phenanthrene	0.0500	8310.00000	1.127
Pyrene	0.0500	8481.00000	1.190

INT_CAL - Modified 03/06/2008
PDF File ID: 5461828
Report generated 09/06/2017 09:44

Method Path : C:\msdchem\1\methods\
Method File : PAHQUANT.M
Title : OVD MSS03 PAHL SIM ICAL 09/02/17
Last Update : Sat Sep 02 12:41:37 2017
Response Via : Initial Calibration
Curve: WG628279
Calibration Files
0.05=15M21949.D .1 =15M21948.D .5 =15M21947.D 1 =15M21950.D 2.5 =15M21946.D 5 =15M

		Compound	0.05	.1	.5	1	2.5	5	10	Avg	%RSD
1)	I	Naphthalene-d8	ISTD								
2)	S	Nitrobenzene-d5	0.277	0.259	0.303	0.297	0.325	0.315	0.340	0.302	9.19
3)		Naphthalene	1.015	1.021	1.039	1.014	1.011	1.006	1.007	1.016	1.09
4)		2-Methylnaphth...	0.688	0.687	0.713	0.703	0.713	0.712	0.715	0.705	1.72
5)		1-Methylnaphth...	0.746	0.668	0.668	0.654	0.659	0.655	0.656	0.672	4.89
6)	I	Acenaphthene-d10	ISTD								
7)	S	2-Fluorobiphenyl	1.447	1.450	1.491	1.466	1.460	1.462	1.483	1.466	1.11
8)		Acenaphthylene	1.711	1.711	1.882	1.869	2.033	2.092	2.120	1.917	8.87
9)		Acenaphthene	1.152	1.162	1.199	1.186	1.193	1.196	1.207	1.185	1.71
10)		Fluorene	1.335	1.363	1.439	1.422	1.456	1.462	1.483	1.423	3.84
11)	I	Phenanthrene-d10	ISTD								
12)		Phenanthrene	1.127	1.131	1.166	1.148	1.142	1.139	1.153	1.144	1.17
13)		Anthracene	1.031	1.017	1.093	1.085	1.138	1.157	1.172	1.099	5.47
14)		Fluoranthene	1.068	1.088	1.178	1.162	1.189	1.192	1.212	1.155	4.80
15)	I	Chrysene-d12	ISTD								
16)		Pyrene	1.190	1.194	1.242	1.215	1.239	1.252	1.253	1.226	2.15
17)	S	p-Terphenyl-d14	0.922	0.894	0.922	0.899	0.903	0.903	0.906	0.907	1.19
18)		Benzo[a]anthra...	1.012	1.017	1.096	1.074	1.111	1.128	1.131	1.081	4.60
19)		Chrysene	1.077	1.080	1.105	1.079	1.083	1.085	1.088	1.085	0.89
20)	I	Perylene-d12	ISTD								
21)		Benzo[b]fluora...	1.089	1.175	1.190	1.198	1.248	1.207	1.269	1.197	4.84
22)		Benzo[k]fluora...	0.953	1.222	1.254	1.243	1.278	1.249	1.352	1.222	10.28
23)		Benzo[a]pyrene	0.890	1.001	1.067	1.071	1.134	1.153	1.226	1.078	10.17
24)		Indeno[1,2,3-c...	1.065	1.074	1.188	1.249	1.131	1.150	1.233	1.156	6.23
25)		Dibenz[ah]anth...	1.055	1.008	1.074	1.086	1.108	1.121	1.207	1.094	5.66
26)		Benzo[ghi]pery...	1.051	1.024	1.129	1.138	1.129	1.129	1.200	1.114	5.26

(#) = Out of Range

PAHQUANT.M Tue Sep 05 09:01:26 2017

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L17081498 Run Date: 09/02/2017 Sample ID: WG628279-09
Instrument ID: HPMS15 Run Time: 12:41 Method: 8270D_SIM
File ID: 15M21952 Analyst: LJH/SCB QC Key: WATERLOO
ICal Workgroup: WG628279 Cal ID: HPMS15 - 02-SEP-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Acenaphthene	CCC	1000	1100	ug/L	1.31	10.4	25	
Benzo[a]pyrene	CCC	1000	1050	ug/L	1.13	4.70	25	
Fluoranthene	CCC	1000	1060	ug/L	1.23	6.10	25	
2-Methylnaphthalene		1000	1060	ug/L	0.747	6.00	25	
Acenaphthylene		1000	1060	ug/L	2.02	5.50	25	
Anthracene		1000	1070	ug/L	1.17	6.80	25	
Benzo[a]anthracene		1000	1080	ug/L	1.16	7.60	25	
Benzo[b]fluoranthene		1000	1070	ug/L	1.28	6.80	25	
Benzo[ghi]perylene		1000	1070	ug/L	1.20	7.40	25	
Benzo[k]fluoranthene		1000	1100	ug/L	1.34	10.0	25	
Chrysene		1000	1090	ug/L	1.18	8.90	25	
Dibenz[ah]anthracene		1000	1040	ug/L	1.14	4.40	25	
Fluorene		1000	1080	ug/L	1.53	7.60	25	
Indeno[1,2,3-cd]pyrene		1000	1040	ug/L	1.20	3.70	25	
Naphthalene		1000	1080	ug/L	1.10	8.40	25	
Phenanthrene		1000	1060	ug/L	1.22	6.40	25	
Pyrene		1000	1040	ug/L	1.28	4.40	25	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5461829
Report generated 09/06/2017 09:44

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L17081498 **CCV Number:** WG628279-02
Instrument ID: HPMS15 **CAL ID:** HPMS15-02-SEP-17
Workgroup (AAB#): WG628159 **Matrix:** WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5
WG628279-02	NA	NA	75679	135490	151299	121077	136159
Upper Limit	NA	NA	151358	270980	302598	242154	272318
Lower Limit	NA	NA	37840	67745	75650	60539	68080
L17081498-01	1.00	01	81918	145507	160754	144226	148627
L17081498-03	1.00	01	69661	124161	135044	122959	126787
L17081498-07	1.00	01	81970	146259	158118	146681	149227
L17081498-09	1.00	01	75251	131898	145408	92227	135680
WG627788-01	1.00	01	61356	109705	121742	105621	110923
WG627788-02	1.00	01	72418	129228	142546	128231	131349
WG627788-03	1.00	01	68343	121610	134516	121304	123382
WG627788-04	1.00	01	54627	98943	107662	98199	99089

IS-1 - Acenaphthene-d10
IS-2 - Chrysene-d12
IS-3 - Naphthalene-d8
IS-4 - Perylene-d12
IS-5 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 5461832
Report generated 09/06/2017 09:44

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L17081498
Instrument ID: HPMS15
Workgroup (AAB#): WG628159

CCV Number: WG628279-02
CAL ID: HPMS15-02-SEP-17
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5
WG628279-02	NA	NA	8.74	14.14	6.49	16.91	10.65
Upper Limit	NA	NA	9.24	14.64	6.99	17.41	11.15
Lower Limit	NA	NA	8.24	13.64	5.99	16.41	10.15
L17081498-01	1.00	01	8.744	14.143	6.487	16.907	10.655
L17081498-03	1.00	01	8.744	14.142	6.487	16.907	10.655
L17081498-07	1.00	01	8.744	14.143	6.487	16.902	10.655
L17081498-09	1.00	01	8.744	14.142	6.487	16.907	10.655
WG627788-01	1.00	01	8.744	14.143	6.487	16.907	10.655
WG627788-02	1.00	01	8.744	14.142	6.487	16.902	10.655
WG627788-03	1.00	01	8.744	14.142	6.487	16.907	10.655
WG627788-04	1.00	01	8.75	14.143	6.492	16.907	10.66

IS-1 - Acenaphthene-d10
IS-2 - Chrysene-d12
IS-3 - Naphthalene-d8
IS-4 - Perylene-d12
IS-5 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 5461834
Report generated 09/06/2017 09:44

2.3 Metals Data

2.3.1 Metals I C P Data

2.3.1.1 Summary Data

Login Number: L17081498
Department: Metals
Analyst: Kerri Buck

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG628174 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 128977
Approved By: Kim Rhodes

Certificate of Analysis

Sample #: L17081498-01 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW07-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:05
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** T4.090117.170541
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5	0.145	J	0.200	0.100
Calcium, Total	7440-70-2	96.7		0.500	0.250
Iron, Total	7439-89-6	0.152		0.100	0.0500
Magnesium, Total	7439-95-4	14.7		0.500	0.250
Manganese, Total	7439-96-5	0.254		0.0100	0.00500
Potassium, Total	7440-09-7	4.28		1.00	0.500
Sodium, Total	7440-23-5	262		0.500	0.250

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #: L17081498-02 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW07-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:09
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** T4.090117.170922
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6		U	0.100	0.0500
Manganese, Dissolved	7439-96-5	0.296		0.0100	0.00500

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-03 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW06-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:13
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** T4.090117.171302
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	114		0.500	0.250
Iron, Total	7439-89-6		U	0.100	0.0500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	25.8		0.500	0.250
Manganese, Total	7439-96-5	0.0658		0.0100	0.00500
Potassium, Total	7440-09-7	1.77		1.00	0.500
Sodium, Total	7440-23-5	43.6		0.500	0.250

U Not detected at or above adjusted sample detection limit.

Sample #: L17081498-04 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW06-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:16
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** T4.090117.171644
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5	0.217		0.200	0.100
Iron, Dissolved	7439-89-6		U	0.100	0.0500
Manganese, Dissolved	7439-96-5	0.0258		0.0100	0.00500

U Not detected at or above adjusted sample detection limit.

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW10-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:20
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** T4.090117.172026
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	82.4		0.500	0.250
Iron, Total	7439-89-6	0.276		0.100	0.0500
Magnesium, Total	7439-95-4	20.1		0.500	0.250
Manganese, Total	7439-96-5	0.221		0.0100	0.00500
Potassium, Total	7440-09-7	2.41		1.00	0.500
Sodium, Total	7440-23-5	172		0.500	0.250

U Not detected at or above adjusted sample detection limit.

Certificate of Analysis

Sample #: L17081498-08 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW10-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:24
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** T4.090117.172407
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	1.85		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.129		0.0100	0.00500

U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-09 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW20-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:42
Collect Date: 08/25/2017 14:10 **Dilution:** 1 **File ID:** T4.090117.174210
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	111		0.500	0.250
Iron, Total	7439-89-6	0.0789	J	0.100	0.0500
Magnesium, Total	7439-95-4	30.1		0.500	0.250
Manganese, Total	7439-96-5	0.0328		0.0100	0.00500
Potassium, Total	7440-09-7	3.69		1.00	0.500
Sodium, Total	7440-23-5	22.9		0.500	0.250

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

Sample #: L17081498-10 **PrePrep Method:** N/A **Instrument:** ICP-THERMO4
Client ID: MW20-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 07:16
Matrix: Water **Analytical Method:** 6010C **Cal Date:** 09/01/2017 12:40
Workgroup #: WG628174 **Analyst:** KKB **Run Date:** 09/01/2017 17:45
Collect Date: 08/25/2017 14:10 **Dilution:** 1 **File ID:** T4.090117.174552
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	0.0750	J	0.100	0.0500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Manganese, Dissolved	7439-96-5	0.125		0.0100	0.00500

J	The analyte was positively identified, but the quantitation was below the RL.
U	Not detected at or above adjusted sample detection limit.

2.3.1.2 QC Summary Data

Example 6010 Calculations
Thermo Scientific iCAP

1.0 Initial Calibration (ICAL) Parameters
For a multi-point calibration, the system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific iCAP

1.0 Initial Calibration (ICAL) Parameters
For a multi-point calibration, the system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Microbac Laboratories Inc.
Microwave Digestion Log

Workgroup:	WG627899	**SOP:**	ME407 Revison 19
Analyst:	ERP	**Spike Solution:**	STD83370
Spike Analyst:	ERP	**Spike Witness:**	VC
Run Date:	08/31/2017 07:16	**HNO3 Lot #:**	COA19940
Method:	3015A	**HCL Lot #:**	COA19849
Balance:	BAL019	**40 & 50 ML. DIGESTION TU**	COA19932
Instrument:	MW-1	**ICP FILTERS LOT#r7ha2443**	RGT40684
Instrument Start:	08/31/2017 07:32		

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG627899-02	BLANK	1	40 mL	50 mL	206.693 g	206.682 g		
2	WG627899-03	LCS	1	40 mL	50 mL	209.542 g	209.538 g	5 mL	
3	L17081498-01	SAMP	1	40 mL	50 mL	204.692 g	204.683 g		09/12/17
4	L17081498-02	SAMP	1	40 mL	50 mL	203.283 g	203.254 g		09/12/17
5	L17081498-03	RS01	1	40 mL	50 mL	204.217 g	204.209 g		09/12/17
6	L17081498-04	SAMP	1	40 mL	50 mL	205.935 g	205.922 g		09/12/17
7	L17081498-07	SAMP	1	40 mL	50 mL	205.395 g	205.379 g		09/12/17
8	L17081498-08	SAMP	1	40 mL	50 mL	204.057 g	204.043 g		09/12/17
9	L17081498-09	SAMP	1	40 mL	50 mL	204.98 g	204.949 g		09/12/17
10	L17081498-10	SAMP	1	40 mL	50 mL	206.586 g	206.564 g		09/12/17
11	L17081559-01	SAMP	1	40 mL	50 mL	204.88 g	204.857 g		09/08/17
12	L17081559-02	SAMP	1	40 mL	50 mL	207.464 g	207.45 g		09/08/17
13	WG627899-01	REF	1	40 mL	50 mL	204.652 g	204.632 g		
14	L17081559-03	RS01	1	40 mL	50 mL	204.652 g	204.632 g		09/08/17
15	WG627899-04	MS	1	40 mL	50 mL	210.77 g	210.737 g	5 mL	
16	L17081559-04	MS01	1	40 mL	50 mL	210.77 g	210.737 g	5 mL	09/08/17
17	WG627899-05	MSD	1	40 mL	50 mL	210.117 g	210.102 g	5 mL	
18	L17081559-05	SD01	1	40 mL	50 mL	210.117 g	210.102 g	5 mL	09/08/17
19	L17081559-06	SAMP	1	40 mL	50 mL	205.213 g	205.193 g		09/08/17
20	L17081559-07	SAMP	1	40 mL	50 mL	203.284 g	203.269 g		09/08/17
21	L17081559-08	SAMP	1	40 mL	50 mL	203.738 g	203.727 g		09/08/17
22	L17081559-09	SAMP	1	40 mL	50 mL	205.523 g	205.511 g		09/08/17
23	L17081559-10	SAMP	1	40 mL	50 mL	206.227 g	206.216 g		09/08/17
24	L17081559-11	SAMP	1	40 mL	50 mL	206.521 g	206.51 g		09/08/17
25	L17081559-12	SAMP	1	40 mL	50 mL	203.273 g	203.254 g		09/08/17
26	L17081569-01	SAMP	1	40 mL	50 mL	203.639 g	203.623 g		09/06/17
27	L17081577-01	SAMP	1	40 mL	50 mL	202.353 g	202.336 g		09/07/17

Analyst: Erin Potter

Reviewer: Vicki Collins

MW_DIG - Modified 09/30/2009
PDF ID: 5456009
Report generated: 08/31/2017 08:12

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 090117T4.1R.TXT
Analyst1: KKB Analyst2: N/A
Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
Maintenance Log ID:

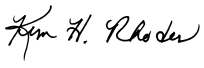
Calibration Std: STD83373 ICV Std: STD83372 Post Spike: STD83371
ICSA: STD83620 ICSAB: STD83467 Int. Std: RGT40895
CCV: STD83374 LLCCV: COA19621 Tuning Sol :
Stannous : Hydroxylamine :

Workgroups: 628008,628009,628174,628176

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T4.090117.122535	WG628357-01	Calibration Point		1		09/01/17 12:25
2	T4.090117.122921	WG628357-02	Calibration Point		1		09/01/17 12:29
3	T4.090117.123308	WG628357-03	Calibration Point		1		09/01/17 12:33
4	T4.090117.123656	WG628357-04	Calibration Point		1		09/01/17 12:36
5	T4.090117.124025	WG628357-05	Calibration Point		1		09/01/17 12:40
6	T4.090117.124353	WG628357-06	Initial Calibration Verification		1		09/01/17 12:43
7	T4.090117.124831	WG628357-07	Initial Calib Blank		1		09/01/17 12:48
8	T4.090117.125219	WG628357-08	Low Level Initial Calibration V		1		09/01/17 12:52
9	T4.090117.125605	WG628357-09	Low Level Initial Calibration V		1		09/01/17 12:56
10	T4.090117.125951	WG628357-10	LLICV		1		09/01/17 12:59
11	T4.090117.130337	WG628357-11	Interference Check		1		09/01/17 13:03
12	T4.090117.130720	WG628357-12	Interference Check		1		09/01/17 13:07
13	T4.090117.131055	WG628357-13	CCV		1		09/01/17 13:10
14	T4.090117.131423	WG628357-14	CCB		1		09/01/17 13:14
15	T4.090117.141024	WG627986-02	Method/Prep Blank	40/50	1		09/01/17 14:10
16	T4.090117.141410	WG627986-03	Laboratory Control S	40/50	1		09/01/17 14:14
17	T4.090117.141744	WG627798-01	Fluid Blank 1		1		09/01/17 14:17
18	T4.090117.142131	L17081556-02	T7H1509-01	5/50	1		09/01/17 14:21
19	T4.090117.142517	WG628008-03	Post Digestion Spike		1	L17081556-02	09/01/17 14:25
20	T4.090117.142850	WG628008-04	Serial Dilution		5	L17081556-02	09/01/17 14:28
21	T4.090117.143237	WG627986-01	Reference Sample		1	L17081597-01	09/01/17 14:32
22	T4.090117.143622	WG627986-04	Matrix Spike	5/50	1	L17081597-01	09/01/17 14:36
23	T4.090117.143955	WG627986-05	Matrix Spike Duplica	5/50	1	L17081597-01	09/01/17 14:39
24	T4.090117.144328	WG628357-15	CCV		1		09/01/17 14:43
25	T4.090117.144656	WG628357-16	CCB		1		09/01/17 14:46
26	T4.090117.145046	WG627917-02	Method/Prep Blank	40/50	1		09/01/17 14:50
27	T4.090117.145433	WG627917-03	Laboratory Control S	40/50	1		09/01/17 14:54
28	T4.090117.145806	L17081553-01	40693-01	40/50	1		09/01/17 14:58
29	T4.090117.150148	L17081553-02	40692-01	40/50	1		09/01/17 15:01
30	T4.090117.150529	L17081553-03	40555-01	40/50	1		09/01/17 15:05
31	T4.090117.150910	L17081553-04	40556-01	40/50	1		09/01/17 15:09
32	T4.090117.151252	L17081553-05	40558-01	40/50	1		09/01/17 15:12
33	T4.090117.151633	L17081553-06	40559-01	40/50	1		09/01/17 15:16
34	T4.090117.152013	WG628009-01	Post Digestion Spike		1	L17081553-06	09/01/17 15:20

Page: 1 Approved: September 05, 2017



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 090117T4.1R.TXT
Analyst1: KKB Analyst2: N/A
Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
Maintenance Log ID:

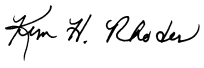
Calibration Std: STD83373 ICV Std: STD83372 Post Spike: STD83371
ICSA: STD83620 ICSAB: STD83467 Int. Std: RGT40895
CCV: STD83374 LLCCV: COA19621 Tuning Sol :
Stannous : Hydroxylamine :

Workgroups: 628008,628009,628174,628176

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	T4.090117.152342	WG628009-02	Serial Dilution		5	L17081553-06	09/01/17 15:23
36	T4.090117.152725	WG628357-17	CCV		1		09/01/17 15:27
37	T4.090117.153050	WG628357-18	CCB		1		09/01/17 15:30
38	T4.090117.153435	L17081557-01	VEP-26	40/50	1		09/01/17 15:34
39	T4.090117.153815	L17081557-02	PRBMW8	40/50	1		09/01/17 15:38
40	T4.090117.154153	L17081557-03	PRBMW8-D	40/50	1		09/01/17 15:41
41	T4.090117.154533	L17081557-04	VEP-29	40/50	1		09/01/17 15:45
42	T4.090117.154912	L17081557-05	VEP-29-D	40/50	1		09/01/17 15:49
43	T4.090117.155252	L17081557-06	AR-1	40/50	1		09/01/17 15:52
44	T4.090117.155631	L17081557-07	T8	40/50	1		09/01/17 15:56
45	T4.090117.160012	L17081557-08	T9	40/50	1		09/01/17 16:00
46	T4.090117.160351	L17081557-09	LKRTA006	40/50	1		09/01/17 16:03
47	T4.090117.160729	L17081557-10	LKRTA004	40/50	1		09/01/17 16:07
48	T4.090117.161112	WG628357-19	CCV		1		09/01/17 16:11
49	T4.090117.161437	WG628357-20	CCB		1		09/01/17 16:14
50	T4.090117.161822	WG627917-01	Reference Sample		1	L17081557-11	09/01/17 16:18
51	T4.090117.162204	WG627917-04	Matrix Spike	40/50	1	L17081557-11	09/01/17 16:22
52	T4.090117.162532	WG627917-05	Matrix Spike Duplica	40/50	1	L17081557-11	09/01/17 16:25
53	T4.090117.162901	L17081564-02	PERMEATE	1/50	1		09/01/17 16:29
54	T4.090117.163246	L17081564-04	BLEED	1/50	1		09/01/17 16:32
55	T4.090117.163626	L17081564-06	N. DOCK FLUME	1/50	1		09/01/17 16:36
56	T4.090117.164009	WG628357-21	CCV		1		09/01/17 16:40
57	T4.090117.164333	WG628357-22	CCB		1		09/01/17 16:43
58	T4.090117.164718	WG628357-23	Low Level Continuing Calibra		1		09/01/17 16:47
59	T4.090117.165101	WG628357-24	Low Level Continuing Calibra		1		09/01/17 16:51
60	T4.090117.165446	WG628357-25	LLCCV		1		09/01/17 16:54
61	T4.090117.165828	WG627899-02	Method/Prep Blank	40/50	1		09/01/17 16:58
62	T4.090117.170212	WG627899-03	Laboratory Control S	40/50	1		09/01/17 17:02
63	T4.090117.170541	L17081498-01	MW07-082517	40/50	1		09/01/17 17:05
64	T4.090117.170922	L17081498-02	MW07-082517	40/50	1		09/01/17 17:09
65	T4.090117.171302	L17081498-03	MW06-082517	40/50	1		09/01/17 17:13
66	T4.090117.171644	L17081498-04	MW06-082517	40/50	1		09/01/17 17:16
67	T4.090117.172026	L17081498-07	MW10-082517	40/50	1		09/01/17 17:20
68	T4.090117.172407	L17081498-08	MW10-082517	40/50	1		09/01/17 17:24

Page: 2 Approved: September 05, 2017



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 090117T4.1R.TXT
Analyst1: KKB Analyst2: N/A
Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
Maintenance Log ID:

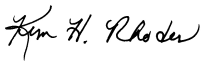
Calibration Std: STD83373 ICV Std: STD83372 Post Spike: STD83371
ICSA: STD83620 ICSAB: STD83467 Int. Std: RGT40895
CCV: STD83374 LLCCV: COA19621 Tuning Sol :
Stannous : Hydroxylamine :

Workgroups: 628008,628009,628174,628176

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	T4.090117.172749	WG628174-01	Post Digestion Spike		1	L17081498-08	09/01/17 17:27
70	T4.090117.173118	WG628174-02	Serial Dilution		5	L17081498-08	09/01/17 17:31
71	T4.090117.173500	WG628357-26	CCV		1		09/01/17 17:35
72	T4.090117.173826	WG628357-27	CCB		1		09/01/17 17:38
73	T4.090117.174210	L17081498-09	MW20-082517	40/50	1		09/01/17 17:42
74	T4.090117.174552	L17081498-10	MW20-082517	40/50	1		09/01/17 17:45
75	T4.090117.174933	L17081559-01	P-22U	40/50	1		09/01/17 17:49
76	T4.090117.175314	L17081559-02	P-22U-D	40/50	1		09/01/17 17:53
77	T4.090117.175655	WG627899-01	Reference Sample		1	L17081559-03	09/01/17 17:56
78	T4.090117.180036	WG627899-04	Matrix Spike	40/50	1	L17081559-03	09/01/17 18:00
79	T4.090117.180405	WG627899-05	Matrix Spike Duplica	40/50	1	L17081559-03	09/01/17 18:04
80	T4.090117.180734	L17081559-06	VEP-4	40/50	1		09/01/17 18:07
81	T4.090117.181114	L17081559-07	WETPU001	40/50	1		09/01/17 18:11
82	T4.090117.181454	L17081559-08	W3WNITC	40/50	1		09/01/17 18:14
83	T4.090117.181837	WG628357-28	CCV		1		09/01/17 18:18
84	T4.090117.182202	WG628357-29	CCB		1		09/01/17 18:22
85	T4.090117.182546	L17081559-09	AR-2	40/50	1		09/01/17 18:25
86	T4.090117.182926	L17081559-10	AR-2-D	40/50	1		09/01/17 18:29
87	T4.090117.183307	L17081559-11	W21WNITC	40/50	1		09/01/17 18:33
88	T4.090117.183653	L17081559-12	VEP-35	40/50	1		09/01/17 18:36
89	T4.090117.184032	L17081569-01	MW-714	40/50	1		09/01/17 18:40
90	T4.090117.184413	L17081577-01	MADISON LP - FILL SAMPL	40/50	1		09/01/17 18:44
91	T4.090117.184754	WG628357-30	CCV		1		09/01/17 18:47
92	T4.090117.185119	WG628357-31	CCB		1		09/01/17 18:51
93	T4.090117.185503	WG628357-32	Low Level Continuing Calibra		1		09/01/17 18:55
94	T4.090117.185845	WG628357-33	Low Level Continuing Calibra		1		09/01/17 18:58
95	T4.090117.190227	WG628357-34	LLCCV		1		09/01/17 19:02
96	T4.090117.190610	WG628013-02	Method/Prep Blank	40/50	1		09/01/17 19:06
97	T4.090117.190954	WG628013-03	Laboratory Control S	40/50	1		09/01/17 19:09
98	T4.090117.191323	L17081589-17	EQUIPMENT BLANK	40/50	1		09/01/17 19:13
99	T4.090117.191706	L17081592-18	EQUIPMENT BLANK	40/50	1		09/01/17 19:17
100	T4.090117.192050	L17081637-01	1001-203 W1	40/50	1		09/01/17 19:20
101	T4.090117.192432	L17081638-01	1001-204 W1	40/50	1		09/01/17 19:24
102	T4.090117.192809	L17081639-01	1001-102-C W1	40/50	1		09/01/17 19:28

 Approved: September 05, 2017



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 090117T4.1R.TXT
Analyst1: KKB Analyst2: N/A
Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
Maintenance Log ID:

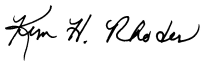
Calibration Std: STD83373 ICV Std: STD83372 Post Spike: STD83371
ICSA: STD83620 ICSAB: STD83467 Int. Std: RGT40895
CCV: STD83374 LLCCV: COA19621 Tuning Sol :
Stannous : Hydroxylamine :

Workgroups: 628008,628009,628174,628176

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	T4.090117.193150	L17081640-01	1001-239 W1	40/50	1		09/01/17 19:31
104	T4.090117.193531	WG628176-01	Post Digestion Spike		1	L17081640-01	09/01/17 19:35
105	T4.090117.193900	WG628176-02	Serial Dilution		5	L17081640-01	09/01/17 19:39
106	T4.090117.194243	WG628357-35	CCV		1		09/01/17 19:42
107	T4.090117.194608	WG628357-36	CCB		1		09/01/17 19:46
108	T4.090117.194951	L17081644-01	BAILEY 006 PERMIT	40/50	1		09/01/17 19:49
109	T4.090117.195340	L17081644-02	BAILEY 006 PERMIT	40/50	1		09/01/17 19:53
110	T4.090117.195729	L17081649-01	WITCPU003	40/50	1		09/01/17 19:57
111	T4.090117.200109	WG628013-01	Reference Sample		1	L17081649-02	09/01/17 20:01
112	T4.090117.200448	WG628013-04	Matrix Spike	40/50	1	L17081649-02	09/01/17 20:04
113	T4.090117.200816	WG628013-05	Matrix Spike Duplica	40/50	1	L17081649-02	09/01/17 20:08
114	T4.090117.201144	L17081649-05	WITCPU006	40/50	1		09/01/17 20:11
115	T4.090117.201524	L17081649-06	HM-50	40/50	1		09/01/17 20:15
116	T4.090117.201903	L17081649-07	W3TAITC	40/50	1		09/01/17 20:19
117	T4.090117.202243	L17081649-08	HM-35	40/50	1		09/01/17 20:22
118	T4.090117.202623	WG628357-37	CCV		1		09/01/17 20:26
119	T4.090117.202947	WG628357-38	CCB		1		09/01/17 20:29
120	T4.090117.203331	L17081649-09	HM-36	40/50	1		09/01/17 20:33
121	T4.090117.203712	L17081649-10	HM-26	40/50	1		09/01/17 20:37
122	T4.090117.204051	L17081649-11	VEP-18B	40/50	1		09/01/17 20:40
123	T4.090117.204431	L17081649-12	VEP-13	40/50	1		09/01/17 20:44
124	T4.090117.204811	L17081649-13	OW-1-3	40/50	1		09/01/17 20:48
125	T4.090117.205151	L17081649-14	WL101TAUSGS	40/50	1		09/01/17 20:51
126	T4.090117.205530	WG628357-39	CCV		1		09/01/17 20:55
127	T4.090117.205855	WG628357-40	CCB		1		09/01/17 20:58
128	T4.090117.210238	WG628357-41	Low Level Continuing Calibra		1		09/01/17 21:02
129	T4.090117.210621	WG628357-42	LLCCV		1		09/01/17 21:06
130	T4.090117.211003	WG628357-43	Low Level Continuing Calibra		1		09/01/17 21:10
131	T4.090117.211346	WG628357-44	Interference Check		1		09/01/17 21:13
132	T4.090117.211726	WG628357-45	Interference Check		1		09/01/17 21:17
133	T4.090117.212056	WG628357-46	CCV		1		09/01/17 21:20
134	T4.090117.212420	WG628357-47	CCB		1		09/01/17 21:24

Page: 4 Approved: September 05, 2017



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 090517T4.1
Analyst1: KKB Analyst2: N/A
Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
Maintenance Log ID:

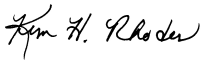
Calibration Std: STD83373 ICV Std: STD83372 Post Spike: STD83371
ICSA: STD83620 ICSAB: STD83467 Int. Std: RGT40895
CCV: STD83374 LLCCV: COA19621 Tuning Sol :
Stannous : Hydroxylamine :

Workgroups: 628396,628009,628174,628176

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T4.090517.142421	WG628511-01	Calibration Point		1		09/05/17 14:24
2	T4.090517.142809	WG628511-02	Calibration Point		1		09/05/17 14:28
3	T4.090517.143156	WG628511-03	Calibration Point		1		09/05/17 14:31
4	T4.090517.143544	WG628511-04	Calibration Point		1		09/05/17 14:35
5	T4.090517.143913	WG628511-05	Calibration Point		1		09/05/17 14:39
6	T4.090517.144240	WG628511-06	Initial Calibration Verification		1		09/05/17 14:42
7	T4.090517.144610	WG628511-07	Initial Calib Blank		1		09/05/17 14:46
8	T4.090517.144958	WG628511-08	Low Level Initial Calibration V		1		09/05/17 14:49
9	T4.090517.145344	WG628511-09	LLICV		1		09/05/17 14:53
10	T4.090517.145731	WG628511-10	LLICV		1		09/05/17 14:57
11	T4.090517.150116	WG628511-11	Interference Check		1		09/05/17 15:01
12	T4.090517.150500	WG628511-12	Interference Check		1		09/05/17 15:05
13	T4.090517.150834	WG628511-13	CCV		1		09/05/17 15:08
14	T4.090517.151202	WG628511-14	CCB		1		09/05/17 15:12
15	T4.090517.152914	WG628301-02	Method/Prep Blank	40/50	1		09/05/17 15:29
16	T4.090517.153301	WG628301-03	Laboratory Control S	40/50	1		09/05/17 15:33
17	T4.090517.153635	L17090013-01	NEELY_01 8000100010000\	40/50	1		09/05/17 15:36
18	T4.090517.154019	L17090013-02	NEELY_01 8000100010000\	40/50	1		09/05/17 15:40
19	T4.090517.154404	L17090013-03	NEELY_01 8000100010000\	40/50	1		09/05/17 15:44
20	T4.090517.154749	L17090013-04	NEELY_01 8000100010000\	40/50	1		09/05/17 15:47
21	T4.090517.155135	L17090014-01	59-11-16.08 W1	40/50	1		09/05/17 15:51
22	T4.090517.155519	L17090015-01	1001-108 S1	40/50	1		09/05/17 15:55
23	T4.090517.155903	WG628396-01	Post Digestion Spike		1	L17090015-01	09/05/17 15:59
24	T4.090517.160236	WG628396-02	Serial Dilution		5	L17090015-01	09/05/17 16:02
25	T4.090517.160624	WG628511-15	CCV		1		09/05/17 16:06
26	T4.090517.160953	WG628511-16	CCB		1		09/05/17 16:09
27	T4.090517.161343	L17090016-01	1001-116 W1	40/50	1		09/05/17 16:13
28	T4.090517.161728	L17090020-01	27-3-15 S1	40/50	1		09/05/17 16:17
29	T4.090517.162111	L17090043-01	MADISON HP FILL SAMPL	40/50	1		09/05/17 16:21
30	T4.090517.162456	L17090046-02	MW2A-336-14	40/50	1		09/05/17 16:24
31	T4.090517.162841	WG628301-01	Reference Sample		1	L17090046-07	09/05/17 16:28
32	T4.090517.163227	WG628301-04	Matrix Spike	40/50	1	L17090046-07	09/05/17 16:32
33	T4.090517.163600	WG628301-05	Matrix Spike Duplica	40/50	1	L17090046-07	09/05/17 16:36
34	T4.090517.163932	L17090046-14	MW4A-336-14	40/50	1		09/05/17 16:39

Page: 1 Approved: September 06, 2017



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 090517T4.1
Analyst1: KKB Analyst2: N/A
Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
Maintenance Log ID:

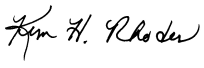
Calibration Std: STD83373 ICV Std: STD83372 Post Spike: STD83371
ICSA: STD83620 ICSAB: STD83467 Int. Std: RGT40895
CCV: STD83374 LLCCV: COA19621 Tuning Sol :
Stannous : Hydroxylamine :

Workgroups: 628396,628009,628174,628176

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	T4.090517.164319	L17090046-17	MW4A2-336-14	40/50	1		09/05/17 16:43
36	T4.090517.164704	L17090046-20	MW5A-336-14	40/50	1		09/05/17 16:47
37	T4.090517.165053	WG628511-17	CCV		1		09/05/17 16:50
38	T4.090517.165421	WG628511-18	CCB		1		09/05/17 16:54
39	T4.090517.165811	L17090046-23	OW1A-336-14	40/50	1		09/05/17 16:58
40	T4.090517.170155	L17090046-26	OW2A-336-14	40/50	1		09/05/17 17:01
41	T4.090517.170543	L17090046-29	OW3A-336-14	40/50	1		09/05/17 17:05
42	T4.090517.170930	L17090055-01	\#1 (PRE COLUMNS)	40/50	1		09/05/17 17:09
43	T4.090517.171314	L17090055-02	\#2 (BETWEEN)	40/50	1		09/05/17 17:13
44	T4.090517.171659	L17090055-03	\#3 (AFTER)	40/50	1		09/05/17 17:16
45	T4.090517.172045	WG628511-19	CCV		1		09/05/17 17:20
46	T4.090517.172412	WG628511-20	CCB		1		09/05/17 17:24
47	T4.090517.180536	WG627917-02	Method/Prep Blank	40/50	1		09/05/17 18:05
48	T4.090517.180923	WG627917-03	Laboratory Control S	40/50	1		09/05/17 18:09
49	T4.090517.181256	L17081557-01	VEP-26	40/50	1		09/05/17 18:12
50	T4.090517.181638	L17081557-02	PRBMW8	40/50	1		09/05/17 18:16
51	T4.090517.182022	L17081557-03	PRBMW8-D	40/50	1		09/05/17 18:20
52	T4.090517.182405	L17081557-04	VEP-29	40/50	1		09/05/17 18:24
53	T4.090517.182747	L17081557-05	VEP-29-D	40/50	1		09/05/17 18:27
54	T4.090517.183129	L17081557-06	AR-1	40/50	1		09/05/17 18:31
55	T4.090517.183513	WG628009-03	Post Digestion Spike		1	L17081557-06	09/05/17 18:35
56	T4.090517.183844	WG628009-04	Serial Dilution		5	L17081557-06	09/05/17 18:38
57	T4.090517.184232	WG628511-21	CCV		1		09/05/17 18:42
58	T4.090517.184600	WG628511-22	CCB		1		09/05/17 18:46
59	T4.090517.184949	L17081557-07	T8	40/50	1		09/05/17 18:49
60	T4.090517.185335	L17081557-08	T9	40/50	1		09/05/17 18:53
61	T4.090517.185718	L17081557-09	LKRTA006	40/50	1		09/05/17 18:57
62	T4.090517.190059	L17081557-10	LKRTA004	40/50	1		09/05/17 19:00
63	T4.090517.190443	WG627917-01	Reference Sample		1	L17081557-11	09/05/17 19:04
64	T4.090517.190828	WG627917-04	Matrix Spike	40/50	1	L17081557-11	09/05/17 19:08
65	T4.090517.191201	WG627917-05	Matrix Spike Duplica	40/50	1	L17081557-11	09/05/17 19:12
66	T4.090517.191534	L17081557-04	VEP-29	40/50	2		09/05/17 19:15
67	T4.090517.191916	L17081557-05	VEP-29-D	40/50	2		09/05/17 19:19
68	T4.090517.192300	L17081557-09	LKRTA006	40/50	2		09/05/17 19:23

 Approved: September 06, 2017



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 090517T4.1
Analyst1: KKB Analyst2: N/A
Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
Maintenance Log ID:

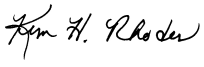
Calibration Std: STD83373 ICV Std: STD83372 Post Spike: STD83371
ICSA: STD83620 ICSAB: STD83467 Int. Std: RGT40895
CCV: STD83374 LLCCV: COA19621 Tuning Sol :
Stannous : Hydroxylamine :

Workgroups: 628396,628009,628174,628176

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	T4.090517.192643	WG628511-23	CCV		1		09/05/17 19:26
70	T4.090517.193012	WG628511-24	CCB		1		09/05/17 19:30
71	T4.090517.193400	WG628511-25	Low Level Continuing Calibra		1		09/05/17 19:34
72	T4.090517.193748	WG628511-26	LLCCV		1		09/05/17 19:37
73	T4.090517.194134	WG628511-27	LLCCV		1		09/05/17 19:41
74	T4.090517.194520	WG627899-02	Method/Prep Blank	40/50	1		09/05/17 19:45
75	T4.090517.194907	WG627899-03	Laboratory Control S	40/50	1		09/05/17 19:49
76	T4.090517.195239	L17081559-01	P-22U	40/50	1		09/05/17 19:52
77	T4.090517.195624	L17081559-02	P-22U-D	40/50	1		09/05/17 19:56
78	T4.090517.200008	WG627899-01	Reference Sample		1	L17081559-03	09/05/17 20:00
79	T4.090517.200353	WG627899-04	Matrix Spike	40/50	1	L17081559-03	09/05/17 20:03
80	T4.090517.200725	WG627899-05	Matrix Spike Duplica	40/50	1	L17081559-03	09/05/17 20:07
81	T4.090517.201057	L17081559-06	VEP-4	40/50	1		09/05/17 20:10
82	T4.090517.201440	L17081559-07	WETPU001	40/50	1		09/05/17 20:14
83	T4.090517.201824	L17081559-08	W3WNITC	40/50	1		09/05/17 20:18
84	T4.090517.202216	WG628511-28	CCV		1		09/05/17 20:22
85	T4.090517.202544	WG628511-29	CCB		1		09/05/17 20:25
86	T4.090517.202932	L17081559-08	W3WNITC	40/50	5		09/05/17 20:29
87	T4.090517.203317	L17081559-09	AR-2	40/50	1		09/05/17 20:33
88	T4.090517.203701	L17081559-10	AR-2-D	40/50	1		09/05/17 20:37
89	T4.090517.204045	L17081559-11	W21WNITC	40/50	1		09/05/17 20:40
90	T4.090517.204435	L17081559-11	W21WNITC	40/50	5		09/05/17 20:44
91	T4.090517.204819	L17081559-12	VEP-35	40/50	1		09/05/17 20:48
92	T4.090517.205202	WG628174-03	Post Digestion Spike		1	L17081559-12	09/05/17 20:52
93	T4.090517.205534	WG628174-04	Serial Dilution		5	L17081559-12	09/05/17 20:55
94	T4.090517.205919	WG628511-30	CCV		1		09/05/17 20:59
95	T4.090517.210248	WG628511-31	CCB		1		09/05/17 21:02
96	T4.090517.210636	WG628511-32	Low Level Continuing Calibra		1		09/05/17 21:06
97	T4.090517.211022	WG628511-33	LLCCV		1		09/05/17 21:10
98	T4.090517.211407	WG628511-34	LLCCV		1		09/05/17 21:14
99	T4.090517.211753	WG628013-02	Method/Prep Blank	40/50	1		09/05/17 21:17
100	T4.090517.212141	WG628013-03	Laboratory Control S	40/50	1		09/05/17 21:21
101	T4.090517.212515	L17081589-17	EQUIPMENT BLANK	40/50	1		09/05/17 21:25
102	T4.090517.212902	L17081592-18	EQUIPMENT BLANK	40/50	1		09/05/17 21:29

Page: 3 Approved: September 06, 2017



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 090517T4.1
Analyst1: KKB Analyst2: N/A
Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
Maintenance Log ID:

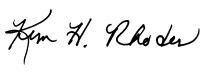
Calibration Std: STD83373 ICV Std: STD83372 Post Spike: STD83371
ICSA: STD83620 ICSAB: STD83467 Int. Std: RGT40895
CCV: STD83374 LLCCV: COA19621 Tuning Sol :
Stannous : Hydroxylamine :

Workgroups: 628396,628009,628174,628176

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	T4.090517.213250	L17081644-01	BAILEY 006 PERMIT	40/50	10		09/05/17 21:32
104	T4.090517.213636	L17081649-01	WITCPU003	40/50	1		09/05/17 21:36
105	T4.090517.214019	L17081649-02	HM-65		1	WG628013-01	09/05/17 21:40
106	T4.090517.214403	L17081649-03	HM-65 MS	40/50	1	WG628013-04	09/05/17 21:44
107	T4.090517.214735	L17081649-04	HM-65 MSD	40/50	1	WG628013-05	09/05/17 21:47
108	T4.090517.215107	L17081649-05	WITCPU006	40/50	1		09/05/17 21:51
109	T4.090517.215455	WG628511-35	CCV		1		09/05/17 21:54
110	T4.090517.215823	WG628511-36	CCB		1		09/05/17 21:58
111	T4.090517.220212	L17081649-06	HM-50	40/50	1		09/05/17 22:02
112	T4.090517.220555	L17081649-07	W3TAITC	40/50	1		09/05/17 22:05
113	T4.090517.220938	L17081649-08	HM-35	40/50	1		09/05/17 22:09
114	T4.090517.221322	L17081649-09	HM-36	40/50	1		09/05/17 22:13
115	T4.090517.221705	L17081649-10	HM-26	40/50	1		09/05/17 22:17
116	T4.090517.222048	L17081649-11	VEP-18B	40/50	1		09/05/17 22:20
117	T4.090517.222430	L17081649-12	VEP-13	40/50	1		09/05/17 22:24
118	T4.090517.222814	L17081649-13	OW-1-3	40/50	1		09/05/17 22:28
119	T4.090517.223200	WG628511-37	CCV		1		09/05/17 22:32
120	T4.090517.223528	WG628511-38	CCB		1		09/05/17 22:35
121	T4.090517.223917	L17081649-14	WL101TAUSGS	40/50	1		09/05/17 22:39
122	T4.090517.224301	WG628176-03	Post Digestion Spike		1	L17081649-14	09/05/17 22:43
123	T4.090517.224632	WG628176-04	Serial Dilution		5	L17081649-14	09/05/17 22:46
124	T4.090517.225016	L17081649-02	HM-65		5	WG628013-01	09/05/17 22:50
125	T4.090517.225400	L17081649-03	HM-65 MS	40/50	5	WG628013-04	09/05/17 22:54
126	T4.090517.225741	L17081649-04	HM-65 MSD	40/50	5	WG628013-05	09/05/17 22:57
127	T4.090517.230123	WG628511-39	CCV		1		09/05/17 23:01
128	T4.090517.230451	WG628511-40	CCB		1		09/05/17 23:04
129	T4.090517.230841	WG628511-41	Low Level Continuing Calibra		1		09/05/17 23:08
130	T4.090517.231228	WG628511-42	LLCCV		1		09/05/17 23:12
131	T4.090517.231614	WG628511-43	LLCCV		1		09/05/17 23:16

Page: 4 Approved: September 06, 2017



Microbac Laboratories Inc.

Data Checklist

Date: 01-SEP-2017
Analyst: KKB
Analyst: NA
Method: 6010B/6010C/200.7
Instrument: ICP-THERMO4
Curve Workgroup: 628357
Runlog ID: 84344
Analytical Workgroups: 628008,628009,628174,628176

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	1589,1592
Level 4	1557,1498,1559,1649
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KKB
Secondary Reviewer	KHR
Comments	

Primary Reviewer:
05-SEP-2017

Secondary Reviewer:
05-SEP-2017

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-05-2017 15:37:16

Microbac Laboratories Inc.

Data Checklist

Date: 05-SEP-2017
Analyst: KKB
Analyst: NA
Method: 6010B/6010C/200.7
Instrument: ICP-THERMO4
Curve Workgroup: 628511
Runlog ID: 84393
Analytical Workgroups: 628396,628009,628174,628176

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	1589,1592
Level 4	1557,1559,1649
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KKB
Secondary Reviewer	KHR
Comments	

Primary Reviewer:
06-SEP-2017

Secondary Reviewer:
06-SEP-2017

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-06-2017 11:17:36

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6010C **AAB#:** WG628174

Login Number: L17081498

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW07-082517	01	08/25/17					08/31/2017	5.9	180		09/01/17	7.3	180	
MW07-082517	02	08/25/17					08/31/2017	5.9	180		09/01/17	7.3	180	
MW06-082517	03	08/25/17					08/31/2017	5.7	180		09/01/17	7.1	180	
MW06-082517	04	08/25/17					08/31/2017	5.7	180		09/01/17	7.1	180	
MW10-082517	07	08/25/17					08/31/2017	5.9	180		09/01/17	7.3	180	
MW10-082517	08	08/25/17					08/31/2017	5.9	180		09/01/17	7.3	180	
MW20-082517	09	08/25/17					08/31/2017	5.7	180		09/01/17	7.1	180	
MW20-082517	10	08/25/17					08/31/2017	5.7	180		09/01/17	7.1	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5461406
Report generated 09/05/2017 11:06

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L17081498
Work Group: WG628174
Blank File ID: T4.090117.165828
Blank Sample ID: WG627899-02
Prep Date: 08/31/17 07:16
Instrument ID: ICP-THERMO4
Analyzed Date: 09/01/17 16:58
Method: 6010C
Analyst: KKB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG627899-03	T4.090117.170212	09/01/17 17:02	01
MW07-082517	L17081498-01	T4.090117.170541	09/01/17 17:05	01
MW07-082517	L17081498-02	T4.090117.170922	09/01/17 17:09	01
MW06-082517	L17081498-03	T4.090117.171302	09/01/17 17:13	01
MW06-082517	L17081498-04	T4.090117.171644	09/01/17 17:16	01
MW10-082517	L17081498-07	T4.090117.172026	09/01/17 17:20	01
MW10-082517	L17081498-08	T4.090117.172407	09/01/17 17:24	01
MW20-082517	L17081498-09	T4.090117.174210	09/01/17 17:42	01
MW20-082517	L17081498-10	T4.090117.174552	09/01/17 17:45	01

Report Name: BLANK_SUMMARY
PDF File ID: 5461407
Report generated 09/05/2017 11:06

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L17081498 Prep Date: 08/31/17 07:16 Sample ID: WG627899-02
Instrument ID: ICP-THERMO4 Run Date: 09/01/17 16:58 Prep Method: 3015A
File ID: T4.090117.165828 Analyst: KKB Method: 6010C
Workgroup (AAB#): WG628174 Matrix: Water Units: mg/L
Contract #: Cal ID: ICP-TH-01-SEP-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Aluminum, Total	0.100	0.200	0.100	1	U
Calcium, Total	0.250	0.500	0.250	1	U
Iron, Total	0.0500	0.100	0.0500	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Manganese, Total	0.00500	0.0100	0.00500	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 5461408
05-SEP-2017 11:07

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L17081498 **Run Date:** 09/01/2017 **Sample ID:** WG627899-03
Instrument ID: ICP-THERMO4 **Run Time:** 17:02 **Prep Method:** 3015A
File ID: T4.090117.170212 **Analyst:** KKB **Method:** 6010C
Workgroup (AAB#): WG628174 **Matrix:** Water **Units:** mg/L
QC Key: WATERLOO **Lot#:** STD83370 **Cal ID:** ICP-TH-01-SEP-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	6.25	6.30	101	85 - 115	
Calcium, Total	6.25	6.11	97.7	85 - 115	
Iron, Total	2.50	2.50	100	85 - 115	
Magnesium, Total	6.25	6.29	101	85 - 115	
Manganese, Total	0.313	0.308	98.7	85 - 115	
Potassium, Total	31.3	31.1	99.6	85 - 115	
Sodium, Total	31.3	31.5	101	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 5461409
Report generated: 09/05/2017 11:07

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L17081498 Cal ID:ICP-THERMO4- Worknum:WG628174

Instrument ID:ICP-THERMO4 Contract #: Method:6010C

Parent ID:WG627899-01 File ID:T4.090117.175655 Dil:1 Matrix:WATER

Sample ID:WG627899-04 MS File ID:T4.090117.180036 Dil:1 Units:mg/L

Sample ID:WG627899-05 MSD File ID:T4.090117.180405 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum	ND	6.25	6.13	98.0	6.25	6.14	98.2	0.145	85 - 115	20	
Calcium, Total	77.5	6.25	85.4	127	6.25	83.1	90.4	2.72	85 - 115	20	*
Iron, Total	0.458	2.50	2.94	99.2	2.50	2.90	97.6	1.37	85 - 115	20	
Magnesium, Total	8.24	6.25	14.7	103	6.25	14.5	101	0.898	85 - 115	20	
Manganese, Total	0.00504	0.313	0.311	98.0	0.313	0.314	98.7	0.740	85 - 115	20	
Potassium, Total	2.76	31.3	34.2	101	31.3	34.2	101	0.124	85 - 115	20	
Sodium	24.5	31.3	56.3	102	31.3	55.9	100	0.696	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011

PDF File ID:5461411

Report generated 09/05/2017 11:07

Microbac Laboratories Inc.
Serial Dilution Report

Login: L17081498 **Worknum:** WG628174
Instrument: ICP-THERMO4 **Method:** 6010C
Serial Dil: WG628174-02 **File ID:** T4.090117.173118 **Dil:** 5 **Units:** ug/L
Sample: L17081498-08 **File ID:** T4.090117.172407 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	24.9		ND	U		
Calcium	74300		76500		2.93	
Iron	1480		1460		1.53	
Magnesium	30400		32000		5.31	
Manganese	103		94.4		8.76	
Potassium	3670		4360		18.70	E
Sodium	179000		188000		4.56	

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 25 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 25 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 5461404
09/05/2017 11:06

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L17081498 **Worknum:** WG628174
Instrument ID: ICP-THERMO4 **Method:** 6010C
Post Spike ID: WG628174-01 **File ID:** T4.090117.172749 **Dil:** 1 **Units:** ug/L
Sample ID: L17081498-08 **File ID:** T4.090117.172407 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	4790		0	U	5000	95.8	75 - 125	
CALCIUM	72200		74300		5000	106.3	75 - 125	
IRON	3240		1480		2000	95.4	75 - 125	
MAGNESIUM	32300		30400		5000	100.1	75 - 125	
MANGANESE	334		103		250	96.3	75 - 125	
POTASSIUM	28000		3670		25000	99.0	75 - 125	
SODIUM	186000		179000		25000	97.9	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 5461405
Report generated: 09/05/2017 11:06

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	**L17081498**	Workgroup (AAB#):	**WG628174**
Analytical Method:	**6010C**	Instrument ID:	**ICP-THERMO4**
ICAL Worknum:	**WG628357**	Initial Calibration Date:	**01-SEP-2017 12:40**

	WG628357-01		WG628357-02		WG628357-03		WG628357-04		WG628357-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.00160	.1	0.00238	.2	0.00309	10	0.0904	20	0.175	.999917	
CALCIUM	0	-0.00171	.1	-0.000500	.2	0.00225	10	0.240	20	0.486	.999803	
IRON	0	0.0000300	.04	0.000750	.08	0.00112	4	0.0687	8	0.137	.999859	
MAGNESIUM	0	-0.000420	NA	NA	.2	0.000520	10	0.0437	20	0.0877	.999727	
MANGANESE	0	0.00174	.005	0.00229	.01	0.00278	.5	0.0865	1	0.170	.99981	
POTASSIUM	0	0.00707	.5	0.0216	1	0.0357	50	1.57	100	3.12	.999909	
SODIUM	0	-0.0373	.5	0.00143	1	0.0346	50	4.44	100	8.89	.99999	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

INT_CAL_ICP - Modified 03/06/2008
PDF File ID: 5461414
Report generated: 05-SEP-2017 11:07

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-07
Instrument ID: ICP-THERMO4 Run Time: 12:48 Method: 6010C
File ID: T4.090117.124831 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG628174 Cal ID: ICP-THERI - 01-SEP-17
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.08	.16	.08	U
CALCIUM	.2	.4	.2	U
IRON	.04	.08	.04	U
MAGNESIUM	.2	.4	.2	U
MANGANESE	.004	.008	.004	U
POTASSIUM	.4	.8	.4	U
SODIUM	.2	.4	.2	U

ICB - Modified 07/14/2009
PDF File ID: 5461417
Report generated 09/05/2017 11:07

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-14

Instrument ID: ICP-THERMO4 Run Time: 13:14 Method: 6010C

File ID: T4.090117.131423 Analyst: KKB Units: mg/L

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0496	F
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5461420
Report generated 09/05/2017 12:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-22

Instrument ID: ICP-THERMO4 Run Time: 16:43 Method: 6010C

File ID: T4.090117.164333 Analyst: KKB Units: mg/L

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5461420
Report generated 09/05/2017 12:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-27

Instrument ID: ICP-THERMO4 Run Time: 17:38 Method: 6010C

File ID: T4.090117.173826 Analyst: KKB Units: mg/L

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5461420
Report generated 09/05/2017 12:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-29

Instrument ID: ICP-THERMO4 Run Time: 18:22 Method: 6010C

File ID: T4.090117.182202 Analyst: KKB Units: mg/L

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5461420
Report generated 09/05/2017 12:06

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-06
Instrument ID: ICP-THERMO4 Run Time: 12:43 Method: 6010C
File ID: T4.090117.124353 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17
QC Key: WATERLOO

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.2	102	90 - 110	
Calcium		10	10.0	100	90 - 110	
Iron		4	3.98	99.5	90 - 110	
Magnesium		10	10.2	102	90 - 110	
Manganese		.5	0.504	101	90 - 110	
Potassium		50	50.0	99.9	90 - 110	
Sodium		50	50.1	100	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 5461416
Report generated 09/05/2017 11:07

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-13

Instrument ID: ICP-THERMO4 Run Time: 13:10 Method: 6010C

File ID: T4.090117.131055 Analyst: KKB QC Key: WATERLOO

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.89	mg/L	98.9	90 - 110		
Iron		4.00	3.94	mg/L	98.6	90 - 110		
Magnesium		10.0	9.96	mg/L	99.6	90 - 110		
Manganese		0.500	0.494	mg/L	98.8	90 - 110		
Potassium		50.0	49.4	mg/L	98.8	90 - 110		
Sodium		50.0	49.6	mg/L	99.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 5461419

Report generated 09/05/2017 12:05

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-21

Instrument ID: ICP-THERMO4 Run Time: 16:40 Method: 6010C

File ID: T4.090117.164009 Analyst: KKB QC Key: WATERLOO

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.89	mg/L	98.9	90 - 110		
Iron		4.00	3.99	mg/L	99.8	90 - 110		
Magnesium		10.0	10.1	mg/L	101	90 - 110		
Manganese		0.500	0.496	mg/L	99.2	90 - 110		
Potassium		50.0	50.2	mg/L	100	90 - 110		
Sodium		50.0	50.3	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 5461419

Report generated 09/05/2017 12:05

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-26

Instrument ID: ICP-THERMO4 Run Time: 17:35 Method: 6010C

File ID: T4.090117.173500 Analyst: KKB QC Key: WATERLOO

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.97	mg/L	99.7	90 - 110		
Iron		4.00	3.97	mg/L	99.3	90 - 110		
Magnesium		10.0	9.98	mg/L	99.8	90 - 110		
Manganese		0.500	0.498	mg/L	99.7	90 - 110		
Potassium		50.0	50.1	mg/L	100	90 - 110		
Sodium		50.0	50.2	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 5461419

Report generated 09/05/2017 12:05

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-28

Instrument ID: ICP-THERMO4 Run Time: 18:18 Method: 6010C

File ID: T4.090117.181837 Analyst: KKB QC Key: WATERLOO

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.97	mg/L	99.7	90 - 110		
Iron		4.00	3.95	mg/L	98.7	90 - 110		
Magnesium		10.0	9.97	mg/L	99.7	90 - 110		
Manganese		0.500	0.494	mg/L	98.8	90 - 110		
Potassium		50.0	50.2	mg/L	100	90 - 110		
Sodium		50.0	50.3	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 5461419

Report generated 09/05/2017 12:05

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-08

Instrument ID: ICP-THERMO4 Run Time: 12:52 Method: 6010C

File ID: T4.090117.125219 Analyst: KKB QC Key: WATERLOO

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.174	mg/L	109	70 - 130		
Calcium		0.400	0.462	mg/L	116	70 - 130		
Iron		0.0800	0.0748	mg/L	93.5	70 - 130		
Magnesium		0.400	0.406	mg/L	101	70 - 130		
Manganese		0.00800	0.00789	mg/L	98.6	70 - 130		
Sodium		0.400	0.438	mg/L	110	70 - 130		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 5461421

Report generated 09/05/2017 11:07

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-09
Instrument ID: ICP-THERMO4 Run Time: 12:56 Method: 6010C
File ID: T4.090117.125605 Analyst: KKB QC Key: WATERLOO
Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Potassium		0.800	1.00	mg/L	125	70 - 130		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5461421
Report generated 09/05/2017 11:07

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-23

Instrument ID: ICP-THERMO4 Run Time: 16:47 Method: 6010C

File ID: T4.090117.164718 Analyst: KKB QC Key: WATERLOO

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.169	mg/L	106	70 - 130		
Calcium		0.400	0.423	mg/L	106	70 - 130		
Iron		0.0800	0.0801	mg/L	100	70 - 130		
Magnesium		0.400	0.388	mg/L	97.0	70 - 130		
Manganese		0.00800	0.00834	mg/L	104	70 - 130		
Sodium		0.400	0.497	mg/L	124	70 - 130		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 5461421

Report generated 09/05/2017 11:07

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-24
Instrument ID: ICP-THERMO4 Run Time: 16:51 Method: 6010C
File ID: T4.090117.165101 Analyst: KKB QC Key: WATERLOO
Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Potassium		0.800	0.920	mg/L	115	70 - 130		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5461421
Report generated 09/05/2017 11:07

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-32

Instrument ID: ICP-THERMO4 Run Time: 18:55 Method: 6010C

File ID: T4.090117.185503 Analyst: KKB QC Key: WATERLOO

Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.171	mg/L	107	70 - 130		
Calcium		0.400	0.404	mg/L	101	70 - 130		
Iron		0.0800	0.0955	mg/L	119	70 - 130		
Magnesium		0.400	0.434	mg/L	108	70 - 130		
Manganese		0.00800	0.00675	mg/L	84.4	70 - 130		
Sodium		0.400	0.454	mg/L	114	70 - 130		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 5461421

Report generated 09/05/2017 11:07

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628357-33
Instrument ID: ICP-THERMO4 Run Time: 18:58 Method: 6010C
File ID: T4.090117.185845 Analyst: KKB QC Key: WATERLOO
Workgroup (AAB#): WG628174 Cal ID: ICP-TH - 01-SEP-17
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Potassium		0.800	0.896	mg/L	112	70 - 130		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5461421
Report generated 09/05/2017 11:07

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L17081498 **Workgroup (AAB#):** WG628174
Instrument ID: ICP-THERMO4 **Method:** 6010C
Sol. A : WG628357-11 **File ID:** T4.090117.130337 **Units:** mg/L
Sol. AB : WG628357-12 **File ID:** T4.090117.130720 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	248	99.2	250	244	97.6	
Calcium	250	239	95.6	250	235	94.0	
Iron	100	95.9	95.9	100	94.3	94.3	
Magnesium	250	245	98.0	250	239	95.6	
Manganese	NS	-0.00338	NS	0.250	0.235	94.0	
Potassium	NS	0.0698	NS	5.00	4.97	99.4	
Sodium	NS	0.0335	NS	5.00	5.05	101	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 5461418
Report generated 09/05/2017 12:05

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L17081498 **Workgroup (AAB#):** WG628174
Instrument ID: ICP-THERMO4 **Method:** 6010C
Sol. A : WG628357-44 **File ID:** T4.090117.211346 **Units:** mg/L
Sol. AB : WG628357-45 **File ID:** T4.090117.211726 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	247	98.8	250	243	97.2	
Calcium	250	238	95.2	250	235	94.0	
Iron	100	94.6	94.6	100	93.9	93.9	
Magnesium	250	241	96.4	250	238	95.2	
Manganese	NS	-0.00322	NS	0.250	0.232	92.8	
Potassium	NS	0.0806	NS	5.00	5.37	107	
Sodium	NS	0.0566	NS	5.00	5.15	103	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 5461418
Report generated 09/05/2017 12:05

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L17081498 **Date:** 01/04/2017
Insturment ID: ICP-THERMO4 **Method:** 6010C

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0.0000410	0	0	0
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0.0145	0	-0.0000800
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0	0	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0.000378	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	-0.000289	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0.0000140	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	-0.0000120	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0	0.0000320	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5461413
Report generated: 09/05/2017 11:07

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L17081498 **Date:** 01/04/2017
Insturment ID: ICP-THERMO4 **Method:** 6010C

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	308.20	0	0	0	-0.000820	0
ANTIMONY	206.80	0	0	0	0	0.0260
ARSENIC	189.00	0	0	0	0	-0.00730
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0.00343	0
CADMIUM	228.80	0	0	0	-0.00390	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	-0.000200
COPPER	224.70	0	0	0	0.0000770	-0.00100
IRON	261.10	0	0	0	0	-0.00100
LEAD	220.30	0	0	0	-0.0000130	-0.000132
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0.0000500
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	-0.000860	0
PHOSPHORUS	214.90	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0.00000500	0	0	0
THALLIUM	190.80	0	0	0	0.00240	0.000276
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	-0.00350
ZINC	206.20	0	0	0	0	-0.00180
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5461413
Report generated: 09/05/2017 11:07

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L17081498 **Date:** 01/04/2017
Insturment ID: ICP-THERMO4 **Method:** 6010C

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0.0000560	0	0	0
ARSENIC	189.00	0	-0.0000490	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0.000648	0	0	0
CADMIUM	228.80	0	-0.00000500	0	0	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0.0000400	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0	0.00139	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0.000609	0	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0.0000220
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0.0000420	0	0	0
PHOSPHORUS	214.90	0.0390	0.000900	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	-0.000118	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	-0.000200	0	0	0
VANADIUM	292.40	0	0.0000700	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5461413
Report generated: 09/05/2017 11:07

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L17081498 **Date:** 01/04/2017
Insturment ID: ICP-THERMO4 **Method:** 6010C

Analyte	Wave Length	MN	MO	NA	NI	P
ALUMINUM	308.20	0	0.0163	0	0	0
ANTIMONY	206.80	0	0.000910	0	-0.00190	0
ARSENIC	189.00	0	0.000139	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	-0.00190	0	0	0
CADMIUM	228.80	0	0.0000320	0	-0.000770	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0.000360	0	0	0	0
COBALT	228.60	0	-0.00200	0	0.000100	0
COPPER	224.70	0	0.00160	0	-0.0123	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	-0.000610	0	0.000110	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	-0.00290	-0.0230	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0.0000300	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0.00710	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0.000600	0.000580	0	0	0
SILICON	212.40	0	-0.354	0	0	0
SILVER	328.10	0	-0.0000100	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0.00100	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	-0.000153	0	0	0
VANADIUM	292.40	-0.000200	-0.00160	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5461413
Report generated: 09/05/2017 11:07

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L17081498 **Date:** 01/04/2017
Insturment ID: ICP-THERMO4 **Method:** 6010C

Analyte	Wave Length	PB	SB	SE	SI	SN
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0	0	0	-0.0320
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0.00440	0	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5461413
Report generated: 09/05/2017 11:07

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L17081498 **Date:** 01/04/2017
Insturment ID: ICP-THERMO4 **Method:** 6010C

Analyte	Wave Length	SR	TI	TL	V	ZN
ALUMINUM	308.20	0	0	0	0.0720	0
ANTIMONY	206.80	0	0.000500	0	-0.00360	0
ARSENIC	189.00	0	0	0	0.000107	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	-0.00000700	0	0.000990	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0	0.000102	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0.0000550	0	0	0
COBALT	228.60	0	0.00170	0	0.0000200	0
COPPER	224.70	0	0.000269	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0	0	-0.000126	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	-0.00290	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	-0.000110	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	-0.00100	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	-0.000720	0	-0.000260	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	-0.00100	0	-0.0420	0
TIN	189.90	0	-0.00190	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0.000820	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5461413
Report generated: 09/05/2017 11:07

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L17081498 **Date:** 01/04/2017
Insturment ID: ICP-THERMO4 **Method:** 6010C

Analyte	Wave Length	ZR
ALUMINUM	308.20	0
ANTIMONY	206.80	0
ARSENIC	189.00	0
BARIUM	455.40	0
BERYLLIUM	313.10	0
BORON	249.60	0
CADMIUM	228.80	0
CALCIUM	422.60	0
CHROMIUM	267.70	0
COBALT	228.60	0
COPPER	224.70	0
IRON	261.10	0
LEAD	220.30	0
LITHIUM	670.70	0
MAGNESIUM	279.10	0
MANGANESE	257.60	0
MOLYBDENUM	202.00	0
NICKEL	231.60	0
PHOSPHORUS	214.90	0
POTASSIUM	766.40	0
SELENIUM	196.10	0
SILICON	212.40	0
SILVER	328.10	0
SODIUM	589.50	0
STRONTIUM	407.70	0
THALLIUM	190.80	0
TIN	189.90	0
TITANIUM	337.20	0
VANADIUM	292.40	0
ZINC	206.20	0
ZIRCONIUM	339.10	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5461413
Report generated: 09/05/2017 11:07

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L17081498 **Date:** 07/17/2017
Insturment ID: ICP-THERMO4 **Method:** 6010C

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Aluminum	10.00	900.0
Antimony	20.00	45.0
Arsenic	10.00	45.0
Barium	10.00	45.0
Beryllium	10.00	1.8
Boron	20.00	45.0
Cadmium	20.00	4.5
Calcium	8.00	270.0
Chromium	20.00	36.0
Cobalt	20.00	45.0
Copper	20.00	180.0
Iron	8.00	720.0
Lead	20.00	225.0
Lithium	8.00	36.0
Magnesium	8.00	900.0
Manganese	10.00	36.0
Molybdenum	20.00	18.0
Nickel	20.00	90.0
Phosphorus	20.00	180.0
Potassium	8.00	360.0
Selenium	20.00	90.0
Silicon	20.00	36.0
Silver	10.00	3.6
Sodium	8.00	270.0
Strontium	8.00	9.0
Thallium	20.00	18.0
Tin	20.00	45.0
Titanium	8.00	45.0
Vanadium	20.00	27.0
Zinc	20.00	45.0
Zirconium	10.00	45.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 5461412
Report generated: 09/05/2017 11:07

2.3 Metals Data

2.3.2 Metals ICP-MS Data

2.3.2.1 Summary Data

Login Number: L17081498
Department: Metals
Analyst: Ji Hu

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG628140 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 128949
Approved By: Kerri Buck

Certificate of Analysis

Sample #: L17081498-01 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW07-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:18
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** NI.090117.131831
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00238		0.00100	0.000500

Sample #: L17081498-02 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW07-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:21
Collect Date: 08/25/2017 10:34 **Dilution:** 1 **File ID:** NI.090117.132136
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00191		0.00100	0.000500

Sample #: L17081498-03 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW06-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:24
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** NI.090117.132442
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.000929	J	0.00100	0.000500

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #: L17081498-04 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW06-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:27
Collect Date: 08/25/2017 13:54 **Dilution:** 1 **File ID:** NI.090117.132747
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.000985	J	0.00100	0.000500

J	The analyte was positively identified, but the quantitation was below the RL.

Certificate of Analysis

Sample #: L17081498-07 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW10-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:30
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** NI.090117.133053
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00468		0.00100	0.000500

Sample #: L17081498-08 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW10-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 12:41
Collect Date: 08/25/2017 10:20 **Dilution:** 1 **File ID:** NI.090117.124123
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00455		0.00100	0.000500

Sample #: L17081498-09 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW20-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:33
Collect Date: 08/25/2017 14:10 **Dilution:** 1 **File ID:** NI.090117.133358
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.000821	J	0.00100	0.000500

J	The analyte was positively identified, but the quantitation was below the RL.

Sample #: L17081498-10 **PrePrep Method:** N/A **Instrument:** ICP-MS2
Client ID: MW20-082517 **Prep Method:** 3015A **Prep Date:** 08/31/2017 09:05
Matrix: Water **Analytical Method:** 6020A **Cal Date:** 09/01/2017 12:04
Workgroup #: WG628140 **Analyst:** JYH **Run Date:** 09/01/2017 13:37
Collect Date: 08/25/2017 14:10 **Dilution:** 1 **File ID:** NI.090117.133704
Sample Tag: 01 **Units:** mg/L

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.000672	J	0.00100	0.000500

J	The analyte was positively identified, but the quantitation was below the RL.

2.3.2.2 QC Summary Data

Example 6020 Calculations
Perkin Elmer ELAN 6100

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Final volume	100
Vi = Initial volume	40
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/L)	0.25

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Final volume	200
Vi = Initial volume	0.5
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/kg)	40

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	40
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	50

50 ug/kg = 0.050 mg/kg

Perkin Elmer ELAN ICP/MS

STANDARDS KEY

QC Std 1 - ICV
QC Std 2 - ICB
QC Std 3 - LLICV
QC Std 4 - ICSA
QC Std 5 - ICSAB
QC Std 6 - CCV
QC Std 7 - CCB
QC Std 8 - LLCCV

Calibration Solutions

Analyte	Stock Conc. (mg/L)	S1 (mg/L)	S2 (mg/L)	S3 (mg/L)	S4 (mg/L)
Al	10	0	0.0004	0.05	0.1
Sb	10	0	0.0004	0.05	0.1
As	10	0	0.0004	0.05	0.1
Ba	10	0	0.0004	0.05	0.1
Be	10	0	0.0004	0.05	0.1
Ca	1000	0	0.04	5	10
Cd	10	0	0.0004	0.05	0.1
Cr	10	0	0.0004	0.05	0.1
Co	10	0	0.0004	0.05	0.1
Cu	10	0	0.0004	0.05	0.1
Fe	1000	0	0.04	5	10
Pb	10	0	0.0004	0.05	0.1
Mg	1000	0	0.04	5	10
Mn	10	0	0.0004	0.05	0.1
Ni	10	0	0.0004	0.05	0.1
K	1000	0	0.04	5	10
Se	10	0	0.0004	0.05	0.1
Ag	10	0	0.0004	0.05	0.1
Na	1000	0	0.04	5	10
Tl	10	0	0.0004	0.05	0.1
V	10	0	0.0004	0.05	0.1
U	1000	0	0.0004	0.05	0.1
Zn	10	0	0.0004	0.05	0.1

Microbac Laboratories Inc.
Microwave Digestion Log

Workgroup:	WG627948	**SOP:**	ME407 Revison 19
Analyst:	VC	**Spike Solution:**	STD80296
Spike Analyst:	VC	**Spike Witness:**	ERP
Run Date:	08/31/2017 09:05	**40 & 50 ML. DIGESTION TU**	COA19932
Method:	3015A	**HNO3 Lot #:**	COA19940
Balance:	BAL016	**MS Filters- fisher-Lot#r**	RGT40686
Instrument:	MW-3		
Instrument Start:	08/31/2017 09:11		

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG627948-02	BLANK	1	20 mL	50 mL	184.884 g	184.864 g		
2	WG627948-03	LCS	1	20 mL	50 mL	185.193 g	185.186 g	.25 mL	
3	L17081498-01	SAMP	1	20 mL	50 mL	182.826 g	182.822 g		09/12/17
4	L17081498-02	SAMP	1	20 mL	50 mL	184.77 g	184.757 g		09/12/17
5	L17081498-03	RS01	1	20 mL	50 mL	183.289 g	183.275 g		09/12/17
6	L17081498-04	SAMP	1	20 mL	50 mL	182.088 g	182.094 g		09/12/17
7	L17081498-07	SAMP	1	20 mL	50 mL	182.851 g	182.811 g		09/12/17
8	WG627948-01	REF	1	20 mL	50 mL	182.084 g	182.062 g		
9	L17081498-08	SAMP	1	20 mL	50 mL	182.084 g	182.062 g		09/12/17
10	L17081498-09	SAMP	1	20 mL	50 mL	181.372 g	181.361 g		09/12/17
11	L17081498-10	SAMP	1	20 mL	50 mL	183.546 g	183.542 g		09/12/17
12	L17081589-17	SAMP	1	20 mL	50 mL	182.112 g	182.086 g		09/13/17
13	L17081592-18	SAMP	1	20 mL	50 mL	182.652 g	182.668 g		09/13/17
14	L17081644-01	SAMP	1	20 mL	50 mL	184.441 g	184.423 g		09/07/17
15	L17081644-02	SAMP	1	20 mL	50 mL	182.98 g	182.96 g		09/07/17
16	WG627948-04	MS	1	20 mL	50 mL	183.562 g	183.538 g	.25 mL	
17	WG627948-05	MSD	1	20 mL	50 mL	183.159 g	183.152 g	.25 mL	

Analyst: Vicki Collins

Reviewer: Erin Potter

MW_DIG - Modified 09/30/2009
PDF ID: 5456391
Report generated: 08/31/2017 11:00

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 090117A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020/6020A/200.8 SOP: ME700A Rev: 3
Maintenance Log ID:

Calibration Std: STD83445 ICV Std: STD83299 Post Spike: STD83027
ICSA: STD83552 ICSAB: STD83553 Int. Std: RGT39300
CCV: STD83443 LLCCV: STD83301 Tuning Sol : STD83302
Stannous : Hydroxylamine :

Workgroups: 628140

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	NI.090117.115146	Blank	Blank		1		09/01/17 11:51
2	NI.090117.115452	WG628241-01	Calibration Point		1		09/01/17 11:54
3	NI.090117.115758	WG628241-02	Calibration Point		1		09/01/17 11:57
4	NI.090117.120103	WG628241-03	Calibration Point		1		09/01/17 12:01
5	NI.090117.120409	WG628241-04	Calibration Point		1		09/01/17 12:04
6	NI.090117.120717	WG628241-05	Initial Calibration Verification		1		09/01/17 12:07
7	NI.090117.121025	WG628241-06	Initial Calib Blank		1		09/01/17 12:10
8	NI.090117.121332	WG628241-07	Low Level Initial Calibration V		1		09/01/17 12:13
9	NI.090117.121905	WG628241-08	Low Level Initial Calibration V		1		09/01/17 12:19
10	NI.090117.122223	WG628241-09	Interference Check		1		09/01/17 12:22
11	NI.090117.122529	WG628241-10	Interference Check		1		09/01/17 12:25
12	NI.090117.122835	WG628241-11	CCV		1		09/01/17 12:28
13	NI.090117.123141	WG628241-12	CCB		1		09/01/17 12:31
14	NI.090117.123512	WG627948-02	Method/Prep Blank	20/50	1		09/01/17 12:35
15	NI.090117.123817	WG627948-03	Laboratory Control S	20/50	1		09/01/17 12:38
16	NI.090117.124123	L17081498-08	MW10-082517		1	WG627948-01	09/01/17 12:41
17	NI.090117.124429	WG627948-04	Matrix Spike	20/50	1	L17081498-08	09/01/17 12:44
18	NI.090117.124734	WG627948-05	Matrix Spike Duplica	20/50	1	L17081498-08	09/01/17 12:47
19	NI.090117.125040	L17081589-17	EQUIPMENT BLANK	20/50	1		09/01/17 12:50
20	NI.090117.125345	L17081592-18	EQUIPMENT BLANK	20/50	1		09/01/17 12:53
21	NI.090117.125651	WG628140-01	Post Digestion Spike		1	L17081592-18	09/01/17 12:56
22	NI.090117.125956	WG628140-02	Serial Dilution		5	L17081592-18	09/01/17 12:59
23	NI.090117.130302	WG628140-02	Serial Dilution		25	L17081592-18	09/01/17 13:03
24	NI.090117.130608	WG628241-13	CCV		1		09/01/17 13:06
25	NI.090117.130914	WG628241-14	CCB		1		09/01/17 13:09
26	NI.090117.131220	L17081644-01	BAILEY 006 PERMIT	20/50	1		09/01/17 13:12
27	NI.090117.131525	L17081644-02	BAILEY 006 PERMIT	20/50	1		09/01/17 13:15
28	NI.090117.131831	L17081498-01	MW07-082517	20/50	1		09/01/17 13:18
29	NI.090117.132136	L17081498-02	MW07-082517	20/50	1		09/01/17 13:21
30	NI.090117.132442	L17081498-03	MW06-082517	20/50	1		09/01/17 13:24
31	NI.090117.132747	L17081498-04	MW06-082517	20/50	1		09/01/17 13:27
32	NI.090117.133053	L17081498-07	MW10-082517	20/50	1		09/01/17 13:30
33	NI.090117.133358	L17081498-09	MW20-082517	20/50	1		09/01/17 13:33
34	NI.090117.133704	L17081498-10	MW20-082517	20/50	1		09/01/17 13:37

Page: 1 Approved: September 05, 2017

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 090117A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020/6020A/200.8 SOP: ME700A Rev: 3
Maintenance Log ID:

Calibration Std: STD83445 ICV Std: STD83299 Post Spike: STD83027
ICSA: STD83552 ICSAB: STD83553 Int. Std: RGT39300
CCV: STD83443 LLCCV: STD83301 Tuning Sol : STD83302
Stannous : Hydroxylamine :

Workgroups: 628140

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	NI.090117.134011	WG628241-15	CCV		1		09/01/17 13:40
36	NI.090117.134317	WG628241-16	CCB		1		09/01/17 13:43
37	NI.090117.134658	WG628241-17	LLCCV		1		09/01/17 13:46
38	NI.090117.135004	WG628241-18	Interference Check		1		09/01/17 13:50
39	NI.090117.135309	WG628241-19	Interference Check		1		09/01/17 13:53
40	NI.090117.135616	WG628241-20	CCV		1		09/01/17 13:56
41	NI.090117.135922	WG628241-21	CCB		1		09/01/17 13:59
42	NI.090117.140228	WG628241-22	Low Level Continuing Calibra		1		09/01/17 14:02

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8			Rerun to verify. JYH	

Page: 2 Approved: September 05, 2017

Microbac Laboratories Inc.

Data Checklist

Date: 01-SEP-2017
Analyst: JYH
Analyst: NA
Method: 6020/6020A/200.8
Instrument: ICP-MS
Curve Workgroup: 628241
Runlog ID: 84339
Analytical Workgroups: 628140

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	1498,1589,1592
Client Forms	X
Level X	
Level 3	1589,1592
Level 4	1498
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	KHR
Comments	

Primary Reviewer:

Secondary Reviewer:
05-SEP-2017

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-05-2017 08:05:32

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6020A **AAB#:** WG628140

Login Number: L17081498

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW07-082517	01	08/25/17					08/31/2017	5.9	180		09/01/17	7.1	180	
MW07-082517	02	08/25/17					08/31/2017	5.9	180		09/01/17	7.1	180	
MW06-082517	03	08/25/17					08/31/2017	5.8	180		09/01/17	7	180	
MW06-082517	04	08/25/17					08/31/2017	5.8	180		09/01/17	7	180	
MW10-082517	07	08/25/17					08/31/2017	5.9	180		09/01/17	7.1	180	
MW10-082517	08	08/25/17					08/31/2017	5.9	180		09/01/17	7.1	180	
MW20-082517	09	08/25/17					08/31/2017	5.8	180		09/01/17	7	180	
MW20-082517	10	08/25/17					08/31/2017	5.8	180		09/01/17	7	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5459519
Report generated 09/01/2017 14:23

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L17081498
Work Group: WG628140
Blank File ID: NI.090117.123512
Blank Sample ID: WG627948-02
Prep Date: 08/31/17 09:05
Instrument ID: ICP-MS2
Analyzed Date: 09/01/17 12:35
Method: 6020A
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG627948-03	NI.090117.123817	09/01/17 12:38	01
MW10-082517	L17081498-08	NI.090117.124123	09/01/17 12:41	01
MW07-082517	L17081498-01	NI.090117.131831	09/01/17 13:18	01
MW07-082517	L17081498-02	NI.090117.132136	09/01/17 13:21	01
MW06-082517	L17081498-03	NI.090117.132442	09/01/17 13:24	01
MW06-082517	L17081498-04	NI.090117.132747	09/01/17 13:27	01
MW10-082517	L17081498-07	NI.090117.133053	09/01/17 13:30	01
MW20-082517	L17081498-09	NI.090117.133358	09/01/17 13:33	01
MW20-082517	L17081498-10	NI.090117.133704	09/01/17 13:37	01

Report Name: BLANK_SUMMARY
PDF File ID: 5459521
Report generated 09/01/2017 14:27

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L17081498 Prep Date: 08/31/17 09:05 Sample ID: WG627948-02
Instrument ID: ICP-MS2 Run Date: 09/01/17 12:35 Prep Method: 3015A
File ID: NI.090117.123512 Analyst: JYH Method: 6020A
Workgroup (AAB#): WG628140 Matrix: Water Units: mg/L
Contract #: Cal ID: ICP-MS-01-SEP-17

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Arsenic, Total	0.000500	0.00100	0.000500	1	U

MDL Method Detection Limit
RL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 5459523
01-SEP-2017 14:27

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L17081498 **Run Date:** 09/01/2017 **Sample ID:** WG627948-03
Instrument ID: ICP-MS2 **Run Time:** 12:38 **Prep Method:** 3015A
File ID: NI.090117.123817 **Analyst:** JYH **Method:** 6020A
Workgroup (AAB#): WG628140 **Matrix:** Water **Units:** mg/L
QC Key: WATERLOO **Lot#:** STD80296 **Cal ID:** ICP-MS-01-SEP-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, Total	0.125	0.117	93.5	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 5459525
Report generated: 09/01/2017 14:27

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L17081498 Cal ID:ICP-MS2- Worknum:WG628140

Instrument ID:ICP-MS2 Contract #: Method:6020A

Parent ID:WG627948-01 File ID:NI.090117.124123 Dil:1 Matrix:WATER

Sample ID:WG627948-04 MS File ID:NI.090117.124429 Dil:1 Units:mg/L

Sample ID:WG627948-05 MSD File ID:NI.090117.124734 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, Dissolved	0.00455	0.125	0.129	99.8	0.125	0.130	100	0.448	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 05/26/2011

PDF File ID:5459527

Report generated 09/01/2017 14:27

Microbac Laboratories Inc.
Serial Dilution Report

Login: L17081498 **Worknum:** WG628140
Instrument: ICP-MS2 **Method:** 6020A
Serial Dil: WG628140-02 **File ID:** NI.090117.125956 **Dil:** 5 **Units:** ug/L
Sample: L17081592-18 **File ID:** NI.090117.125345 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Arsenic	ND	U	ND	U		

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 100 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 100 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 5459517
09/01/2017 14:27

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L17081498 **Worknum:** WG628140
Instrument ID: ICP-MS2 **Method:** 6020A
Post Spike ID: WG628140-01 **File ID:** NI.090117.125651 **Dil:** 1 **Units:** ug/L
Sample ID: L17081592-18 **File ID:** NI.090117.125345 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	50.5		0	U	50	101.1	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 5459518
Report generated: 09/01/2017 14:27

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	**L17081498**	Workgroup (AAB#):	**WG628140**
Analytical Method:	**6020A**	Instrument ID:	**ICP-MS2**
ICAL Worknum:	**WG628241**	Initial Calibration Date:	**01-SEP-2017 12:04**

	WG628241-01		WG628241-02		WG628241-03		WG628241-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ARSENIC	0	-83.9	.4	-69.6	50	33600	100	67700	.999921	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

INT_CAL_ICP - Modified 03/06/2008
PDF File ID: 5459532
Report generated: 01-SEP-2017 14:24

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-06
Instrument ID: ICP-MS2 Run Time: 12:10 Method: 6020A
File ID: NI.090117.121025 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG628140 Cal ID: ICP-MS2 - 01-SEP-17
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.2	.4	.2	U

ICB - Modified 07/14/2009
PDF File ID: 5459536
Report generated 09/01/2017 14:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-12

Instrument ID: ICP-MS2 Run Time: 12:31 Method: 6020A

File ID: NI.090117.123141 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17

Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5459540
Report generated 09/05/2017 08:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-14

Instrument ID: ICP-MS2 Run Time: 13:09 Method: 6020A

File ID: NI.090117.130914 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17

Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5459540
Report generated 09/05/2017 08:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:	L17081498	Run Date:	09/01/2017	Sample ID:	WG628241-16
Instrument ID:	ICP-MS2	Run Time:	13:43	Method:	6020A
File ID:	NI.090117.134317	Analyst:	JYH	Units:	ug/L
Workgroup (AAB#):	WG628140	Cal ID:	ICP-MS - 01-SEP-17		
Matrix:	WATER	QAPP:	WATERLOO		

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5459540
Report generated 09/05/2017 08:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-21

Instrument ID: ICP-MS2 Run Time: 13:59 Method: 6020A

File ID: NI.090117.135922 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17

Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5459540
Report generated 09/05/2017 08:23

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-05
Instrument ID: ICP-MS2 Run Time: 12:07 Method: 6020A
File ID: NI.090117.120717 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17
QC Key: WATERLOO

Analyte		Expected	Found	%REC	LIMITS	Q
Arsenic		50	49.3	98.6	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 5459534
Report generated 09/01/2017 14:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-11

Instrument ID: ICP-MS2 Run Time: 12:28 Method: 6020A

File ID: NI.090117.122835 Analyst: JYH QC Key: WATERLOO

Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0511	mg/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 5459538

Report generated 09/05/2017 08:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-13

Instrument ID: ICP-MS2 Run Time: 13:06 Method: 6020A

File ID: NI.090117.130608 Analyst: JYH QC Key: WATERLOO

Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0496	mg/L	99.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 5459538

Report generated 09/05/2017 08:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-15

Instrument ID: ICP-MS2 Run Time: 13:40 Method: 6020A

File ID: NI.090117.134011 Analyst: JYH QC Key: WATERLOO

Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0485	mg/L	97.0	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 5459538

Report generated 09/05/2017 08:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-20

Instrument ID: ICP-MS2 Run Time: 13:56 Method: 6020A

File ID: NI.090117.135616 Analyst: JYH QC Key: WATERLOO

Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0491	mg/L	98.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 5459538

Report generated 09/05/2017 08:23

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-08
Instrument ID: ICP-MS2 Run Time: 12:19 Method: 6020A
File ID: NI.090117.121905 Analyst: JYH QC Key: WATERLOO
Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.433	ug/L	108	50 - 150		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5459541
Report generated 09/01/2017 14:28

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L17081498 Run Date: 09/01/2017 Sample ID: WG628241-22

Instrument ID: ICP-MS2 Run Time: 14:02 Method: 6020A

File ID: NI.090117.140228 Analyst: JYH QC Key: WATERLOO

Workgroup (AAB#): WG628140 Cal ID: ICP-MS - 01-SEP-17

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.439	ug/L	110	50 - 150		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 5459541

Report generated 09/01/2017 14:28

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L17081498 **Workgroup (AAB#):** WG628140
Instrument ID: ICP-MS2 **Method:** 6020A
Sol. A : WG628241-09 **File ID:** NI.090117.122223 **Units:** ug/L
Sol. AB : WG628241-10 **File ID:** NI.090117.122529 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Arsenic	NS	0.115	NS	100	106	106	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 5459537
Report generated 09/01/2017 14:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L17081498 **Workgroup (AAB#):** WG628140
Instrument ID: ICP-MS2 **Method:** 6020A
Sol. A : WG628241-18 **File ID:** NI.090117.135004 **Units:** ug/L
Sol. AB : WG628241-19 **File ID:** NI.090117.135309 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Arsenic	NS	-0.0128	NS	100	105	105	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 5459537
Report generated 09/01/2017 14:24

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L17081498 **Analytical Method:** 6020
Analytical Workgroup: WG628140 **Matrix:** 1
Instrument: ICP-MS2 **Analyst:** JYH
ICAL Date: 01-SEP-2017 11:54

			BISMUTH	GERMANIUM	INDIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec
L17081498-01	SAMP	01-SEP-2017 13:18	93.259	95.872	104.02
L17081498-02	SAMP	01-SEP-2017 13:21	92.056	95.258	102.934
L17081498-03	SAMP	01-SEP-2017 13:24	97.583	97.789	105.352
L17081498-04	SAMP	01-SEP-2017 13:27	99.626	99.358	105.737
L17081498-07	SAMP	01-SEP-2017 13:30	96.482	96.851	103.565
L17081498-08	SAMP	01-SEP-2017 12:41	95.242	95.681	99.75
L17081498-09	SAMP	01-SEP-2017 13:33	100.837	100.144	105.049
L17081498-10	SAMP	01-SEP-2017 13:37	99.2	99.076	103.742
L17081592-18	SAMP	01-SEP-2017 12:53	102.492	100.946	103.986
WG627948-02	BLANK	01-SEP-2017 12:35	102.191	98.585	103.483
WG627948-03	LCS	01-SEP-2017 12:38	103.308	99.158	105.255
WG627948-04	MS	01-SEP-2017 12:44	94.234	95.783	99.638
WG627948-05	MSD	01-SEP-2017 12:47	94.965	96.308	99.516
WG628140-01	PSPK	01-SEP-2017 12:56	102.136	100.884	102.648
WG628140-02	SERIAL	01-SEP-2017 12:59	97.029	92.5	98.395
WG628241-05	ICV	01-SEP-2017 12:07	100.104	95.865	102.15
WG628241-06	ICB	01-SEP-2017 12:10	96.766	90.534	98.599
WG628241-08	LLICV	01-SEP-2017 12:19	102.345	98.17	101.493
WG628241-09	ICS	01-SEP-2017 12:22	95.043	89.774	96.598
WG628241-10	ICS	01-SEP-2017 12:25	97.542	92.459	98.826
WG628241-11	CCV	01-SEP-2017 12:28	98.429	94.35	100.359
WG628241-12	CCB	01-SEP-2017 12:31	98.368	91.271	100.756
WG628241-13	CCV	01-SEP-2017 13:06	99.384	98.323	100.386
WG628241-14	CCB	01-SEP-2017 13:09	96.801	92.07	96.281
WG628241-15	CCV	01-SEP-2017 13:40	99.444	98.257	104.677
WG628241-16	CCB	01-SEP-2017 13:43	96.118	90.691	98.597
WG628241-18	ICS	01-SEP-2017 13:50	92.529	88.901	96.508
WG628241-19	ICS	01-SEP-2017 13:53	96.12	93.641	99.873
WG628241-20	CCV	01-SEP-2017 13:56	100.303	98.208	102.963
WG628241-21	CCB	01-SEP-2017 13:59	92.106	87.185	94.104
WG628241-22	LLCCV	01-SEP-2017 14:02	101.417	100.248	102.939

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 5459530
Report generated: 09/01/2017 14:27

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L17081498 **Date:** 04/12/2017
Insturment ID: ICP-MS2 **Method:** 6020A

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Antimony	1.00	100.0
Arsenic	1.00	100.0
Barium	1.00	100.0
Cadmium	1.00	100.0
Chromium	1.00	100.0
Cobalt	1.00	100.0
Copper	1.00	100.0
Lead	1.00	100.0
Manganese	1.00	100.0
Nickel	1.00	100.0
Selenium	1.00	100.0
Silver	1.00	100.0
Thallium	1.00	100.0
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 5459528
Report generated: 09/01/2017 14:23

3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
September 18, 2017

---

001 – BIO-CHEM TESTING WVDEP 220	002 – REIC Consultants, Inc. WVDEP 060
003 – Sturm Environmental	004 – MICROBAC PITTSBURGH
005 – ES LABORATORIES	006 – ALCOSAN LABORATORIES
007 – ALS LABORATORIES	008 – BENCHMARK LABORATORIES
010 – MICROBAC CHICAGOLAND	AC – AMBER R. CARMICHAEL
ADC – ANTHONY D. CANTER	ADG – APRIL D. GREENE
ALS – ADRIANE L. STEED	AWE – ANDREW W. ESSIG
AZH – AFTER HOURS	BJO – BRIAN J. OGDEN
BLG – BRENDA L. GREENWALT	BLR – BRANDON L. RICHARDS
BNB – Brandi N. Bentley	BRG – BRENDA R. GREGORY
CAS – Craig A. Smith	CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD	CLS – CARA L. STRICKLER
CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
CTB – CHRIS T. BUCINA	CV – Carl Volkman
DAK – DEAN A. KETELSEN	DCM – DAVID C. MERCKLE
DEV – DAVID E. VANDENBERG	DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE
DSM – DAVID S. MOSSOR	DTG – DOMINIC T. GEHRET
ECL – ERIC C. LAWSON	EPT – ETHAN P. TIDD
ERP – ERIN R. PORTER	FJB – FRANCES J. BOLDEN
HRF – HEATHER R. FAIRCHILD	JDH – JUSTIN D. HESSON
JDS – JARED D. SMITH	JKP – JACQUELINE K. PARSONS
JLD – JESSICA L. DELONG	JST – JOSHUA S. TAYLOR
JTP – JOSHUA T. PEMBERTON	JWR – JOHN W. RICHARDS
JWS – JACK W. SHEAVES	JYH – JI Y. HU
KAK – KATHY A. KIRBY	KDD – Katelyn D. Daley
KEB – KATIE E. BARNES	KHR – KIM H. RHODES
KKB – KERRI K. BUCK	KRA – KATHY R. ALBERTSON
KRP – KATHY R. PARSONS	LJH – Lacey J. Hendershot
LLS – LARRY L. STEPHENS	LSB – LESLIE S. BUCINA
LSJ – LAURA S. JONES	MAP – MARLA A. PORTER
MBK – MORGAN B. KNOWLTON	MES – MARY E. SCHILLING
MMB – MAREN M. BEERY	MRT – MICHELLE R. TAYLOR
OJE – OMOYEMWEN J. ENGLISH	PDM – PIERCE D. MORRIS
PIT – MICROBAC WARRENDALE	REK – BOB E. KYER
RLB – BOB BUCHANAN	RNP – RICK N. PETTY
SAV – SARAH A. VANDENBERG	SCA – SUEELLEN C. ADAMS
SCB – SARAH C. BOGOLIN	SCJ – SUE ELLEN C. JOHNSON
SDC – SHALYN D. CONLEY	TB – TODD BOYLE
TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WTD – WADE T. DELONG
XXX – UNAVAILABLE OR SUBCONTRACT	ZTB – ZACH T. BARNES

Microbac Laboratories Inc.
List of Valid Qualifiers
September 18, 2017

Qualkey: WATERLOO

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
>,H1	Result is greater than the associated numerical value. Sample analysis performed past holding time.
A	See the report narrative
B	Analyte detected in the method blank
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to interference.
E	Semiquantitative result (out of calibration range)
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
FP1	Did not ignite.
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration.
J	The analyte was positively identified, but the quantitation was below the RL.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	Analyte detected in both the method blank and sample above the MDL.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Not detected at or above adjusted sample detection limit.

Qualkey: WATERLOO

UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

Chain of Custody Record

ch2m:

CH2M COC (YYYYMMDD-##):

LABORATORY: Microbac, 158 Starlite Dr., Marietta, OH 45750, 740.373.4071

LABORATORY CONTACT: Michelle Taylor

PROJECT: Former Hampshire Chemical Corp., Waterloo, NY
PROJECT NUMBER: 691615.04.SA
EVENT: 2017 Annual Groundwater Sampling

PROJECT MANAGER & REPORT TO #1:
David Newman
119 Cherry Hill Rd., #300, Parsippany, NJ 07054
973.316.3538, david.newman@ch2m.com

PROJECT CONTACT & REPORT TO #2:
Shane Lowe
300 Hunter Ave, #305, St. Louis, MO 63154
314.335.3024, shane.lowe@ch2m.com

PURCHASE ORDER # B31159
TURNAROUND TIME: Standard
DATA PACKAGE: Level IV
PROGRAM: RCRA
SAMPLER(s): TAYLOR SIESBURG, AUDREY STAPLETON
SIGNATURE:

ANALYSES REQUESTED

PRESERVATIVE CODES (H=HCl, N=HNO_3, S=H_2SO_4, Zn=zinc acetate, B=NaOH, --=none)

SAMPLE IDENTIFICATION	GRAB/COMPOSITE	DATE	TIME	MATRIX	# CONTAINERS	VOCs + TICs (8260C)	Total Metals (6010C)(Al, As, Ca, Cr, Fe, K, Mg, Mn, Na)	Dissolved Metals (6010C)(Al, As, Cr, Fe, Mn) Field Filtered	Total Metals (6010C)(Al, As, Ca, Fe, K, Mg, Mn, Na)	Dissolved Metalsb (6010C) (Al, As, Fe, Mn) Field Filtered	Anions (300.0) (Cl^{1-}, $SO4^{2-}$)	Nitrate (353.2)	Alkalinity (310.2)	Total Phosphorous (365.4)	TOC (SM5310)	Ammonia (350.1)	TKN (351.2)	Orthophosphate(SM4500PE) Field Filtered	TDS (SM2540)	Total Sulfide (SM 4500)	Silica (200.7)	SVOCs + TICs (8270C)	PAHs (8270D SIM)	Additional Requirements
						H	N	N	N	N	--	--		S				--	--	Z,B	N	--	--	
MW07-082517	G	8/25/17	1034	GW	9	✓			✓	✓												✓	✓	
MW06-082517	G		1354	GW	9	✓			✓	✓												✓	✓	
MW06-082517-175	G		1354	GW	2																	✓		
MW06-082517-175D	G		1354	GW	2																	✓		
MW10-082517	G		1020	GW	9	✓			✓	✓												✓	✓	
MW20-082517	G		1410	GW	9	✓			✓	✓												✓	✓	
TB-082517	G		800	DI	2	✓																		
FB-082517	G	↓	1240	DI	3	✓																		

1. RELINQUISHED BY (Signature)	DATE	TIME	1. RECEIVED BY (Signature)	DATE	TIME
[signature]	8/25/17	1800	FEDEX	8/25/17	1800
2. RELINQUISHED BY (Signature)	DATE	TIME	2. RECEIVED BY (Signature)	DATE	TIME
3. RELINQUISHED BY (Signature)	DATE	TIME	3. RECEIVED BY (Signature)	DATE	TIME

ADDITIONAL REMARKS/INSTRUCTIONS:

PAGE 1 of 1

Microbac OVD
Received: 08/29/2017 10:51
By: BRENDA GREGORY
221000105211

Brenda Gregory

MICROBAC®

COOLER TEMP >6° C LOG

Cooler ID 5211

SAMPLE ID	Bottle 1 °C	Bottle 2 °C	Bottle 3 °C	Bottle 4 °C	Bottle 5 °C	Bottle 6 °C

CHD 8/29/17

pH Exceptions

pH Lot # HC6001354

SAMPLE ID	Bottle 1	Bottle 2	Bottle 3	Bottle 4	Bottle 5	Bottle 6

CHD 8/29/17

PRESERVATIVE EXCEPTIONS

✓ NONE

__ AS NOTED

CHD 8/29/17

Document Control # 1957
Last 10-07-2016

Issued to: Document Master File

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-01	956234	PCT-S 8260C

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Samplenum	Container ID	Products
L17081498-01	956235	PCT-S 827-SPE-DIOX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	EXT	29-AUG-2017 14:36	BRG		
2	DISP	EXT	DISP	08-SEP-2017 14:05	JDH	ZTB	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	06-SEP-2017 14:09	JDH	CLS	
3	ANALYZ*	EXT	SEMI	07-SEP-2017 13:33	SCB	JDH	

***Sample extract/digestate/leachate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-01	956236	PCT-S 827-PAHL

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	31-AUG-2017 16:43	JDH	CLS	
3	ANALYZ*	EXT	SEMI	01-SEP-2017 10:37	SCB	JDH	
4	DISP	EXT	DISP	08-SEP-2017 14:05	JDH	ZTB	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	STORE	W1	A1	14-SEP-2017 13:44	BJO	BJO	

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L17081498-01	956237	PCT-S AL AS-MS CA FE K MG MN NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	DIG	29-AUG-2017 14:57	ERP	BRG	
3	STORE	DIG	A2	31-AUG-2017 12:41	BRG	ERP	
4	ANALYZ*	DIG	METALS	01-SEP-2017 09:36	JYH	ERP	

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L17081498-02	956238	PCT-S AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	DIG	29-AUG-2017 14:57	ERP	BRG	
3	STORE	DIG	A2	31-AUG-2017 12:41	BRG	ERP	
4	ANALYZ*	DIG	METALS	01-SEP-2017 09:36	JYH	ERP	

***Sample extract/digestate/leachate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-03	956239	PCT-S 8260C

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Samplenum	Container ID	Products
L17081498-03	956240	PCT-S 827-SPE-DIOX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	EXT	29-AUG-2017 14:36	BRG		
2	DISP	EXT	DISP	08-SEP-2017 14:05	JDH	ZTB	

Sample extract/digestate/leachate

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	06-SEP-2017 14:09	JDH	CLS	
3	ANALYZ*	EXT	SEMI	07-SEP-2017 13:33	SCB	JDH	

Sample extract/digestate/leachate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-03	956241	PCT-S 827-PAHL

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	EXT	29-AUG-2017 14:36	BRG		
2	DISP	EXT	DISP	08-SEP-2017 14:05	JDH	ZTB	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	STORE	W1	A1	14-SEP-2017 13:44	BJO	BJO	

Samplenum	Container ID	Products
L17081498-03	956242	PCT-S AL AS-MS CA FE K MG MN NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	DIG	29-AUG-2017 14:57	ERP	BRG	
3	STORE	DIG	A2	31-AUG-2017 12:41	BRG	ERP	
4	ANALYZ*	DIG	METALS	01-SEP-2017 09:36	JYH	ERP	

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L17081498-04	956243	PCT-S AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	DIG	29-AUG-2017 14:57	ERP	BRG	
3	STORE	DIG	A2	31-AUG-2017 12:41	BRG	ERP	
4	ANALYZ*	DIG	METALS	01-SEP-2017 09:36	JYH	ERP	

***Sample extract/digestate/leachate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-05	956244	PCT-S 827-SPE-DIOX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	EXT	29-AUG-2017 14:36	BRG		
2	DISP	EXT	DISP	08-SEP-2017 14:05	JDH	ZTB	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	06-SEP-2017 14:09	JDH	CLS	
3	ANALYZ*	EXT	SEMI	07-SEP-2017 13:33	SCB	JDH	

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L17081498-06	956245	PCT-S 827-SPE-DIOX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	EXT	29-AUG-2017 14:36	BRG		
2	DISP	EXT	DISP	08-SEP-2017 14:05	JDH	ZTB	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	06-SEP-2017 14:09	JDH	CLS	
3	ANALYZ*	EXT	SEMI	07-SEP-2017 13:33	SCB	JDH	

***Sample extract/digestate/leachate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-07	956246	PCT-S 8260C

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Samplenum	Container ID	Products
L17081498-07	956247	PCT-S 827-SPE-DIOX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	EXT	29-AUG-2017 14:36	BRG		
2	DISP	EXT	DISP	08-SEP-2017 14:05	JDH	ZTB	

Sample extract/digestate/leachate

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	06-SEP-2017 14:09	JDH	CLS	
3	ANALYZ*	EXT	SEMI	07-SEP-2017 13:33	SCB	JDH	
4	DISP	EXT	DISP	14-SEP-2017 15:21	BRG	BRG	

Sample extract/digestate/leachate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-07	956248	PCT-S 827-PAHL

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	31-AUG-2017 16:43	JDH	CLS	
3	ANALYZ*	EXT	SEMI	01-SEP-2017 10:37	SCB	JDH	
4	DISP	EXT	DISP	14-SEP-2017 15:21	BRG	BRG	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	STORE	W1	A1	14-SEP-2017 13:44	BJO	BJO	

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L17081498-07	956249	PCT-S AL AS-MS CA FE K MG MN NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	DIG	29-AUG-2017 14:57	ERP	BRG	
3	STORE	DIG	A2	31-AUG-2017 12:41	BRG	ERP	
4	ANALYZ*	DIG	METALS	01-SEP-2017 09:36	JYH	ERP	

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L17081498-08	956250	PCT-S AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	DIG	29-AUG-2017 14:57	ERP	BRG	
3	STORE	DIG	A2	31-AUG-2017 12:41	BRG	ERP	
4	ANALYZ*	DIG	METALS	01-SEP-2017 09:36	JYH	ERP	

***Sample extract/digestate/leachate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-09	956251	PCT-S 8260C

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		29-AUG-2017 14:36	BRG		

Samplenum	Container ID	Products
L17081498-09	956252	PCT-S 827-SPE-DIOX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	EXT	29-AUG-2017 14:36	BRG		
2	DISP	EXT	DISP	08-SEP-2017 14:05	JDH	ZTB	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	06-SEP-2017 14:09	JDH	CLS	
3	ANALYZ*	EXT	SEMI	07-SEP-2017 13:33	SCB	JDH	
4	DISP	EXT	DISP	14-SEP-2017 15:21	BRG	BRG	

***Sample extract/digestate/leachate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-09	956253	PCT-S 827-PAHL

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	EXT	31-AUG-2017 16:43	JDH	CLS	
3	ANALYZ*	EXT	SEMI	01-SEP-2017 10:37	SCB	JDH	
4	DISP	EXT	DISP	14-SEP-2017 15:21	BRG	BRG	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	STORE	W1	A1	14-SEP-2017 13:44	BJO	BJO	

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L17081498-09	956254	PCT-S AL AS-MS CA FE K MG MN NA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	DIG	29-AUG-2017 14:57	ERP	BRG	
3	STORE	DIG	A2	31-AUG-2017 12:41	BRG	ERP	
4	ANALYZ*	DIG	METALS	01-SEP-2017 09:36	JYH	ERP	

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L17081498-10	956255	PCT-S AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	29-AUG-2017 14:36	BRG		
2	PREP	W1	DIG	29-AUG-2017 14:57	ERP	BRG	
3	STORE	DIG	A2	31-AUG-2017 12:41	BRG	ERP	
4	ANALYZ*	DIG	METALS	01-SEP-2017 09:36	JYH	ERP	

***Sample extract/digestate/leachate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17081498
Account: 2736
Project: 2736.061
Samples: 12
Due Date: 12-SEP-2017

Samplenum	Container ID	Products
L17081498-11	956256	PCT-S 8260C

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Samplenum	Container ID	Products
L17081498-12	956257	PCT-S 8260C

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	29-AUG-2017 14:36	BRG		
2	ANALYZ	V1	ORG4	30-AUG-2017 07:15	AWE	CLS	
3	STORE	ORG4	A2	11-SEP-2017 07:17	CLS	AWE	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

NELAP Addendum - January 4, 2016

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVD NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO3)
Propionaldehyde (HPLC-UV)

SOLID AND HAZARDOUS CHEMICALS
Nitrogen, Ammonia by Method 350.1
Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
Phenolics, Total by Method 420.1
ASTM D3987-06

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD HPLC02/HPLC-UV

Nitroglycerin
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVD MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam
Hexamethylphosphoramide (HMPA)
Pentachlorobenzene
Pentachloroethane

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD MSV01/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVD HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

OVD HPLC12/HPLC/UV

Acetate
Formate

OVD RSK01/GC-FID

Acetylene
Propane

OVD K9305/ISE

Fluoroborate

SOLID AND HAZARDOUS CHEMICALS

OVD MSS0I/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVD MSV0I/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)