AGAT Laboratories

57 Old Pennywell Road, Unit I
St. John's, NL
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FAX (709 747-2139
http://www.agatlabs.com

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE
JOHN CABOT BLDG,10 BARTERS HILL,BOX 4600
ST. JOHNS, NL A1C5T2
(709) 772-5396

ATTENTION TO: Cathy Martin

PROJECT: AGAT16-59 700406785/R.090602.002

AGAT WORK ORDER: 18K323536

SOIL ANALYSIS REVIEWED BY: Jason Coughtrey, Inorganics Supervisor

TRACE ORGANICS REVIEWED BY: Amy Hunter, Trace Organics Supervisor, B.Sc.

DATE REPORTED: Apr 10, 2018

PAGES (INCLUDING COVER): 14

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (709)747-8573

NOTES

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

Legend for sample descriptions: 3118-BH1-0.3-1Z = Borehole 1 - Taken at a depth between 0.3 & 1 meter below seafloor
3118-BH1-1-2Z = Borehole 1 - Taken at a depth between 1 & 2 meters below seafloor

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Certificate of Analysis

AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

PWGSC NL - Marine Sediment Package - Inorganics

DATE RECEIVED: 2018-03-26 **DATE REPORTED: 2018-03-29**

SAMPLE DESCRIPTION:				3118-BH1-GS-0Z	3118-BH1-0.3-1Z	3118-BH1-1-2Z	3118-BH2-GS-0Z	3118-BH2-0.3-1Z	3118-BH2-1-2Z	3118-BH3-0.3-1Z
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2018-03-18	2018-03-21	2018-03-21	2018-03-21	2018-03-21	2018-03-21	2018-03-21
Parameter	Unit	G / S	RDL	9149609	9149612	9149613	9149614	9149615	9149616	9149617
Aluminum	mg/kg		10	8820	9930	9550	8290	9340	8830	9820
Antimony	mg/kg		1	<1	<1	<1	1	<1	<1	<1
Arsenic	mg/kg		1	15	27	20	26	9	11	11
Barium	mg/kg		5	84	58	60	91	20	39	36
Beryllium	mg/kg		2	<2	<2	<2	<2	<2	<2	<2
Boron	mg/kg		2	58	136	140	210	646	455	49
Cadmium	mg/kg		0.3	1.3	2.1	1.7	3.3	4.8	5.3	0.7
Chromium	mg/kg		2	97	82	54	59	70	64	43
Cobalt	mg/kg		1	9	15	14	8	8	7	9
Copper	mg/kg		2	154	172	94	101	74	66	69
Iron	mg/kg		50	26500	42400	136000	27800	24200	22200	38400
Lead	mg/kg		0.5	294	136	169	456	12.9	77.5	152
Manganese	mg/kg		2	330	499	617	287	287	294	373
Molybdenum	mg/kg		2	8	24	20	23	75	57	12
Nickel	mg/kg		2	27	75	35	39	53	45	39
Selenium	mg/kg		1	2	3	3	4	7	7	<1
Silver	mg/kg		0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Strontium	mg/kg		5	480	292	256	530	140	244	544
Thallium	mg/kg		0.1	0.1	0.2	0.1	0.3	0.3	0.2	<0.1
Tin	mg/kg		2	18	14	11	17	3	7	10
Uranium	mg/kg		0.1	7.7	7.2	7.5	12.5	22.3	18.2	9.4
Vanadium	mg/kg		2	71	122	88	103	88	91	50
Zinc	mg/kg		5	651	344	246	779	61	236	205
Mercury	mg/kg		0.05	1.05	0.25	0.41	0.40	0.12	0.13	0.86
pH				7.88	8.40	8.35	7.75	7.99	7.93	NA
Cyanide	µg/g		0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

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PROJECT: AGAT16-59 700406785/R.090602.002

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

PWGSC NL - Marine Sediment Package - Inorganics

DATE RECEIVED: 2018-03-26 **DATE REPORTED: 2018-03-29**

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

9149609-9149616 Results are based on the dry weight of the sample.

Cyanide analysed at AGAT Mississauga.

9149617 Results are based on the dry weight of the sample.

Cyanide analysed at AGAT Mississauga.
NA- Insufficient sample for analysis

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AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

Moisture

DATE RECEIVED: 2018-03-26 **DATE REPORTED: 2018-03-27**

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: 3118-BH1-GS-0Z	3118-BH1-0.3-1Z	3118-BH1-1-2Z	3118-BH2-GS-0Z	3118-BH2-0.3-1Z	3118-BH2-1-2Z	3118-BH3-0.3-1Z
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2018-03-18	2018-03-21	2018-03-21	2018-03-21	2018-03-21	2018-03-21	2018-03-21
				9149609	9149612	9149613	9149614	9149615	9149616	9149617
% Moisture	%			46	51	62	76	80	80	20

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

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AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

PWGSC NL - Marine Sediment Package - Atlantic RBCA Tier 1 Hydrocarbons in Soil (Version 3.1) - Field Preserved

DATE RECEIVED: 2018-03-26 **DATE REPORTED: 2018-04-04**

					SAMPLE DESCRIPTION:	3118-BH1-GS-0Z	3118-BH1-0.3-1Z	3118-BH1-1-2Z	3118-BH2-GS-0Z	3118-BH2-0.3-1Z	3118-BH2-1-2Z	3118-BH3-0.3-1Z
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	2018-03-18	2018-03-21	2018-03-21	2018-03-21	2018-03-21	2018-03-21	2018-03-21
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**		**9149609**	**9149612**	**9149613**	**9149614**	**9149615**	**9149616**	**9149617**
Benzene	mg/kg	0.030	0.0068	0.03		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Toluene	mg/kg	0.37	0.08	0.04		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ethylbenzene	mg/kg	0.082	0.018	0.03		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Xylene (Total)	mg/kg	11	2.4	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
C6-C10 (less BTEX)	mg/kg			3		<3	<3	<3	<3	<3	<3	<3
>C10-C16 Hydrocarbons	mg/kg			15		227	798	848	279	<15	378	53
>C16-C21 Hydrocarbons	mg/kg			15		588	1870	1530	628	25	639	150
>C21-C32 Hydrocarbons	mg/kg			15		1260	2850	1920	1400	90	1220	280
Modified TPH (Tier 1)	mg/kg			20		2080	5520	4300	2310	115	2240	483
Resemblance Comment						WFOF+LOF	FOF+LOF	FOF+LOF	WFOF+LOF	WFOF+LOF	WFOF+LOF	WFOF+LOF
Return to Baseline at C32						Y	Y	Y	Y	Y	Y	Y
Surrogate	**Unit**	**Acceptable Limits**										
Isobutylbenzene - EPH	%	60-140				116	107	112	105	102	108	111
Isobutylbenzene - VPH	%	60-140				101	107	105	101	103	100	100
n-Dotriacontane - EPH	%	60-140				128	139	113	137	117	140	135

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to CCME Industrial Guidelines for Soil, Coarse, B Refers to CCME Industrial Guidelines for Soil, Fine
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9149609-9149617 Results are based on the dry weight of the soil.

Resemblance Comment Key:
GF - Gasoline Fraction
WGF - Weathered Gasoline Fraction
GR - Product in Gasoline Range
FOF - Fuel Oil Fraction
WFOF - Weathered Fuel Oil Fraction
FR - Product in Fuel Oil Range
LOF - Lube Oil Fraction
LR - Lube Range
UC - Unidentified Compounds
NR - No Resemblance
NA - Not Applicable

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Certificate of Analysis

AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

PWGSC NL - Marine Sediment Package - PAH in Sediment

DATE RECEIVED: 2018-03-26 **DATE REPORTED: 2018-03-29**

Parameter	Unit	G / S: A	G / S: B	RDL	3118-BH1-GS-0Z Soil 2018-03-18 9149609	3118-BH1-0.3-1Z Soil 2018-03-21 9149612	3118-BH1-1-2Z Soil 2018-03-21 9149613	3118-BH2-GS-0Z Soil 2018-03-21 9149614	3118-BH2-0.3-1Z Soil 2018-03-21 9149615	3118-BH2-1-2Z Soil 2018-03-21 9149616	3118-BH3-0.3-1Z Soil 2018-03-21 9149617
1-Methylnaphthalene	mg/kg			0.05	0.18	15.1	12.4	0.13	0.10	<0.05	0.09
2-Methylnaphthalene	mg/kg			0.02	0.20	7.51	4.48	0.17	<0.02	0.02	0.12
Acenaphthene	mg/kg	Factsheet	Factsheet	0.00671	1.19	86.8	83.8	0.653	0.271	0.0805	8.99
Acenaphthylene	mg/kg	Factsheet	Factsheet	0.005	0.486	2.43	3.27	0.669	<0.005	<0.005	<0.005
Anthracene	mg/kg	Factsheet	Factsheet	0.03	2.77	21.9	23.2	2.77	0.17	0.50	2.61
Benzo(a)anthracene	mg/kg	Factsheet	Factsheet	0.01	7.56	29.5	20.8	9.48	0.27	1.52	2.86
Benzo(a)pyrene	mg/kg	Factsheet	Factsheet	0.01	4.92	8.71	7.64	4.43	0.15	1.12	1.00
Benzo(b)fluoranthene	mg/kg	Factsheet	Factsheet	0.05	4.51	11.5	8.69	5.04	0.17	1.12	1.21
Benzo(j,k)fluoranthane	mg/Kg			0.05	6.45	11.4	10.4	6.93	0.20	1.24	1.35
Benzo(ghi)perylene	mg/kg			0.01	2.29	2.49	2.16	1.80	0.06	0.34	0.35
Chrysene	mg/kg	Factsheet	Factsheet	0.01	7.72	35.4	22.5	9.46	0.24	1.49	2.97
Dibenzo(a,h)anthracene	mg/kg	Factsheet	Factsheet	0.006	0.636	0.782	0.702	<0.006	<0.006	<0.006	0.117
Fluoranthene	mg/kg	Factsheet	Factsheet	0.05	21.3	197	159	18.0	1.67	1.02	17.1
Fluorene	mg/kg	Factsheet	Factsheet	0.01	1.59	62.7	53.1	0.89	0.17	0.12	2.27
Indeno(1,2,3)pyrene	mg/kg	Factsheet	Factsheet	0.01	2.59	3.13	2.86	2.09	0.08	0.42	0.42
Naphthalene	mg/kg	Factsheet	Factsheet	0.01	0.35	5.80	4.89	0.38	0.07	0.03	0.19
Perylene	mg/kg			0.05	1.17	1.95	1.63	1.11	0.10	0.49	0.23
Phenanthrene	mg/kg	Factsheet	Factsheet	0.03	7.09	171	145	5.38	0.29	0.41	14.8
Pyrene	mg/kg	Factsheet	Factsheet	0.05	12.0	105	80.5	14.1	0.94	0.59	9.38
Surrogate	**Unit**		**Acceptable Limits**								
Nitrobenzene-d5	%		50-140		102	102	124	105	127	112	127
2-Fluorobiphenyl	%		50-140		97	89	106	95	121	105	114
Terphenyl-d14	%		50-140		106	104	120	106	124	116	131

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to CCME Industrial Guidelines for Soil, Coarse, B Refers to CCME Industrial Guidelines for Soil, Fine
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9149609-9149617 Results are based on the dry weight of the soil.

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Certificate of Analysis

AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

PWGSC NL - Marine Sediment Package - PCB in Sediment

DATE RECEIVED: 2018-03-26

DATE REPORTED: 2018-04-05

					SAMPLE DESCRIPTION:	3118-BH1-GS-0Z	3118-BH1-0.3-1Z	3118-BH1-1-2Z	3118-BH2-GS-0Z	3118-BH2-0.3-1Z	3118-BH2-1-2Z	3118-BH3-0.3-1Z
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	2018-03-18	2018-03-21	2018-03-21	2018-03-21	2018-03-21	2018-03-21	2018-03-21
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**		**9149609**	**9149612**	**9149613**	**9149614**	**9149615**	**9149616**	**9149617**
Total Polychlorinated Biphenyls	mg/kg	33	33	0.02		0.76[<A]	1.37[<A]	1.59[<A]	1.19[<A]	<0.02	0.81[<A]	<0.02
Surrogate	**Unit**	**Acceptable Limits**										
Decachlorobiphenyl	%	50-130				125	82	98	79	77	112	82

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to CCME Industrial Guidelines for Soil, Coarse, B Refers to CCME Industrial Guidelines for Soil, Fine
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Quality Assurance

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
PWGSC NL - Marine Sediment Package - Inorganics															
Aluminum	9150462		25800	26900	4.4%	< 10	106%	80%	120%	102%	80%	120%	94%	70%	130%
Antimony	9150462		<1	<1	NA	< 1	98%	80%	120%	104%	80%	120%	NA	70%	130%
Arsenic	9150462		5	5	NA	< 1	106%	80%	120%	102%	80%	120%	98%	70%	130%
Barium	9150462		9	9	NA	< 5	107%	80%	120%	106%	80%	120%	113%	70%	130%
Beryllium	9150462		<2	<2	NA	< 2	106%	80%	120%	107%	80%	120%	95%	70%	130%
Boron	9150462		10	8	NA	< 2	104%	80%	120%	108%	80%	120%	93%	70%	130%
Cadmium	9150462		<0.3	<0.3	NA	< 0.3	106%	80%	120%	103%	80%	120%	100%	70%	130%
Chromium	9150462		136	172	23.6%	< 2	113%	80%	120%	109%	80%	120%	106%	70%	130%
Cobalt	9150462		23	23	2.1%	< 1	102%	80%	120%	100%	80%	120%	94%	70%	130%
Copper	9150462		30	27	9.9%	< 2	107%	80%	120%	101%	80%	120%	116%	70%	130%
Iron	9150462		28300	27900	1.3%	< 50	100%	80%	120%	95%	80%	120%	103%	70%	130%
Lead	9150462		2.6	3.2	21.5%	< 0.5	115%	80%	120%	112%	80%	120%	98%	70%	130%
Manganese	9150462		446	467	4.6%	< 2	117%	80%	120%	113%	80%	120%	NA	70%	130%
Molybdenum	9150462		<2	<2	NA	< 2	104%	80%	120%	104%	80%	120%	105%	70%	130%
Nickel	9150462		260	301	14.8%	< 2	106%	80%	120%	105%	80%	120%	101%	70%	130%
Selenium	9150462		<1	<1	NA	< 1	106%	80%	120%	108%	80%	120%	92%	70%	130%
Silver	9150462		<0.5	<0.5	NA	< 0.5	109%	80%	120%	106%	80%	120%	84%	70%	130%
Strontium	9150462		110	102	8.1%	< 5	113%	80%	120%	112%	80%	120%	104%	70%	130%
Thallium	9150462		<0.1	<0.1	NA	< 0.1	106%	80%	120%	105%	80%	120%	70%	70%	130%
Tin	9150462		3	3	NA	< 2	102%	80%	120%	100%	80%	120%	101%	70%	130%
Uranium	9150462		0.2	0.2	NA	< 0.1	106%	80%	120%	105%	80%	120%	101%	70%	130%
Vanadium	9150462		59	51	13.6%	< 2	109%	80%	120%	106%	80%	120%	95%	70%	130%
Zinc	9150462		32	32	0.8%	< 5	102%	80%	120%	99%	80%	120%	89%	70%	130%
Mercury	1	9150462	<0.05	<0.05	NA	< 0.05	95%	70%	130%		70%	130%	81%	70%	130%
pH	1	9150450	9.68	9.59	0.9%	<	103%	80%	120%		80%	120%		80%	120%
Cyanide	9147681		<0.040	<0.040	NA	< 0.040	102%	90%	110%	101%	90%	110%	104%	70%	130%

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Quality Assurance

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
PWGSC NL - Marine Sediment Package - Atlantic RBCA Tier 1 Hydrocarbons in Soil (Version 3.1) - Field Preserved															
Benzene	1	9149609	< 0.03	< 0.03	NA	< 0.03	103%	60%	140%	121%	60%	140%	NA		
Toluene	1	9149609	0.035	<0.025	NA	< 0.04	109%	60%	140%	121%	60%	140%	NA		
Ethylbenzene	1	9149609	< 0.03	< 0.03	NA	< 0.03	106%	60%	140%	111%	60%	140%	NA		
Xylene (Total)	1	9149609	< 0.05	< 0.05	NA	< 0.05	105%	60%	140%	112%	60%	140%	NA		
C6-C10 (less BTEX)	1	9149609	< 3	< 3	NA	< 3	107%	60%	140%	92%	60%	140%	107%	30%	130%
>C10-C16 Hydrocarbons	1	9149615	< 15	< 15	NA	< 15	100%	60%	140%	98%	60%	140%	NA	30%	130%
>C16-C21 Hydrocarbons	1	9149615	25	23	NA	< 15	97%	60%	140%	98%	60%	140%	NA	30%	130%
>C21-C32 Hydrocarbons	1	9149615	90	81	10.5%	< 15	87%	60%	140%	98%	60%	140%	NA	30%	130%
PWGSC NL - Marine Sediment Package - PAH in Sediment															
1-Methylnaphthalene	1	9149615	0.10	0.12	18	< 0.05	94%	50%	140%	93%	50%	140%	95%	50%	140%
2-Methylnaphthalene	1	9149615	0.01	0.01	0	< 0.02	94%	50%	140%	92%	50%	140%	99%	50%	140%
Acenaphthene	1	9149615	0.271	0.299	10	< 0.00671	96%	50%	140%	94%	50%	140%	95%	50%	140%
Acenaphthylene	1	9149615	<0.004	<0.004	0	< 0.005	89%	50%	140%	85%	50%	140%	103%	50%	140%
Anthracene	1	9149615	0.17	0.14	19	< 0.03	84%	50%	140%	80%	50%	140%	93%	50%	140%
Benzo(a)anthracene	1	9149615	0.27	0.24	12	< 0.01	81%	50%	140%	77%	50%	140%	95%	50%	140%
Benzo(a)pyrene	1	9149615	0.15	0.13	14	< 0.01	90%	50%	140%	71%	50%	140%	91%	50%	140%
Benzo(b)fluoranthene	1	9149615	0.17	0.15	13	< 0.05	94%	50%	140%	85%	50%	140%	98%	50%	140%
Benzo(ghi)perylene	1	9149615	0.06	0.09	40	< 0.01	91%	50%	140%	73%	50%	140%	81%	50%	140%
Chrysene	1	9149615	0.24	0.21	13	< 0.01	92%	50%	140%	89%	50%	140%	90%	50%	140%
Dibenzo(a,h)anthracene	1	9149615	<0.006	<0.006	0	< 0.006	63%	50%	140%	64%	50%	140%	78%	50%	140%
Fluoranthene	1	9149615	1.67	1.71	2	< 0.05	84%	50%	140%	85%	50%	140%	56%	50%	140%
Fluorene	1	9149615	0.17	0.19	11	< 0.01	88%	50%	140%	88%	50%	140%	98%	50%	140%
Indeno(1,2,3)pyrene	1	9149615	0.08	0.07	13	< 0.01	58%	50%	140%	56%	50%	140%	77%	50%	140%
Naphthalene	1	9149615	0.07	0.06	15	< 0.01	99%	50%	140%	98%	50%	140%	97%	50%	140%
Perylene	1	9149615	0.10	0.08	22	< 0.05	108%	50%	140%	93%	50%	140%	103%	50%	140%
Phenanthrene	1	9149615	0.29	0.29	0	< 0.03	95%	50%	140%	97%	50%	140%	95%	50%	140%
Pyrene	1	9149615	0.94	0.95	1.1%	< 0.05	83%	50%	140%	84%	50%	140%	71%	50%	140%
Nitrobenzene-d5	1	9149615	127	<0	0	<									
2-Fluorobiphenyl	1	9149615	121	<0	0	<									
Terphenyl-d14	1	9149615	124	<0	0	<									
PWGSC NL - Marine Sediment Package - PCB in Sediment															
Total Polychlorinated Biphenyls	1	9149995	< 0.02	< 0.02	NA	< 0.02	91%	60%	130%	95%	60%	130%	99%	60%	130%

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.

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.

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Quality Assurance

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			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

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:

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Method Summary

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Aluminum	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Antimony	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Arsenic	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Barium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Beryllium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Boron	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Cadmium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Chromium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Cobalt	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Copper	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Iron	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Lead	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP-MS
Manganese	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Molybdenum	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Nickel	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Selenium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Silver	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Strontium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Thallium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Tin	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Uranium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Vanadium	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Zinc	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B & SM 3125	ICP/MS
Mercury	MET-121-6101 & MET-121-6107	EPA 245.5	CVAAS
pH	INOR-121-6001	modified from Canadian Society of Soil Science p15	
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER

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Method Summary

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AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
% Moisture		Calculation	GRAVIMETRIC
Benzene	VOL-120-5013	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/MS
Toluene	VOL-120-5013	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/MS
Ethylbenzene	VOL-120-5013	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/MS
Xylene (Total)	VOL-120-5013	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/MS
C6-C10 (less BTEX)	VOL-120-5013	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/MS/FID
>C10-C16 Hydrocarbons	ORG-120-5101	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/FID
>C16-C21 Hydrocarbons	ORG-120-5101	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/FID
>C21-C32 Hydrocarbons	ORG-120-5101	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/FID
Modified TPH (Tier 1)	ORG-120-5101	Atlantic RBCA Guidelines for Laboratories Tier 1	CALCULATION
Resemblance Comment	ORG-120-5101	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/MS/FID
Return to Baseline at C32	ORG-120-5101	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/FID
Isobutylbenzene - EPH	ORG-120-5101	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/FID
Isobutylbenzene - VPH	VOL-120-5013	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/MS
n-Dotriacontane - EPH	ORG-120-5101	Atlantic RBCA Guidelines for Laboratories Tier 1	GC/FID
1-Methylnaphthalene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
2-Methylnaphthalene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Acenaphthene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Acenaphthylene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Anthracene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(a)anthracene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(a)pyrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(b)fluoranthene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(j,k)fluoranthane	ORG-120-5104	CALCULATION	GC/MS
Benzo(ghi)perylene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Chrysene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Dibenzo(a,h)anthracene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Fluoranthene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Fluorene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Indeno(1,2,3)pyrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Naphthalene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Perylene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Phenanthrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Pyrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Nitrobenzene-d5	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
2-Fluorobiphenyl	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Terphenyl-d14	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Total Polychlorinated Biphenyls	ORG-120-5106	EPA SW846/8081/8080	GC/ECD

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Method Summary

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICE

AGAT WORK ORDER: 18K323536

PROJECT: AGAT16-59 700406785/R.090602.002

ATTENTION TO: Cathy Martin

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Decachlorobiphenyl	ORG-120-5106	EAP SW846 3510C/8080/8010	GC/ECD

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Chain of Custody Record

Laboratory Use Only
Arrival Condition: ☐ Good ☐ Poor (see notes)
Arrival Temperature: 6.1
Hold Time:
AGAT Job Number: 18Z323536
Notes:

Report Information
Company: PWGSC
Contact: Cathy Martin
Address: 10 Barter's Hill, PO Box 4600
St. John's, NL
Phone: 709-772-5852 Fax:
Client Project #: R.090602.002
AGAT Quotation: AGAT16-59 (Burin, NL)
Please Note: If quotation number is not provided client will be billed full price for analysis.

Report Information (Please print):
1. Name: Cathy Martin
Email: Cathy.Martin@pwgsc-tpsgc.gc.ca;
2. Name:
Email:

Report Format
☐ Single Sample per page
☑ Multiple Sample per page
☑ Excel Format Included
☐ Export:

Turnaround Time Required (TAT)
Regular TAT ☑ 5 to 7 working days
Rush TAT ☐ Same day ☐ 1 day ☐ 2 days ☐ 3 days
Date Required:

Invoice To Same Yes ☑ / No ☑
Company:
Contact: Cathy Martin
Address:
Phone: Fax:
PO/Credit Card#:

Regulatory Requirements (Check):
☑ List Guidelines on Report ☐ Do not list Guidelines on Report
☐ PIRI
☐ Tier 1 ☐ Res ☐ Pot ☐ Coarse
☐ Tier 2 ☐ Com ☐ N/Pot ☐ Fine
☐ Gas ☐ Fuel ☐ Lube
☐ CCME ☐ CDWQ
☐ Industrial ☐ NSEQS-Cont Sites
☐ Commercial ☐ HRM 101
☐ Res/Park ☐ Storm Water
☐ Agricultural ☐ Waste Water
☐ FWAL
☐ Sediment ☐ Other

Drinking Water Sample: ☐ Yes ☐ No **Salt Water Sample:** ☐ Yes ☐ No
Reg. No.:

Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments – Site/Sample Info. Sample Containment	Field Filtered/Preserved	Standard Water Analysis	Metals: ☐ Total ☐ Diss ☐ Available	Mercury	☐ BOD ☐ CBOD	Grain Size (coarse/fine)	☐ TOC - Miss ☐ FOC - Miss	Phosphates (total as P2O5)	Chromium (Tri & Hexavalent)	Phenols	Tier 1: TPH/BTEX (PIRI) ☐ low level	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX	VOC	Oil & Grease (TOG)	BNAE EPA 625 - Miss	PAH	PCB	Marine Sediment Package	Dioxins & Furans	Fecal Coliform ☐ MPN ☐ MF	Other:	Other:	Hazardous (Y/N)
3118-BH1-GS-0Z	March 18, 2018	MS	2x40,1x120, 1x250 mL																				✓					
3118-BH1-0.3-1Z	March 21, 2018	MS	2x40, 1x120, 1x250 mL																				✓					
3118-BH1-1-2Z	March 21, 2018	MS	2x40, 1x250 mL																				✓					
3118-BH2-GS-0Z	March 21, 2018	MS	2x40, 1x120, 1x250 mL																				✓					
3118-BH2-0.3-1Z	March 21, 2018	MS	2x40, 1x120, 1x250 mL																				✓					
3118-BH2-1-2Z	March 21, 2018	MS	2x40, 1x120, 1x250 mL																				✓					
3118-BH3-0.3-1Z	March 21, 2018	MS	2x40, 1x120, 1x250 mL																				✓					

Samples Relinquished By (Print Name):	Date/Time	Samples Received By (Print Name):	Date/Time
Eunjeong Seok	March 26, 2018	A Canning	03/26/18
Samples Relinquished By (Sign):	**Date/Time**	**Samples Received By (Sign):**	**Date/Time**
E Seok	12:45		12:45

Pink Copy - Client
Yellow Copy - AGAT
White Copy- AGAT

Page 1 of 1
N°: FFC-3118-COC-01

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Date revised: January 2016