

**CLIENT NAME: DEFENCE CONSTRUCTION CANADA  
14 ALERT BLVD, 8 WING TRENTON  
ASTRA, ON K0K3W0  
(613) 392-2811**

**ATTENTION TO: Cameron Chadwick**

**PROJECT: Eurka & ALC**

**AGAT WORK ORDER: 17P233491**

**MICROBIOLOGY ANALYSIS REVIEWED BY: Inesa Alizarchyk, Inorganic Lab Supervisor**

**TRACE ORGANICS REVIEWED BY: Gyulhan Yalamova, Report Reviewer**

**WATER ANALYSIS REVIEWED BY: Inesa Alizarchyk, Inorganic Lab Supervisor**

**DATE REPORTED: Jul 21, 2017**

**PAGES (INCLUDING COVER): 21**

**VERSION\*: 3**

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

**\*NOTES**

VERSION 3: Version 3 supersedes work order 17P233491, Version 2, issued July 18, 2017.  
The units for Phenols results have been changed from mg/L to µg/L.

**All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.**



# Certificate of Analysis

AGAT WORK ORDER: 17P233491

PROJECT: Eurka & ALC

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
TEL (905)712-5100  
FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: DEFENCE CONSTRUCTION CANADA

SAMPLING SITE:

ATTENTION TO: Cameron Chadwick

SAMPLED BY:CC

## Microbiological Analysis (water)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

Parameter	Unit	SAMPLE DESCRIPTION:		ERK-1	ERK-3	ERK-4	ERK-5
		SAMPLE TYPE:	DATE SAMPLED:	Water	Water	Water	Water
Fecal Coliform	CFU/100mL	G / S	RDL	8532827	8532835	8532847	8532861

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to SDWA - Microbiology

8532827 RDL > 1 indicates dilutions of the sample.

TEMPERATURE -temperature upon receipt above 10 C.

The time from sample collection to initiation of analysis exceeded 48 hours. Review data with discretion.

8532835-8532861 RDL >1 indicates dilutions of the sample.

ND - Not Detected.

TEMPERATURE -temperature upon receipt above 10 C.

The time from sample collection to initiation of analysis exceeded 48 hours. Review data with discretion.

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### BTEX - Water (P & T - GC/MS)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

Parameter	Unit	SAMPLE DESCRIPTION:	
		SAMPLE TYPE:	ERK-2
		DATE SAMPLED:	Water
		G / S	2017-06-24
		RDL	8532832
Benzene	µg/L	0.20	<0.20
Toluene	µg/L	0.20	<0.20
Ethylbenzene	µg/L	0.10	<0.10
m & p-Xylene	µg/L	0.20	<0.20
o-Xylene	µg/L	0.10	<0.10
Xylene Mixture (Total)	µg/L	0.20	<0.20
Surrogate	Unit	Acceptable Limits	
Toluene-d8	% Recovery	60-130	92
4-Bromofluorobenzene	% Recovery	70-130	109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8532832 Results relate only to the items tested.

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## O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

Parameter	Unit	SAMPLE DESCRIPTION:		ERK-3	ERK-4	ERK-5
		G / S	RDL	SAMPLE TYPE:	Water	Water
				DATE SAMPLED:	2017-06-24	2017-06-24
Benzene	µg/L			0.20	<0.20	<0.20
Toluene	µg/L			0.20	<0.20	<0.20
Ethylbenzene	µg/L			0.10	<0.10	<0.10
Xylene Mixture	µg/L			0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L			25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L			25	<25	<25
F2 (C10 to C16)	µg/L			100	<100	<100
F3 (C16 to C34)	µg/L			100	<100	<100
F4 (C34 to C50)	µg/L			100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L			500	NA	NA
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140		82	94	98

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## O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8532835 The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

Some sediment was observed in the sample. The whole bottle extraction was performed.

8532847-8532861 The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

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## Oil and Grease (+Total) - water

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

Parameter	Unit	SAMPLE DESCRIPTION:		ERK-1	ERK-2	ERK-3	ERK-4	ERK-5
		SAMPLE TYPE:	DATE SAMPLED:	Water	Water	Water	Water	Water
				G / S	RDL	2017-06-24	2017-06-24	2017-06-24
Oil and Grease (animal/vegetable)	mg/L			0.5	1.2	1.5	<0.5	<0.5
Oil and Grease (mineral) in water	mg/L			0.5	<0.5	<0.5	<0.5	<0.5
Oil and Grease (Total) in water	mg/L			0.5	1.3	1.6	<0.5	<0.5

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

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## Polycyclic Aromatic Hydrocarbons in Water - (PAH)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

Parameter	Unit	SAMPLE DESCRIPTION:		ERK-3	ERK-4	ERK-5			
		G / S	SAMPLE TYPE:	Water	Water	Water			
				DATE SAMPLED:	8532835	2017-06-24	8532847	2017-06-24	8532861
1-Methylnaphthalene	ug/L			0.01	<0.01	<0.01			<0.01
2-Methylnaphthalene	ug/L			0.01	<0.01	<0.01			<0.01
Acenaphthene	ug/L			0.01	<0.01	<0.01			<0.01
Acenaphthylene	ug/L			0.01	<0.01	<0.01			<0.01
Acridine	ug/L			0.01	<0.01	<0.01			<0.01
Anthracene	ug/L			0.012	<0.012	<0.012			<0.012
Benzo(a)anthracene	ug/L			0.018	<0.018	<0.018			<0.018
Benzo(a)pyrene	ug/L			0.010	<0.010	<0.010			<0.010
Benzo(b)fluoranthene	ug/L			0.01	<0.01	<0.01			<0.01
Benzo(e)pyrene	ug/L			0.01	<0.01	<0.01			<0.01
Benzo(ghi)perylene	ug/L			0.01	<0.01	<0.01			<0.01
Benzo(k)fluoranthene	ug/L			0.01	<0.01	<0.01			<0.01
Chrysene	ug/L			0.01	<0.01	<0.01			<0.01
Dibenzo(a,h)anthracene	ug/L			0.01	<0.01	<0.01			<0.01
Fluoranthene	ug/L			0.01	<0.01	<0.01			<0.01
Fluorene	ug/L			0.01	<0.01	<0.01			<0.01
Indeno(1,2,3-cd)pyrene	ug/L			0.01	<0.01	<0.01			<0.01
Naphthalene	ug/L			0.01	0.03	<0.01			<0.01
Perylene	ug/L			0.01	<0.01	<0.01			<0.01
Phenanthrene	ug/L			0.01	<0.01	<0.01			<0.01
Pyrene	ug/L			0.01	<0.01	<0.01			<0.01
Quinoline	ug/L			0.01	<0.01	<0.01			<0.01
Surrogate	Unit	Acceptable Limits							
Nitrobenzene-d5	%	50-140		93	81	51			
2-Fluorobiphenyl	%	50-140		75	93	87			
Terphenyl-d14	%	50-140		73	72	76			

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

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## Inorganic Chemistry (Water)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

SAMPLE DESCRIPTION: ERK-1			
SAMPLE TYPE: Water			
DATE SAMPLED: 2017-06-24			
Parameter	Unit	G / S	RDL
BOD (5)	mg/L	5	29
pH	pH Units	NA	8.18
Total Suspended Solids	mg/L	10	56
Chemical Oxygen Demand	mg/L	125	164

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8532827 Elevated RDLs indicate the degree of sample dilutions prior to the analysis to keep analytes within the calibration range, reduce matrix interference and/or to avoid contaminating the instrument.

pH, Total Suspended Solids - The analyses were completed beyond the recommended hold times.

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## Inorganic Chemistry (Water)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

Parameter	Unit	SAMPLE DESCRIPTION:		ERK-3		ERK-4		ERK-5	
		SAMPLE TYPE:	DATE SAMPLED:	Water		Water		Water	
				G / S	RDL	2017-06-24	8532835	RDL	2017-06-24
BOD (5)	mg/L		5	<5		5		<5	
Electrical Conductivity	uS/cm		2	466		2	897	2	1610
pH	pH Units		NA	7.60		NA	7.68	NA	7.81
Total Suspended Solids	mg/L		10	1270		10	<10	10	<10
Total Hardness (as CaCO <sub>3</sub> )	mg/L		0.5	100		0.5	179	0.5	282
Alkalinity (as CaCO <sub>3</sub> )	mg/L		5	64		5	42	5	40
Chloride	mg/L		0.20	62.7		0.40	127	1.00	365
Nitrate as N	mg/L		0.10	0.43		0.20	<0.20	0.50	<0.50
Nitrite as N	mg/L		0.10	<0.10		0.20	<0.20	0.50	<0.50
Sulphate	mg/L		0.20	47.6		0.40	171	1.00	177
Ammonia as N	mg/L		0.02	0.06		0.02	<0.02	0.02	<0.02
Chemical Oxygen Demand	mg/L		5	16		5	11	5	15
Phenols	ug/L		1	<1		1	<1	1	<1
Calcium	mg/L		0.05	25.7		0.05	49.1	0.10	60.3
Magnesium	mg/L		0.05	8.76		0.05	13.7	0.10	31.8
Sodium	mg/L		0.05	35.3		0.05	79.0	0.10	156
Potassium	mg/L		0.05	3.42		0.05	7.00	0.10	5.05
Total Arsenic	mg/L		0.500	<0.500		0.500	<0.500	0.500	<0.500
Total Cadmium	mg/L		0.10	<0.10		0.10	<0.10	0.10	<0.10
Total Chromium	mg/L		0.15	<0.15		0.15	<0.15	0.15	<0.15
Total Copper	mg/L		0.15	<0.15		0.15	<0.15	0.15	<0.15
Total Iron	mg/L		0.5	29.9		0.5	0.5	0.5	0.8
Total Lead	µg/L		0.5	14.2		0.5	<0.5	0.5	0.5
Total Mercury	mg/L		0.000015	0.000043		0.000015	<0.000015	0.000015	<0.000015
Total Nickel	mg/L		0.15	<0.15		0.15	<0.15	0.15	<0.15

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ATTENTION TO: Cameron Chadwick

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### Inorganic Chemistry (Water)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8532835-8532861 Elevated RDLs indicate the degree of sample dilutions prior to the analysis to keep analytes within the calibration range, reduce matrix interference and/or to avoid contaminating the instrument.

pH, Electrical Conductivity, Total Suspended Solids, Nitrate as N, Nitrite as N, Ammonia - The analyses were completed beyond the recommended hold times.

July 18, 2017: This is a revision of a previous report issued on July 10, 2017. At client's request, the concentration units for Pb results have been changed from mg/L to  $\mu$ g/L. The RDL for Pb has been changed to reflect the lower dilution of the sample.

July 21, 2017: This is a revision of a previous report issued on July 18, 2017. At client's request, the concentration units for Phenols results have been changed from mg/L to  $\mu$ g/L.

*Certified By:* 



# Certificate of Analysis

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ATTENTION TO: Cameron Chadwick

SAMPLED BY:CC

## Lead (Water)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

SAMPLE DESCRIPTION: ERK-2

SAMPLE TYPE: Water

DATE SAMPLED: 2017-06-24

Parameter	Unit	G / S	RDL
Lead	µg/L	0.50	<0.50

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8532832 July 18, 2017: This is a revision of a previous report issued on July 10, 2017. At client's request, the concentration unit for Pb result has been changed from mg/L to µg/L. The RDL for Pb has been changed to reflect the lower dilution of the sample.

Certified By:



CLIENT NAME: DEFENCE CONSTRUCTION CANADA

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## Certificate of Analysis

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ATTENTION TO: Cameron Chadwick  
SAMPLED BY:CC

### Phenols (Water)

DATE RECEIVED: 2017-07-04

DATE REPORTED: 2017-07-21

SAMPLE DESCRIPTION: ERK-2

SAMPLE TYPE: Water

DATE SAMPLED: 2017-06-24

Parameter	Unit	G / S	RDL	8532832
Phenols	ug/L	1	1	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8532832 July 21, 2017: This is a revision of a previous report issued on July 18, 2017. At client's request, the concentration unit for Phenols has been changed from mg/L to ug/L.

Certified By:

A handwritten signature in black ink, appearing to read "Cameron Chadwick".



## Quality Assurance

CLIENT NAME: DEFENCE CONSTRUCTION CANADA

AGAT WORK ORDER: 17P233491

PROJECT: Eurka & ALC

ATTENTION TO: Cameron Chadwick

SAMPLING SITE:

SAMPLED BY:CC

### Microbiology Analysis

RPT Date: Jul 21, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

**Microbiological Analysis (water)**

Fecal Coliform	1	ND	ND	NA	< 1
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Comments: ND – Not detected; NA - % RPD Not Applicable

**Microbiological Analysis (water)**

Fecal Coliform	8530576	ND	ND	NA	< 1
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Comments: ND – Not detected; NA - % RPD Not Applicable

**Certified By:**



## Quality Assurance

CLIENT NAME: DEFENCE CONSTRUCTION CANADA

AGAT WORK ORDER: 17P233491

PROJECT: Eurka & ALC

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SAMPLING SITE:

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### Trace Organics Analysis

RPT Date: Jul 21, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

#### BTEX - Water (P & T - GC/MS)

Benzene	8533347	< 0.20	< 0.20	NA	< 0.20	87%	60%	130%	73%	60%	130%	100%	60%	130%
Toluene	8533347	< 0.20	< 0.20	NA	< 0.20	96%	60%	130%	91%	60%	130%	111%	60%	130%
Ethylbenzene	8533347	< 0.10	< 0.10	NA	< 0.10	97%	60%	130%	90%	60%	130%	111%	60%	130%
m & p-Xylene	8533347	< 0.20	< 0.20	NA	< 0.20	101%	60%	130%	91%	60%	130%	109%	60%	130%
o-Xylene	8533347	< 0.10	< 0.10	NA	< 0.10	108%	60%	130%	96%	60%	130%	119%	60%	130%

#### Oil and Grease (+Total) - water

Oil and Grease (animal/vegetable)	TW	< 0.5	< 0.5	NA	< 0.5	NA	70%	130%	108%	70%	130%	110%	70%	130%
Oil and Grease (mineral) in water	TW	< 0.5	< 0.5	NA	< 0.5	NA	70%	130%	75%	70%	130%	78%	70%	130%
Oil and Grease (Total) in water	TW	< 0.5	< 0.5	NA	< 0.5	NA	70%	130%	92%	70%	130%	94%	70%	130%

#### O. Reg. 153(511) - PHCs F1 - F4 (Water)

Benzene	8533163	< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	99%	60%	130%	92%	50%	140%
Toluene	8533163	< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	101%	60%	130%	97%	50%	140%
Ethylbenzene	8533163	< 0.10	< 0.10	NA	< 0.10	84%	50%	140%	101%	60%	130%	111%	50%	140%
Xylene Mixture	8533163	< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	107%	60%	130%	117%	50%	140%
F1 (C6 to C10)	8533163	< 25	< 25	NA	< 25	85%	60%	140%	82%	60%	140%	93%	60%	140%
F2 (C10 to C16)	TW	< 100	< 100	NA	< 100	105%	60%	140%	105%	60%	140%	63%	60%	140%
F3 (C16 to C34)	TW	< 100	< 100	NA	< 100	106%	60%	140%	104%	60%	140%	61%	60%	140%
F4 (C34 to C50)	TW	< 100	< 100	NA	< 100	84%	60%	140%	89%	60%	140%	82%	60%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.

When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

#### Polycyclic Aromatic Hydrocarbons in Water - (PAH)

1-Methylnaphthalene	1	8503977	2.53	3.57	34	< 0.01	99%	50%	140%	81%	50%	140%	-23%	50%	140%
2-Methylnaphthalene	1	8503977	0.67	0.73	9	< 0.01	103%	50%	140%	80%	50%	140%	320%	50%	140%
Acenaphthene	1	8503977	0.07	0.07	0	< 0.01	105%	50%	140%	78%	50%	140%	60%	50%	140%
Acenaphthylene	1	8503977	<0.01	<0.01	0	< 0.01	97%	50%	140%	76%	50%	140%	60%	50%	140%
Acridine	1	8503977	<0.01	<0.01	0	< 0.01	70%	50%	140%	69%	50%	140%	66%	50%	140%
Anthracene	1	8503977	<0.012	<0.012	0	< 0.012	85%	50%	140%	77%	50%	140%	61%	50%	140%
Benzo(a)anthracene	1	8503977	<0.018	<0.018	0	< 0.018	85%	50%	140%	74%	50%	140%	78%	50%	140%
Benzo(a)pyrene	1	8503977	<0.015	<0.015	0	< 0.010	77%	50%	140%	75%	50%	140%	87%	50%	140%
Benzo(b)fluoranthene	1	8503977	<0.01	<0.01	0	< 0.01	93%	50%	140%	70%	50%	140%	72%	50%	140%
Benzo(e)pyrene	1	8503977	<0.01	<0.01	0	< 0.01	93%	50%	140%	66%	50%	140%	78%	50%	140%
Benzo(ghi)perylene	1	8503977	<0.01	<0.01	0	< 0.01	83%	50%	140%	87%	50%	140%	98%	50%	140%
Benzo(k)fluoranthene	1	8503977	<0.01	<0.01	0	< 0.01	112%	50%	140%	85%	50%	140%	100%	50%	140%
Chrysene	1	8503977	<0.01	<0.01	0	< 0.01	118%	50%	140%	80%	50%	140%	80%	50%	140%
Dibenzo(a,h)anthracene	1	8503977	<0.01	<0.01	0	< 0.01	69%	50%	140%	80%	50%	140%	89%	50%	140%
Fluoranthene	1	8503977	<0.01	<0.01	0	< 0.01	103%	50%	140%	82%	50%	140%	61%	50%	140%
Fluorene	1	8503977	0.05	0.07	33	< 0.01	96%	50%	140%	80%	50%	140%	64%	50%	140%
Indeno(1,2,3-cd)pyrene	1	8503977	<0.01	<0.01	0	< 0.01	95%	50%	140%	72%	50%	140%	82%	50%	140%

#### AGAT QUALITY ASSURANCE REPORT (V3)

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AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from [www.cala.ca](http://www.cala.ca) and/or [www.scc.ca](http://www.scc.ca). The tests in this report may not necessarily be included in the scope of accreditation.



## Quality Assurance

CLIENT NAME: DEFENCE CONSTRUCTION CANADA

AGAT WORK ORDER: 17P233491

PROJECT: Eurka & ALC

ATTENTION TO: Cameron Chadwick

SAMPLING SITE:

SAMPLED BY:CC

### Trace Organics Analysis (Continued)

RPT Date: Jul 21, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
			Lower	Upper	Lower			Lower	Upper		Lower	Upper		Lower	Upper
Naphthalene	1	8503977	7.60	9.95	27	< 0.01	105%	50%	140%	77%	50%	140%	-173%	50%	140%
Perlylene	1	8503977	<0.01	<0.01	0	< 0.01	79%	50%	140%	77%	50%	140%	70%	50%	140%
Phenanthrene	1	8503977	<0.01	<0.01	0	< 0.01	91%	50%	140%	75%	50%	140%	59%	50%	140%
Pyrene	1	8503977	<0.01	<0.01	0	< 0.01	104%	50%	140%	82%	50%	140%	64%	50%	140%
Quinoline	1	8503977	<0.01	<0.01	0	< 0.01	70%	50%	140%	64%	50%	140%	70%	50%	140%
Nitrobenzene-d5	1	8503977	61	<0	0	<									
2-Fluorobiphenyl	1	8503977	77	<0	0	<									
Terphenyl-d14	1	8503977	86	<0	0	<									

Comments: If Matrix spike value is NA, the spiked analyte concentration was lower than that of the matrix contribution.

If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

**Certified By:**



## Quality Assurance

CLIENT NAME: DEFENCE CONSTRUCTION CANADA

AGAT WORK ORDER: 17P233491

PROJECT: Eurka & ALC

ATTENTION TO: Cameron Chadwick

SAMPLING SITE:

SAMPLED BY:CC

### Water Analysis

RPT Date: Jul 21, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper			Lower		Recovery	Lower	Upper
<b>Inorganic Chemistry (Water)</b>																
BOD (5)	8532827	8532827	29	28	3.2%	< 5	102%	75%	125%	NA			NA			
Electrical Conductivity	8532827	8532827	3420	3430	0.3%	< 2	106%	80%	120%	NA			NA			
pH	8532827	8532827	8.18	7.99	2.4%	NA	108%	90%	110%	NA			NA			
Total Suspended Solids	8532827	8532827	56	60	6.9%	< 10	98%	80%	120%	NA			NA			
Alkalinity (as CaCO <sub>3</sub> )	8532827	8532827	231	232	0.4%	< 5	100%	80%	120%	NA			NA			
Chloride	8532847	8532847	127	125	1.6%	< 0.20	93%	90%	110%	105%	90%	110%	100%	80%	120%	
Nitrate as N	8532847	8532847	<0.20	<0.20	NA	< 0.10	93%	90%	110%	103%	90%	110%	104%	80%	120%	
Nitrite as N	8532847	8532847	<0.20	<0.20	NA	< 0.10	NA	90%	110%	104%	90%	110%	109%	80%	120%	
Sulphate	8532847	8532847	171	169	1.2%	< 0.20	96%	90%	110%	101%	90%	110%	102%	80%	120%	
Ammonia as N	8535939		15.0	15.0	0.0%	< 0.02	110%	90%	110%	98%	90%	110%	111%	80%	120%	
Chemical Oxygen Demand	8527181		<5	<5	NA	< 5	97%	80%	120%	99%	90%	110%	100%	70%	130%	
Phenols	8532832	8532832	1	2	NA	< 1	106%	90%	110%	103%	90%	110%	99%	80%	120%	
Calcium	8512944		21.1	21.0	0.5%	< 0.05	97%	90%	110%	96%	90%	110%	95%	70%	130%	
Magnesium	8512944		3.70	3.71	0.3%	< 0.05	94%	90%	110%	93%	90%	110%	91%	70%	130%	
Sodium	8512944		11.0	11.0	0.0%	< 0.05	97%	90%	110%	98%	90%	110%	95%	70%	130%	
Potassium	8512944		3.51	3.49	0.6%	< 0.05	99%	90%	110%	98%	90%	110%	96%	70%	130%	
Total Arsenic	8541692		<0.500	<0.500	NA	< 0.500	101%	90%	110%	101%	80%	120%	106%	70%	130%	
Total Cadmium	8541692		<0.10	<0.10	NA	< 0.10	98%	90%	110%	98%	80%	120%	101%	70%	130%	
Total Chromium	8541692		<0.15	<0.15	NA	< 0.15	101%	90%	110%	105%	80%	120%	106%	70%	130%	
Total Copper	8541692		<0.15	<0.15	NA	< 0.15	102%	90%	110%	107%	80%	120%	108%	70%	130%	
Total Iron	8541692		0.5	0.6	NA	< 0.5	108%	90%	110%	115%	80%	120%	120%	70%	130%	
Total Lead	8541692		4.8	4.9	2.1%	< 0.5	101%	90%	110%	99%	80%	120%	98%	70%	130%	
Total Mercury	8537156		0.000017	0.000021	NA	< 0.000015	101%	90%	110%	102%	90%	110%	105%	80%	120%	
Total Nickel	8541692		<0.15	<0.15	NA	< 0.15	101%	90%	110%	109%	80%	120%	109%	70%	130%	
<b>Lead (Water)</b>																
Lead	8527181		0.03	0.04	NA	< 0.50	94%	90%	110%	96%	90%	110%	94%	70%	130%	
<b>Phenols (Water)</b>																
Phenols	8532832	8532832	1	2	NA	<1	106%	90%	110%	103%	90%	110%	99%	80%	120%	

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

**Certified By:**



## QA Violation

CLIENT NAME: DEFENCE CONSTRUCTION CANADA

AGAT WORK ORDER: 17P233491

PROJECT: Eurka & ALC

ATTENTION TO: Cameron Chadwick

RPT Date: Jul 21, 2017			REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Sample Id	Sample Description	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
<b>Polycyclic Aromatic Hydrocarbons in Water - (PAH)</b>											
1-Methylnaphthalene	8503977	ERK-3	99%	50%	140%	81%	50%	140%	-23%	50%	140%
2-Methylnaphthalene	8503977	ERK-3	103%	50%	140%	80%	50%	140%	320%	50%	140%
Naphthalene	8503977	ERK-3	105%	50%	140%	77%	50%	140%	-173%	50%	140%

Comments: If Matrix spike value is NA, the spiked analyte concentration was lower than that of the matrix contribution.  
If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.



## Method Summary

CLIENT NAME: DEFENCE CONSTRUCTION CANADA

PROJECT: Eurka & ALC

SAMPLING SITE:

AGAT WORK ORDER: 17P233491

ATTENTION TO: Cameron Chadwick

SAMPLED BY:CC

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
<b>Microbiology Analysis</b>			
Fecal Coliform	MIC-93-7000	SM 9222 D	Membrane Filtration



## Method Summary

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AGAT WORK ORDER: 17P233491

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SAMPLING SITE:

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
<b>Trace Organics Analysis</b>			
Benzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Xylene Mixture (Total)	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Benzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Toluene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10)	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Oil and Grease (animal/vegetable)	VOL-91- 5011	SM 5520 & EPA SW846 3510C & EPA 1664	GRAVIMETRIC
Oil and Grease (mineral) in water	VOL-91- 5011	SM 5520 & EPA SW846 3510C & EPA 1664	GRAVIMETRIC
Oil and Grease (Total) in water	VOL-91- 5011	SM 5520 & EPA SW846 3510C & EPA 1664	GRAVIMETRIC
1-Methylnaphthalene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
2-Methylnaphthalene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Acenaphthene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Acenaphthylene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Acridine	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Anthracene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Benzo(a)anthracene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Benzo(a)pyrene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Benzo(b)fluoranthene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Benzo(e)pyrene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Benzo(ghi)perylene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Benzo(k)fluoranthene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Chrysene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Dibenzo(a,h)anthracene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Fluoranthene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Fluorene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Naphthalene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Perylene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Phenanthrene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Pyrene	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Quinoline	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Nitrobenzene-d5	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
2-Fluorobiphenyl	ORG-120-5104	EPA SW846/3510/8270C	GC/MS
Terphenyl-d14	ORG-120-5104	EPA SW846/3510/8270C	GC/MS



## Method Summary

CLIENT NAME: DEFENCE CONSTRUCTION CANADA

AGAT WORK ORDER: 17P233491

PROJECT: Eurka & ALC

ATTENTION TO: Cameron Chadwick

SAMPLING SITE:

SAMPLED BY:CC

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
<b>Water Analysis</b>			
BOD (5)	INOR-93-6006	SM 5210 B	DO METER
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Total Suspended Solids	INOR-93-6028	SM 2540 D	BALANCE
Chemical Oxygen Demand	INOR-93-6042	SM 5220 D	SPECTROPHOTOMETER
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
Total Hardness (as CaCO <sub>3</sub> )	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Alkalinity (as CaCO <sub>3</sub> )	INOR-93-6000	SM 2320 B	PC TITRATE
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Phenols	INOR-93-6050	MOE ROPHEN-E 3179 & SM 5530 D	TECHNICON AUTO ANALYZER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Arsenic	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Cadmium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Chromium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Copper	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Iron	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Lead	MET-93-6003	EPA SW-846 3010A & 6020A	ICP/MS
Total Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Total Nickel	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

