# GROUNDWATER MONITORING AND SAMPLING PROGRAM – JANUARY 2023 FORMER SEARS FUEL SITE AND ADJACENT HOUNSFIELD HEIGHTS AREA 1620 – 14<sup>th</sup> AVENUE NW CALGARY, ALBERTA SUNCOR OUTLET NO. 9445

ALBERTA ENVIRONMENT AND PROTECTED AREAS (AEPA) FILE NO. 00141934

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THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD-PARTY RELIANCE.

## SUMMARY

Site:	1620 - 14th Avenue NW;theMallProperty;14th Avenue NW; Lions Park; and the adjacent HounsfieldHeights community							
Type of Facility:	Former Sears Fuel Site							
Applicable Groundwater Guidelines:	Alberta Environment and Parks (AEP), 2022 Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines; fine- grained and coarse-grained soils; commercial land use, residential land use, and commercial land use with a residential buffer. The freshwater aquatic life pathway has been eliminated. In addition, Tier 2 guidelines for the vapour inhalation pathway have been calculated for selected areas.							
Date(s) of Groundwater Monitoring and Sampling:	January 9, 2023 to January 20, 2023							
Presence of Liquid-Phase Hydrocarbons (LPH):	LPH was not detected in any of the groundwater monitoring wells or extraction wells monitored.							
Monitoring and Extraction Wells with Groundwater Samples that Exceeded Guidelines:	Nine of 104 monitoring wells sampled had concentrations that exceeded guidelines for the vapour inhalation pathway (BH1912, BH1915, BH1979, BH4002, BH4003A, BH4006, BH4007, EX-5, and EX-7); three of 104 wells sampled exceeded the guidelines for the ecological direct soil pathway; 33 of 104 wells sampled exceeded the drinking water guidelines; for one or more petroleum hydrocarbon constituents (BTEX, F1, F2), or 1,2-Dichloroethane.							
Changes to Program and Future Work:	Based on a review of the groundwater analytical results, no changes to the groundwater monitoring and sampling (GWMS) program are proposed at this time. Groundwater monitoring and sampling will be conducted in July 2023, in accordance with the semi-annual GWMS program.							

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# 1.0 INTRODUCTION

Parsons Inc. (Parsons) was retained by Suncor Energy Products Partnership (Suncor) to perform groundwater monitoring and sampling for the Former Sears Fuel Site located at 1620 - 14th Avenue NW; as well as the Mall Property; 14th Avenue NW; Lions Park; and the adjacent Hounsfield Heights community (collectively referred to as "the site").

## 1.1 PURPOSE

Groundwater monitoring and sampling was conducted between January 9, 2023 and January 20, 2023 in accordance with the semi-annual groundwater monitoring and sampling (GWMS) program, in order to maintain an audit of subsurface conditions.

## **1.2** SCOPE OF WORK

The following site activities were conducted on behalf of Suncor in January 2023:

- Monitor the groundwater monitoring wells and extraction wells for subsurface vapour concentrations, water levels, and the presence or absence of liquid-phase hydrocarbons (LPH);
- Collect groundwater samples from selected wells for laboratory analyses;
- Repair selected wells which were previously damaged or inaccessible, where possible; and,
- Prepare a report that describes the field activities and the results of the laboratory analyses.

The site location and municipal zoning are presented in Drawing No. 1. The grade elevations are shown on Drawing No. 2.

# 2.0 SITE ACTIVITIES

The dual-phase vapour extraction system operating at the site was turned off on January 9, 2023. Between January 9 and January 20, 2023, groundwater monitoring was performed on 117 groundwater monitoring and extraction wells across the site, as presented in Table 1. Groundwater samples were then collected from 104 groundwater monitoring and extraction wells for laboratory analysis, as presented in Table 2. Some of the wells could not be monitored or sampled as they were dry, had insufficient water, were blocked below grade, were paved over, or could not be located. Groundwater samples from two monitoring wells (BH1946 and BH1947) were not analyzed due to uncertainty issues raised by sample labeling issues.

Groundwater Monitoring and	Drawing No. 3
Extraction Well Locations:	
Monitoring/Sampling Date(s):	January 9, 2023 to January 20, 2023
Groundwater samples analyzed for:	Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)
	☑ Petroleum Hydrocarbon (PHC) Fractions F1 and F2
	⊠1,2-Dichloroethane (1,2-DCA)
	⊠Routine Water Chemistry (select wells only)
Laboratory:	AGAT Laboratories
Field procedures and sampling	Appendix A: The field procedures were conducted in
method shown in:	accordance with generally accepted industry practices.

# **3.0 GUIDELINES REFERENCED**

The groundwater regulatory guidelines referenced are the Alberta Tier 2 Soil and Groundwater Remediation Guidelines (AEP 2022a/b) for fine-grained and coarse-grained soil, and for commercial and residential/parkland land use, with the freshwater aquatic life (FAL) pathway excluded. These are summarized in Appendix B. Tier 2 guidelines are also referenced for the vapour inhalation pathway for selected areas, as described below. In the northern area of the site, within 30 m of properties zoned for residential or parkland land use, vapour inhalation pathway guidelines (soil and groundwater) and ecological soil contact guidelines (for groundwater) for residential land use have been applied, as shown on Drawing No. 3. For areas of the site north of the Tier 2 guideline area as described below, Tier 1 guidelines for coarse-grained soil have been conservatively applied.

Tier 2 groundwater guidelines for the vapour inhalation pathway were developed by Intrinsik (Intrinsik, 2022) for some areas of the site, as shown on Drawing No. 3. In the applicable areas (areas N1, N2, S1 and S2, as shown on Drawing No. 3), the calculated Tier 2 guidelines are used in place of the Tier 1 guidelines for the vapour inhalation pathway. For risk management purposes, in accordance with the Revised Remediation Plan (Version 4.0) (Clifton, 2022), groundwater concentrations have been compared to the Tier 2 risk-based guidelines for the vapour inhalation pathway (Intrinsik, 2022).

# 4.0 **RESULTS OF THE INVESTIGATION**

## 4.1 GROUNDWATER MONITORING RESULTS

As presented in Table 1, the depth to groundwater varies with the grade elevation and the geological unit, ranging from approximately 1.00 to 14.85 mbgs. Generally, groundwater is deeper in the northern areas of the site, and shallower in the southern areas.
As presented in Table 1, subsurface vapour concentrations
measured in the monitoring wells ranged from not detected
(<5 parts per million by volume (ppmv)) to >100% of the lower
explosive limit (LEL).
LPH was not detected in any of the groundwater monitoring or
extraction wells monitored.
Presented as Drawing No. 4.
The apparent direction of groundwater flow during the January
2023 monitoring event was generally towards the south-
southeast

## 4.2 GROUNDWATER ANALYTICAL RESULTS

BTEX, F1, F2, and 1,2-DCA:	As presented in Table 2, nine of 104 monitoring wells sampled								
	exceeded guidelines for the vapour inhalation pathway								
	(BH1912, BH1915, BH1979, BH4002, BH4003A, BH4006,								
	BH4007, EX-5, and EX-7); three of 104 wells sampled exceeded								
	the guidelines for the ecological direct soil pathway; 33 of 104								
	wells sampled exceeded the drinking water guidelines; for one								
	or more petroleum hydrocarbon constituents (BTEX, F1, F2), or								
	1,2-Dichloroethane.								
Routine Water Chemistry:	Presented as Table 2.								
Spatial Summary of	Presented as Drawing No. 5 and Drawing No. 6.								
Analytical Results:									
Historical Analytical Results:	Results from 2022 and January 2023 are presented in								
	Appendix C.								
Laboratory Certificates:	Presented in Appendix D.								

## 4.3 QUALITY ASSURANCE AND QUALITY CONTROL (QAQC) RESULTS

Laboratory QAQC:	Appendix D	No laboratory QAQC issues were identified that call into question the reliability of the laboratory data reported.
Field QAQC:	Appendix D	Three field duplicate soil vapour samples were submitted. No field QAQC issues were identified that call into question the reliability of the lab data reported.
QAQC Summary:	Appendix D	No QAQC issues were identified that would affect the overall conclusions of the assessment work presented in this report.

# 5.0 SUMMARY

Between January 9 and January 20, 2023, groundwater monitoring and sampling was conducted as part of the semi-annual GWMS program. Groundwater monitoring was performed on 117 groundwater monitoring and extraction wells, with groundwater samples were collected from 104 wells and sent for laboratory analysis. The groundwater regulatory guidelines referenced are the AEP, 2022 Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines; fine-grained and coarse-grained soils; commercial land use, residential land use, and commercial land use with a residential buffer. The freshwater aquatic life pathway has been eliminated. In addition, Tier 2 guidelines for the vapour inhalation pathway have been calculated for selected areas.

The results of the January 9 to 20, 2023 GWMS event are summarized as follows:

- The depth to water varies with the grade elevation and the geological unit, varying from approximately 1.00 to 14.85 mbgs. Generally, groundwater is deeper in the northern areas of the site, and shallower in the southern areas;
- Subsurface vapour concentrations measured in the monitoring wells ranged from not detected to >100% LEL;
- LPH was not detected in any of the groundwater monitoring or extraction wells monitored;
- The apparent direction of groundwater flow during the January 2023 monitoring event was generally towards the south-southeast; and,
- Nine of 104 monitoring wells sampled had concentrations that exceeded guidelines for the vapour inhalation pathway (BH1912, BH1915, BH1979, BH4002, BH4003A, BH4006, BH4007, EX-5, and EX-7); three of 104 wells sampled exceeded the guidelines for the ecological direct soil pathway; 33 of 104 wells sampled exceeded the drinking water guidelines; for one or more petroleum hydrocarbon constituents (BTEX, F1, F2), or 1,2-Dichloroethane.

Based on a review of the groundwater analytical results, no changes to the GWMS program are proposed at this time.

The next groundwater monitoring and sampling is anticipated to be conducted in July 2023, in accordance with the semi-annual GWMS program.

# 6.0 LIMITATION OF LIABILITY, SCOPE OF REPORT AND THIRD-PARTY RELIANCE

This report has been prepared and the work referred to in this report has been undertaken by Parsons for Suncor Energy Products Partnership (Suncor). It is intended for the sole and exclusive use of Suncor Energy Inc., its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "Suncor"). Any use, reliance on or decision made by any person other than Suncor based on this report is the sole responsibility of such other person. Suncor and Parsons make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigations undertaken by Parsons with respect to this report and any conclusions or recommendations made in this report reflect Parsons' judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information examined at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed in this report. Substances other than those addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by Suncor, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Parsons. Nothing in this report is intended to constitute or provide a legal opinion.

# 7.0 CLOSURE

We trust the foregoing information is satisfactory for your requirements. If there are any questions or concerns regarding this report, please do not hesitate to contact the undersigned.

Respectfully submitted,

PARSONS INC.

R-Napolal

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# 8.0 **REFERENCES**

AEP 2022a. *Alberta Tier 1 Soil and Groundwater Remediation Guidelines*. Land Policy Branch, Policy and Planning Division, Alberta Environment and Parks. August 24, 2022.

AEP 2022b. *Alberta Tier 2 Soil and Groundwater Remediation Guidelines*. Land Policy Branch, Policy and Planning Division, Alberta Environment and Parks. August 24, 2022.

Clifton, 2022. Revised Remediation Plan (Version 4.0). Hounsfield Heights and Mall Areas, 1620 – 14<sup>th</sup> Avenue NW, Calgary, AB. Prepared by Clifton Engineering Group Inc. (Clifton) for Suncor Energy Products Partnership. March 31, 2022.

Intrinsik, 2022. *Development of Soil Vapour and Groundwater Quality Guidelines*. Prepared by Intrinsik Corp. for Suncor Energy Products Partnership. December 2022.

Parsons, 2022. Annual Summary Report – 2022, Former Sears Fuel Site and Adjacent Hounsfield Heights Area, 1620 – 14<sup>th</sup> Avenue NW, Calgary, Alberta, Suncor Outlet No. 9445. Prepared by Parsons Inc. (Parsons) for Suncor Energy Products Partnership. March 31, 2023.

#### **GROUNDWATER MONITORING RESULTS - JANUARY 2023**

ASSESSMENT LOCATION	TOP OF PIPE ELEVATION (masl)	GROUND SURFACE ELEVATION (masl)	SCREEN INTERVAL (mbgs)	DATE (yyyy/mm/dd)	SUBSURFACE VAPOUR CONCENTRATIONS <sup>1</sup>	FREE PRODUCT THICKNESS (mm)	POTENTIOMETRIC DEPTH <sup>3</sup> (mbgs)	POTENTIOMETRIC ELEVATION <sup>2</sup> (masl)
BH510A	1091.04	1091.15	11.3 - 17.4	2023/01/10	ND	ND	13.59	1077.56
BH732	1080.54	1080.60	4.3 - 14.9	2023/01/09	ND	ND	5.55	1075.06
BH912	1075.14	1075.23	1.5 - 6.1	2023/01/09	20	ND	2.60	1072.63
BH1102	1089.18	1089.25	7.6 - 15.2	2023/01/09	ND	ND	10.34	1078.91
BH1704	1089.46	1089.58	9.1 - 13.7	2023/01/10	250	ND	10.50	1079.09
BH1904	1090.49	1090.58	12.8 - 16.8	2023/01/13	210	ND	10.08	1080.50*
BH1905	1090.43	1090.57	3.1 - 6.1	2023/01/13	220	ND	3.87	1086.70
BH1906	1090.95	1091.03	11.6 - 19.2	2023/01/09	100	ND	11.71	1079.32
BH1907	1090.14	1090.22	8.8 - 18.0	2023/01/09	100%	ND	11.05	1079.17
BH1908	1089.44	1089.55	12.2 - 16.8	2023/01/09	290	ND	10.71	1078.84*
BH1909	1089.48	1089.56	5.5-7.4	2023/01/09	35	DRY	DRY	DRY
BH1910	1090.08	1090.23	11.0 - 18.6	2023/01/09	170	ND	11.37	1078.86
BH1911	1092.86	1092.96	14.3 - 18.3	2023/01/09	20	ND	13.82	1079.14*
BH1912	1091.04	1091.09	13.4 - 21.0	2023/01/13	60	ND	10.49	1080.60*
BH1913	1091.05	1091.11	6.4 - 10.0	2023/01/13	5	ND	5.66	1085.45*
BH1914	1091.03	1091.08	1.5 - 7.3	2023/01/13	10	ND	5.35	1085.73
BH1915	1091.06	1091.10	10.4 - 18.6	2023/01/13	40%	ND	10.20	1080.90*
BH1916	1091.06	1091.12	0.9 - 6.4	2023/01/13	5	ND	5.52	1085.60
BH1917	1089.39	1089.55	8.8 - 16.2	2023/01/09	NM (Could Not Find)	NM (Could Not Find)	NM (Could Not Find)	NM (Could Not Find)
BH1918	1087.23	1087.27	5.8 - 13.1	2023/01/12	40	ND	9.38	1077.89
BH1919	1085.47	1085.52	6.7 - 15.5	2023/01/09	60	ND	9.82	1075.70
BH1921	1088.92	1089.11	8.8 - 18.9	2023/01/10	25	ND	11.49	1077.62
BH1922	1087.65	1087.76	7.9 - 19.2	2023/01/10	70	ND	10.99	1076.76
BH1924	1093.31	1093.39	14.9 - 19.8	2023/01/16	70%	ND	14.18	1079.21*
BH1925	1091.15	1091.24	16.4 - 19.8	2023/01/11	10	ND	13.72	1077.53*
BH1926	1091.01	1091.13	7.6 - 23.5	2023/01/09	NM (Could Not Find)	NM (Could Not Find)	NM (Could Not Find)	NM (Could Not Find)
BH1927	1090.31	1090.45	12.2 - 22.3	2023/01/10	NM (Could Not Find)	NM (Could Not Find)	NM (Could Not Find)	NM (Could Not Find)
BH1928	1083.60	1083.72	6.4 - 16.8	2023/01/09	60	ND	8.29	1075.43
BH1929	1082.55	1082.67	5.5 - 14.9	2023/01/09	7%	ND	7.88	1074.79
BH1930	1088.51	1088.73	6.4 - 18.3	2023/01/10	NM	NM	NM	NM
BH1933	1090.41	1090.53	8.8 - 17.1	2023/01/13	30	ND	11.01	1079.53
BH1934	1090.47	1090.55	5.8 - 8.5	2023/01/13	85	ND	6.44	1084.11
BH1935	1090.48	1090.60	1.5 - 5.2	2023/01/16	ND	ND	4.58	1086.02
BH1936	1082.18	1082.26	5.3 - 14.7	2023/01/10	280	ND	7.60	1074.66
BH1937	1080.60	1080.75	8.8 - 12.8	2023/01/10	ND	ND	6.18	1074.58*
BH1938	1082.20	1082.30	3.7 - 5.2	2023/01/10	30	DRY	DRY	DRY
BH1939	1080.66	1080.75	8.1 - 8.7	2023/01/10	5	ND	6.22	1074.53*
BH1941	1073.80	1073.95	7.3 - 11.3	2023/01/09	55	ND	2.02	1071.92*
BH1942	1068.37	1068.54	4.4 - 8.5	2023/01/09	60	ND	1.80	1066.74*
BH1943	1078.72	1078.91	7.3 - 14.0	2023/01/11	NM (Could Not Find)	NM (Could Not Find)	NM (Could Not Find)	NM (Could Not Find)
BH1944	1077.12	1077.33	5.9 - 7.6	2023/01/11	15	ND	5.89	1071.44*
BH1945	1069.27	1069.36	3.7 - 6.4	2023/01/11	ND	ND	3.04	1066.32*

1 - ppmv if not indicated or % LEL if indicated.

2 - Calculated using product thicknesses corrected by a specific gravity of 0.75 g/cm<sup>3</sup>.

masl - metres above sea level

mbgs - metres below ground surface

mm - millimetres

ND - Not detected.

NM - Not monitored.

\* - Water level above top of screen. \*\* - Screen interval to be confirmed.

#### **GROUNDWATER MONITORING RESULTS - JANUARY 2023**

ASSESSMENT LOCATION	TOP OF PIPE ELEVATION (masl)	GROUND SURFACE ELEVATION (masl)	SCREEN INTERVAL (mbgs)	DATE (yyyy/mm/dd)	SUBSURFACE VAPOUR CONCENTRATIONS <sup>1</sup>	FREE PRODUCT THICKNESS (mm)	POTENTIOMETRIC DEPTH <sup>3</sup> (mbgs)	POTENTIOMETRIC ELEVATION <sup>2</sup> (masl)
BH1946	1064.57	1064.66	4.3 - 6.4	2023/01/11	45	ND	2.97	1061.69*
BH1947	1067.72	1067.83	4.3 - 6.1	2023/01/12	20	ND	1.68	1066.14*
BH1949	1091.06	1091.10	6.4 - 7.3	2023/01/09	ND	DRY	DRY	DRY
BH1950A	1091.04	1091.15	8.5 - 11.1	2023/01/11	60	ND	10.01	1081.14
BH1951	1068.02	1068.12	2.0 - 4.1	2023/01/11	35	ND	3.26	1064.85
BH1952	1090.81	1090.99	7.9 - 18.6	2023/01/10	40	ND	11.73	1079.26
BH1953	1091.28	1091.34	11.3 - 18.6	2023/01/12	15	ND	14.85	1076.49
BH1954	1076.76	1076.90	5.5 - 13.1	2023/01/09	5	ND	3.48	1073.42*
BH1955A	1073.95	1074.13	8.5 - 11.0**	2023/01/09	ND	ND	2.40	1071.73
BH1956	1084.76	1084.92	5.8 - 14.6	2023/01/11	50	NM (Blocked)	NM (Blocked)	NM (Blocked)
BH1957	1089.87	1089.98	5.8 - 14.1	2023/01/13	35	ND	10.01	1079.97
BH1958	1090.26	1090.41	5.8 - 14.9	2023/01/13	45	ND	9.78	1080.62
BH1961	1076.67	1076.79	8.5 - 11.9	2023/01/11	ND	ND	4.41	1072.38*
BH1962	1078.36	1078.48	9.8 - 12.5	2023/01/11	ND	ND	3.10	1075.38*
BH1963	1080.84	1080.96	5.5 - 11.3	2023/01/11	30	ND	4.98	1075.98*
BH1964	1076.77	1076.90	7.6 - 8.5	2023/01/11	ND	ND	4.24	1072.66*
BH1966	1089.42	1089.52	7.3 - 16.5	2023/01/09	5	ND	10.62	1078.90
BH1967	1090.10	1090.21	5.5 - 8.5	2023/01/09	85	ND	7.18	1083.03
BH1968	1090.08	1090.20	1.5 - 5.2	2023/01/09	45	DRY	DRY	DRY
BH1969	1089.39	1089.47	1.5 - 7.6	2023/01/09	15	DRY	DRY	DRY
BH1970	1089.22	1089.30	7.9 - 8.5	2023/01/09	100	DRY	DRY	DRY
BH1971	1090.76	1090.94	7.3 - 11.0	2023/01/09	ND	ND	7.23	1083.72*
BH1972	1088.79	1088.92	8.2 - 11.0	2023/01/10	45	ND	8.51	1080.41
BH1973	1090.81	1090.93	1.5 - 6.4	2023/01/09	35	ND	6.06	1084.87
BH1974	1090.07	1090.24	7.6 - 10.4	2023/01/09	ND	ND	6.62	1083.62*
BH1975	1090.23	1090.39	1.5 - 7.3	2023/01/09	25	ND	6.30	1084.09
BH1976	1092.63	1092.79	9.4 - 14.3	2023/01/09	ND	ND	8.34	1084.45*
BH1977	1074.04	1074.16	3.1 - 7.6	2023/01/09	ND	ND	1.18	1072.98*
BH1978	1069.24	1069.42	0.9 - 3.0	2023/01/11	ND	ND	2.37	1067.05
BH1979	1078.71	1078.78	2.8 - 6.7	2023/01/11	5	ND	5.74	1073.04
BH1980	1074.24	1074.31	4.3 - 6.1	2023/01/09	105	ND	2.62	1071.69*
BH1981	1076.99	1077.06	3.0 - 9.1	2023/01/09	50	ND	3.61	1073.45
BH1982	1080.85	1080.96	1.5 - 7.9	2023/01/10	ND	ND	6.39	1074.58
BH1983A	1090.59	1090.71	3.7 - 5.2**	2023/01/16	200	ND	9.61	1081.10
BH1984	1090.37	1090.46	7.3 - 15.5	2023/01/13	>100%	ND	8.74	1081.72
BH1985	1090.21	1090.31	6.4 - 17.4	2023/01/13	90	ND	8.54	1081.78
BH2001	1069.85	1069.94	3.4 - 4.9	2023/01/12	45	ND	1.00	1068.94*
BH2002	1070.03	1070.14	1.6 - 3.8	2023/01/09	ND	ND	2.56	1067.58
BH2003	1073.31	1073.48	1.5 - 4.6	2023/01/09	40	ND	2.88	1070.60
BH2004	1074.03	1074.18	4.9 - 6.4	2023/01/11	75	ND	5.08	1069.10
BH2005	1076.70	1076.84	3.95 - 7.0	2023/01/12	ND	ND	3.35	1073.49*
BH2006	1074.10	1074.24	2.3 - 4.9	2023/01/09	ND	ND	1.34	1072.90*

1 - ppmv if not indicated or % LEL if indicated.

2 - Calculated using product thicknesses corrected by a specific gravity of 0.75 g/cm<sup>3</sup>.
 masI - metres above sea level

mbgs - metres below ground surface

mm - millimetres

ND - Not detected.

NM - Not monitored.

\* - Water level above top of screen. \*\* - Screen interval to be confirmed.

#### **GROUNDWATER MONITORING RESULTS - JANUARY 2023**

ASSESSMENT LOCATION	TOP OF PIPE ELEVATION (masl)	GROUND SURFACE ELEVATION (masl)	SCREEN INTERVAL (mbgs)	DATE (yyyy/mm/dd)	SUBSURFACE VAPOUR CONCENTRATIONS <sup>1</sup>	FREE PRODUCT THICKNESS (mm)	POTENTIOMETRIC DEPTH <sup>3</sup> (mbgs)	POTENTIOMETRIC ELEVATION <sup>2</sup> (masl)
BH2007	1091.72	1091.86	12.8 - 18.3	2023/01/11	ND	ND	11.23	1080.63*
BH2008	1091.80	1091.93	5.2 - 12.8	2023/01/11	35	ND	7.58	1084.35
BH2010	1094.27	1094.38	14.0 - 18.9	2023/01/09	70	ND	13.72	1080.66*
BH2011	1094.07	1094.26	9.4 - 14.0	2023/01/09	80	ND	11.12	1083.15
BH2012	1094.72	1094.90	13.4 - 18.3	2023/01/11	ND	ND	13.58	1081.32
BH3001A	1070.46	1070.52	1.5 - 3.05	2023/01/12	ND	ND	1.30	1069.22*
BH3001B	1070.43	1070.50	3.7 - 4.3	2023/01/12	ND	ND	1.79	1068.72*
BH3001C	1070.35	1070.44	5.2 - 6.1	2023/01/12	10	ND	2.88	1067.55*
BH3002A	1073.25	1073.37	1.8 - 3.8	2023/01/12	20	ND	1.57	1071.80*
BH3002B	1073.22	1073.30	6.1 - 7.6	2023/01/12	35	ND	5.34	1067.96*
BH3003A	1073.08	1073.15	2.18 - 2.9	2023/01/12	110	ND	1.92	1071.24*
BH3003B	1072.95	1073.07	6.9 - 7.9	2023/01/12	5	ND	5.36	1067.71*
BH4002	1091.10	1091.00	11.7 - 13.2	2023/01/13	330	ND	9.37	1081.63*
BH4003A	1090.97	1090.87	10.5 - 12.0	2023/01/13	4%	ND	9.40	1081.47*
BH4003B	1090.97	1090.92	14.9 - 16.4	2023/01/13	50	ND	9.57	1081.35*
BH4004A	1090.69	1090.62	11.5 - 13.0	2023/01/13	100	ND	9.41	1081.213*
BH4004B	1090.71	1090.64	14.5 - 16.0	2023/01/13	5%	ND	9.65	1080.99*
BH4005	1090.41	1090.36	10.7 - 12.2	2023/01/13	45	ND	8.82	1081.54*
BH4006	1090.62	1090.51	10.7 - 12.2	2023/01/13	10%	ND	8.81	1081.70*
BH4007	1090.73	1090.65	10.6 - 12.1	2023/01/17	35	ND	9.14	1081.52*
BH4008A	1090.83	1090.74	10.5 - 12.0	2023/01/13	80	ND	9.00	1081.75*
BH4008B	1090.84	1090.76	15.2 - 16.7	2023/01/13	25	ND	9.37	1081.39*
BH4009A	1091.52	1091.43	10.5 - 12.0	2023/01/13	150	ND	9.83	1081.60*
BH4009B	1091.56	1091.44	14.5 - 16	2023/01/13	20	ND	9.88	1081.56*
BH5001	1069.38	1069.47	1.5 - 3.05	2023/01/12	50	ND	1.57	1067.90
BH5002	1065.68	1065.83	1.5 - 3.05	2023/01/12	80	ND	1.72	1064.10
BH6001	1089.36	1089.47	9.75 - 12.8	2023/01/10	ND	ND	11.22	1078.25
BH6002	1089.55	1089.67	10.65 - 13.7	2023/01/10	60	ND	11.12	1078.55
BH6003	1089.77	1089.88	9.75 - 12.8	2023/01/10	5%	ND	11.02	1078.87
BH6004	1089.66	1089.78	9.15 - 12.2	2023/01/09	150	ND	10.66	1079.12
BH6005	1089.08	1089.31	9.15 - 12.2	2023/01/09	ND	ND	10.19	1079.12
BH6006	1091.38	1091.50	12.2 - 15.2	2023/01/11	45	ND	13.80	1077.70
EX-1	1088.62	1089.25	11.7 - 14.63	2023/01/11	NM (Could Not Open)	NM (Could Not Open)	NM (Could Not Open)	NM (Could Not Open)
EX-2	1087.85	1088.48	8.8 - 13.41	2023/01/10	ND	ND	13.41	1075.07
EX-3	1088.46	1089.09	8.2 - 12.8	2023/01/10	10	ND	12.13	1076.96
EX-4	1089.44	1090.07	10.3 - 13.72	2023/01/10	15	ND	10.54	1079.54
EX-5	1090.31	1090.94	10.6 - 13.72	2023/01/10	10	ND	10.82	1080.12
EX-6	1090.45	1091.08	10.6 - 13.11	2023/01/19	100	ND	11.55	1079.53
EX-7	1088.92	1089.55	11.5 - 15.85	2023/01/16	20	ND	11.54	1078.01

1 - ppmv if not indicated or % LEL if indicated.

2 - Calculated using product thicknesses corrected by a specific gravity of 0.75 g/cm<sup>3</sup>.

masl - metres above sea level

mbgs - metres below ground surface mm - millimetres ND - Not detected.

NM - Not monitored.

\* - Water level above top of screen.

\*\* - Screen interval to be confirmed.

**GROUNDWATER ANALYTICAL DATA - JANUARY 2023** 

Well ID	Second Second (second		CONSTITUENT	Benzene	e Toluene	Ethylbenzene	Total Xylenes	Petroleum Hydrocarbons F1 (C6-C10) <sup>b</sup>	Petroleum s Hydrocarbons F2 (>C10-C16) <sup>c</sup>	5 1,2- Dichloroethane	Alkalinity, Total (as CaCO <sub>3</sub> )	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (uS/cm)	/ Fluoride	Hardness ∣ (CaCO <sub>3</sub> )	Hydroxide (OH)	lron (filtered)	Magnesium (filtered)	Manganese (filtered)	e pH (unitless)	Potassiu m (filtered)	Sodium (filtered)	Sodium Adsorption Ratio (unitless)	Sulphate (filtered)	Total Dissolved Solids (TDS)	Nitrate (as N) (filtered)	Nitrate (as NO <sub>3</sub> ) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO <sub>2</sub> ) (filtered)	Nitrate + Nitrite - N
Guideline	s <sup>a</sup> :	Guideline Referenced	a Sample Date																												
Domes	tic Use Aquifer Pathway			0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapou	r Inhalation Pathway:																														
I	N1 Area (Tier 2)			16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
I	N2 Area (Tier 2)			12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
:	S1 Area (Tier 2)			0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
:	S2 Area (Tier 2)			0.57	NG	NG	44	19	NG 17	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Commercial area, Coarse-graine	a Coorco grainad		0.07	45	31	20	0.81	17	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Residential/Residential Burler ar	ea, Coarse-grained		0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecoloc	ical Soil Contact Pathway:												110		NO						NO						NO		NO		
	N1, N2, S1, S2 Areas (Residentia	I, most stringent of fine or	r coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Commercial area, Coarse-graine	d		350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
I	Residential/Residential Buffer ar	rea, Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Residential, Fine-grained			100 NG	82 NG	42 NG	21 NG	6.5	1.8	NG	NG	NG	NG	NG	NG 1.5	NG	NG	NG	NG	NG	NG	NG	NG 200	NG	NG 420	NG	NG	NG	NG	NG	NG
Most s	tringent guideline for Routine Pa	arameters		NG	NO	NO	NG	NG	NG	NO	NO	NO	120	NO	1.5	140	NG	0.5	NO	0.02	0.5-0.5	NO	200	NO	423	500	5	NG	0.02	NG	NO
BH510A	11.3 - 17.4	N I	2023-01-19	0.169	0.0115	0.348	0.0208	1.1	0.2	<u>0.019</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DU 700	11.3 - 17.4	N1	2023-01-19 Dup	<u>0.172</u>	0.0114	<u>0.358</u>	0.0193	1.0	0.1	0.020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH/32	4.3 - 14.9	N2	2023-01-19	< 0.0005	<0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH912	1.0 - 0.1	51	2023-01-18	< 0.0005	<0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1102	7.6 - 15.2	N1	2023-01-17	< 0.0005	<0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1704	9.1 - 13.7	N I	2023-01-19	0.121	<u>0.655</u>	0.0538	2.63	<u>3.0</u>	<u>6.0</u>	0.020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1904	12.0 - 10.0	Commercial area	2023-01-18	0.114	<0.0003	<0.0005	0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUMOOC	12.0 - 10.0	N1	2023-01-18 Dup	0.115	<0.0003	<0.0005	0.0006	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH 1900	11.6 10.2	N1	2023-01-17	1.00	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.028	402	184	<u>311</u>	1970	0.20	070	<0	<0.1	101	0.677	7.51	4.7	50.8	0.75	37.8	1130	<u>31.2</u>	138	<u>5.39</u>	17.7	30.0
DI 14007	8.8 18.0	N1	2023-01-17 Dup	<u>1.02</u>	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.028	459	184	314	1970	0.12	871	<0	<0.1	100	0.674	7.49	4.7	50.0	0.74	37.3	1130	31.0	140	<u> 3.34</u>	18.2	37.2
BH 1907	12.2 16.8	N1	2023-01-17	0.387	<u>2.82</u>	0.000	4.90	<u>2.8</u>	0.7	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH 1908	12.2 - 10.0	N1	2023-01-17	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	- 142	-	-	- 0.15	- 017	-	-	-	-	- 7 50	-	-	-	-	-	-	-	-	-	-
DU 1910	11.0 - 18.6	N1	2023-01-17	0.135	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.022	504	140	<u>347</u>	1940	0.15	917	<5	<0.1	130	0.573	7.52	3.Z	40.2	0.00	27.4	1000	1.10	0.1	0.04	0.14	1.19
DU1011	14.3 - 18.3	N1	2023-01-17 Dup	<u>0.130</u>	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<u>0.021</u>	204	145	<u>341</u>	1940	0.14	921	<0	<0.1	137	0.5//	1.00	3.2	40.7	0.07	21.2	1000	1.15	5.1	0.05	0.15	1.20
	13.4 - 21.0	Residential Buffer	2023-01-17	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	64-100	Residential Buffer	2023-01-13	<u>0.007</u>	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<u>0.015</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101/	15-73	Residential Buffer	2023-01-13	<0.0005				<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10.4 - 18.6	Residential Buffer	2023-01-13	0.0005	0.0003	0.0005	<0.0005 0.012	14	0.1	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01913	10.4 - 18.6	Residential Buffer	2023-01-13	0.0375	0.0000	0.0029	0.013	1.4	0.3	0.015	·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1016	0.01 6.4	Residential Buffer	2023-01-13 Dup	<0.0005	<0.0007	<0.0005		1.J <0.1	0.4 ∠0.1	<0.010		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1918	5.8 - 13.1	N1	2023-01-19	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	585	150	389	2230	0.05	955	<5	<0.1	141	<0.005	7.69	4.9	85.1	1.20	50.1	1220	<u>9.87</u>	43.7	<0.01	<0.05	9.87

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - BTEX have been subtracted from the fraction.

c - Naphthalene has not been subtracted from the fraction.

d - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample.

NA - Not applicable.

NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

 Highlighted
 Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

 Highlighted
 Exceeds referenced guideline for the vapour inhalation pathway.

BOLD - Exceeds most stringent guideline for routine water quality parameters.

**GROUNDWATER ANALYTICAL DATA - JANUARY 2023** 

Well ID	Screen Interval (mbr	c) Guideline Poference	CONSTITUENT	Benzene	Toluene	Ethylbenzene	Total Xylenes	Petroleum Hydrocarbons F1 (C6-C10) <sup>b</sup>	Petroleum Hydrocarbons F2 (>C10-C16) <sup>c</sup>	1,2- Dichloroethane	Alkalinity, Total (as CaCO <sub>3</sub> )	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (uS/cm)	/ Fluoride	Hardness (CaCO <sub>3</sub> )	Hydroxide (OH)	e Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	e pH (unitless)	Potassiu m (filtered)	Sodium (filtered)	Sodium Adsorption Ratio (unitless)	Sulphate (filtered)	Total Dissolved Solids (TDS)	Nitrate (as N) (filtered)	Nitrate (as NO <sub>3</sub> ) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO <sub>2</sub> ) (filtered)	Nitrate + Nitrite - N
Guideline	s <sup>a</sup> :																														
Domes	stic Use Aquifer Pathway			0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapou	r Inhalation Pathway:																														
I	N1 Area (Tier 2)			16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
I	N2 Area (Tier 2)			12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
:	S1 Area (Tier 2)			0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	S2 Area (Tier 2)			0.57	NG	NG	44	19	NG 17	0.12	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Commercial area, Coarse-grail	ied Srea Coarso grained		0.37	45	31	20	0.81	17	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Residential Fine-grained	area, coarse-graineu		0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecoloc	nical Soil Contact Pathway:												no		no						no						NO		NO		
	N1, N2, S1, S2 Areas (Resident	ial, most stringent of fine or	r coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Commercial area, Coarse-grain	ed		350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
I	Residential/Residential Buffer	area, Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
I	Residential, Fine-grained			100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most s	tringent guideline for Routine	Parameters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	0.0-0.0	NG	200	NG	429	500	3	NG	0.02	NG	NG
BH1919	6.7 - 15.5	N2	2023-01-19	< 0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1922	7.9 - 19.2	N2	2023-01-19	< 0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1925	16.4 - 19.8	N1	2023-01-19	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	486	70.0	106	1480	0.15	669	<5	<0.1	120	<0.005	7.86	2.2	48.5	0.82	158	814	2.76	12.2	<0.01	<0.05	2.76
BH1928	6.4 - 16.8	N2	2023-01-18	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	530	268	<u>797</u>	3380	0.15	1520	<5	<0.1	207	0.014	7.54	6.3	110	1.23	40.9	<u>1950</u>	43.8	194	0.03	0.11	43.9
BH1929	5.5 - 14.9	N2	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5.5 - 14.9	N2	2023-01-18 Dup	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1930	6.4 - 18.3	N2	2023-01-19	0.0029	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1933	8.8 - 17.1	Residential Buffer	2023-01-18	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1934	5.8 - 8.5	Residential Buffer	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1935	1.5 - 5.2	Residential Buffer	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1936	5.3 - 14.7	S1	2023-01-20	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5.3 - 14.7	S1	2023-01-20 Dup	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1937	5.3 - 14.7	S1	2023-01-19	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1939	8.1 - 8.7	S1	2023-01-19	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<u>0.051</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1942	4.4 - 8.5	S2	2023-01-19	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.4 - 8.5	S2	2023-01-19 Dup	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1944	5.9 - 7.6	S1	2023-01-19	<u>0.0155</u>	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	469	107	25.6	959	0.12	524	<5	<0.1	62.3	0.260	7.75	2.9	12.2	0.23	46.3	554	2.48	11.0	0.05	0.16	2.53
BH1945	3.7 - 6.4	S2	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1950A	8.5 - 11.1	N1	2023-01-19	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-		-		-	-
BH1951	2.0 - 4.1	Residential	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1952	7.9 - 18.6	N1	2023-01-19	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-		-		-	-
BH1953	11.3 - 18.6	N1	2023-01-19	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	651	186	<u>324</u>	2120	0.12	1000	<5	<0.1	131	<u>0.182</u>	7.58	5.7	78.0	1.07	41.6	<u>1210</u>	<u>9.87</u>	43.7	<0.01	<0.05	9.87

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - BTEX have been subtracted from the fraction.

c - Naphthalene has not been subtracted from the fraction.

d - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample.

NA - Not applicable.

NG - No Guideline.

<u>Italics</u> - Exceeds guideline for the domestic use aquifer pathway solely. Highlighted - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

Highlighted - Exceeds referenced guideline for the vapour inahalation pathway. <u>BOLD</u> - Exceeds most stringent guideline for routine water quality parameters.

**GROUNDWATER ANALYTICAL DATA - JANUARY 2023** 

Well ID	Screen Interval (mb	as) Guideline Reference	CONSTITUENT	Benzene	Toluene	Ethylbenzene	Total Xylenes	Petroleum Hydrocarbons F1 (C6-C10) <sup>b</sup>	Petroleum Hydrocarbons F2 (>C10-C16) <sup>c</sup>	1,2- Dichloroethane	Alkalinity, Total (as CaCO <sub>3</sub> )	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (uS/cm)	/ Fluoride	Hardness (CaCO <sub>3</sub> )	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassiu m (filtered)	Sodium (filtered)	Sodium Adsorption Ratio (unitless)	Sulphate (filtered)	Total Dissolved Solids (TDS)	Nitrate (as N) (filtered)	Nitrate (as NO <sub>3</sub> ) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO <sub>2</sub> ) (filtered)	Nitrate + Nitrite - N
Guidelines <sup>a</sup> :		3-,																													
Domestic	Use Aquifer Pathway			0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Ini	halation Pathway:																														
N1 A	Area (Tier 2)			16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2 /	Area (Tier 2)			12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 A	Area (Tier 2)			0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S2 A	Area (Tier 2)	ined		0.57	NG	NG	44 26	19 Q 1	NG 17	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Con	imercial area, coarse-gra	r area Coarse-grained		0.03	45	31	20	0.81	15	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	idential. Fine-grained	alea, coalse-graineu		0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecological	Soil Contact Pathway:																														
N1,	N2, S1, S2 Areas (Reside	ntial, most stringent of fine o	or coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Com	nmercial area, Coarse-gra	ined		350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Res	idential/Residential Buffe	r area, Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	idential, Fine-grained			100 NG	82 NG	42 NG	21 NG	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG 0.02	NG	NG	NG 200	NG	NG	NG	NG	NG	NG	NG	NG
Most strin	gent guideline for Routin	e Parameters		NG	NO	NO	NG	140	NO	NO	NO	NO	120	NO	1.5	NO	NG	0.5	NO	0.02	0.5-0.5	NG	200	NO	423	500	J	NG	0.02	110	NG
BH1954	5.5 - 13.1	S1	2023-01-18	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-
BH1955A	8.5 - 11.0°	S2	2023-01-18	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-
BH1957	5.8 - 14.1	Commercial area	2023-01-18	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1958	5.8 - 14.9	Commercial area	2023-01-18	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	482	140	<u>238</u>	1600	0.16	707	<5	<0.1	86.7	<0.005	7.67	4.0	61.4	1.01	38.3	874	2.42	10.7	<0.01	<0.05	2.42
BH1961	8.5 - 11.9	N2	2023-01-20	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1962	9.8 - 12.5	N2	2023-01-20	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	319	69.1	5.0	580	0.28	293	<5	<0.1	29.3	0.169	7.97	1.9	16.0	0.41	20.6	338	0.16	0.7	0.02	0.07	0.18
BH1963	5.5 - 11.3	N2	2023-01-20	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1964	7.6 - 8.5	N2	2023-01-20	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1966	7.3 - 16.5	N1	2023-01-17	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1967	5.5 - 8.5	N1	2023-01-17	<u>0.0900</u>	0.0072	<u>0.0114</u>	0.0009	<u>2.4</u>	0.3	<u>0.019</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1971	7.3 - 11.0	N1	2023-01-17	0.0037	0.0004	0.0083	<0.0005	1.4	0.2	<u>0.046</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1972	8.2 - 11.0	N2	2023-01-19	< 0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1973	1.5 - 6.4	N1	2023-01-17	0.0034	0.0007	0.0067	<0.0005	0.8	0.2	<u>0.018</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1974	7.6 - 10.4	N1	2023-01-17	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1976	9.4 - 14.3	N1	2023-01-17	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1977	3.1 - 7.6	S2	2023-01-18	<u>0.0646</u>	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-
BH1978	0.9 - 3.0	S2	2023-01-18	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1979	2.8 - 6.7	S1	2023-01-19	<u>1.11</u>	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<u>0.009</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1980	4.3 - 6.1	S2	2023-01-19	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1981	3.0 - 9.1	S1	2023-01-18	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<u>0.027</u>	·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3.0 - 9.1	S1	2023-01-18 Dup	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<u>0.026</u>	·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1982	1.5 - 7.9	S1	2023-01-19	<u>0.0477</u>	0.0055	<u>0.0301</u>	0.0029	0.4	<0.1	0.097	·	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	1.5 - 7.9	51	2023-01-19 Dup	0.0463	0.006	<u>0.0331</u>	0.0031	0.4	<0.1	<u>0.111</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - BTEX have been subtracted from the fraction.

c - Naphthalene has not been subtracted from the fraction.

d - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample.

NA - Not applicable.

NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

Highlighted - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

Highlighted - Exceeds referenced guideline for the vapour inabalation pathway.

BOLD - Exceeds most stringent guideline for routine water quality parameters.

**GROUNDWATER ANALYTICAL DATA - JANUARY 2023** 

			CONSTITUENT	Benzene	Toluene	Ethylbenzene	Total Xylenes	Petroleum Hydrocarbons F1 (C6-C10) <sup>b</sup>	Petroleum Hydrocarbons F2 (>C10-C16) <sup>c</sup>	1,2- Dichloroethane	Alkalinity, Total (as CaCO <sub>3</sub> )	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (uS/cm)	y Fluoride	Hardness   (CaCO <sub>3</sub> )	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassiu m (filtered)	Sodium (filtered)	Sodium Adsorption Ratio (unitless)	Sulphate (filtered)	Total Dissolved Solids (TDS)	Nitrate (as N) (filtered)	Nitrate (as NO <sub>3</sub> ) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO <sub>2</sub> ) (filtered)	Nitrate + Nitrite - N
Well ID Guidelines <sup>a</sup>	Screen Interval (mbgs)	Guideline Referenced	d Sample Date																												
Domestic Use	Aquifer Pathway			0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Inhalati	tion Pathway:										-		no		no						No						no		NO		
N1 Area	(Tier 2)			16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2 Area	(Tier 2)			12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 Area	(Tier 2)			0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S2 Area	(Tier 2)			0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Commer	rcial area, Coarse-grained			0.37	NG	NG	26	9.1	1/	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resident	tial/Residential Buffer area,	, Coarse-grained		0.03	45 NC	31	2.2	10	1.5 NC	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resident	itiai, Fine-grained			0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N1. N2. S	S1, S2 Areas (Residential, n	nost stringent of fine or	r coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Commer	rcial area, Coarse-grained	noor or ingent of the of	oouloe grainea)	350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resident	tial/Residential Buffer area,	, Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resident	tial, Fine-grained	-		100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most stringent	t guideline for Routine Para	meters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	6.5-8.5	NG	200	NG	429	500	3	NG	0.02	NG	NG
BH1983A	3.7 - 5.2 <sup>d</sup>	Commercial area	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1984	7.3 - 15.5	Commercial area	2023-01-18	0.0019	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	538	114	<u>150</u>	1450	0.19	729	<5	<0.1	108	0.574	7.72	4.1	27.2	0.44	41.3	<u>811</u>	8.54	37.8	<u>0.15</u>	0.50	8.69
BH1985	6.4 - 17.4	Residential Buffer	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2001	3.4 - 4.9	S2	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2002	1.6 - 3.8	S2	2023-01-18	<0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2003	1.5 - 4.6	S2	2023-01-19	-	-	-	-	-	-	-	486	100	<u>141</u>	1320	0.12	545	<5	<0.1	71.7	0.044	7.81	3.1	74.7	1.39	60.3	749	0.18	0.8	<0.01	<0.05	0.18
	1.5 - 4.6	S2	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2004	4.9 - 6.4	S2	2023-01-19	<0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.9 - 6.4	S2	2023-01-19 Dup	<0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2005	3.95 - 7	S2	2023-01-18	0.0010	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2006	2.3 - 4.9	S2	2023-01-18	<0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2007	12.8 - 18.3	Residential Buffer	2023-01-17	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2008	5.2 - 12.8	Residential Buffer	2023-01-17	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2010	14.0 - 18.9	Residential Buffer	2023-01-19	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	359	91.5	34.7	778	0.12	403	<5	<0.1	42.4	0.080	7.83	2.9	6.8	0.15	35.4	446	2.80	12.4	<u>0.14</u>	0.46	2.94
BH2011	9.4 - 14.0	Residential Buffer	2023-01-19	< 0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2012	13.4 - 18.3	Residential Buffer	2023-01-20	< 0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	< 0.001	473	141	305	1860	0.21	875	<5	<0.1	127	0.152	7.66	4.6	45.3	0.67	62.0	1060	18.4	81.5	0.02	0.08	18.4
BH3001A	1.5 - 3.05	Residential	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	591	161	278	1950	0.11	904	<5	<0.1	122	< 0.005	7.91	4.5	65.4	0.95	53.3	1100	13.5	59.7	<0.01	<0.05	13.5
BH3001B	3.7 - 4.3	Residential	2023-01-18	< 0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001		-	-		-	-	-	-			-	-			-	-	-	-	-	-	-
BH3001C	5.2 - 6.1	Residential	2023-01-18	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-		-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-
BH3002A	1.8 - 3.8	Residential	2023-01-18	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-		-	-	-	-	-	-	-	-	-		-	-		-	-			-
BH3002B	6.1 - 7.6	Residential	2023-01-18	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - BTEX have been subtracted from the fraction.

c - Naphthalene has not been subtracted from the fraction.

d - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample.

NA - Not applicable.

NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

Highlighted - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

Highlighted - Exceeds referenced guideline for the vapour inabalation pathway.

BOLD - Exceeds most stringent guideline for routine water quality parameters.

**GROUNDWATER ANALYTICAL DATA - JANUARY 2023** 

			CONSTITUENT	Benzene	Toluene	Ethylbenzene	Total Xylenes	Petroleum Hydrocarbons F1 (C6-C10) <sup>b</sup>	Petroleum Hydrocarbons F2 (>C10-C16) <sup>c</sup>	1,2- Dichloroethane	Alkalinity, Total (as CaCO <sub>3</sub> )	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (uS/cm)	/ Fluoride	Hardness (CaCO <sub>3</sub> )	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	e pH (unitless)	Potassiu m (filtered)	Sodium (filtered)	Sodium Adsorption Ratio (unitless)	Sulphate (filtered)	Total Dissolved Solids (TDS)	Nitrate (as N) (filtered)	Nitrate (as NO <sub>3</sub> ) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO <sub>2</sub> ) (filtered)	Nitrate + Nitrite - N
Guidelines <sup>a</sup> :	Screen Interval (mbgs)	Guideline Referenced	Sample Date																												
Domestic	Use Aquifer Pathwav			0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Ini	halation Pathway:																														
N1 A	Area (Tier 2)			16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2 /	Area (Tier 2)			12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 A	Area (Tier 2)			0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S2 A	Area (Tier 2)			0.57	NG	NG	44	19	NG 17	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Con	imercial area, Coarse-grained	a Coarse-grained		0.07	45	31	20	0.81	15	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	idential. Fine-grained	a, coarse-gramed		0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecological	Soil Contact Pathway:																														
N1,	N2, S1, S2 Areas (Residential,	most stringent of fine or	coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Com	nmercial area, Coarse-grained			350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Res	idential/Residential Buffer area	a, Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi Mont strin	idential, Fine-grained			100 NG	82 NG	42 NG	21 NG	6.5 NG	1.8 NG	NG NG	NG NG	NG NG	NG 120	NG	NG 1.5	NG NG	NG NG	NG 0.3	NG NG	NG 0.02	NG 6 5-8 5	NG NG	NG 200	NG NG	NG 429	NG 500	NG 3	NG NG	NG 0.02	NG NG	NG NG
Most string	2 18 2 0	Desidential	0000 04 40			.0.0005	-0.0005						.20					0.0		0.02	0.0 0.0		200		120		•		0.02		
BH3003A	2.10-2.9	Residential	2023-01-18	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3003B	0.9 - 7.9		2023-01-18	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4002	10.5 12		2023-01-18	0.0071	0.0000	0.0005	2.66	1.9	0.5	<0.001		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4003A	14.0 16.4	Commercial area	2023-01-18	<u>2.33</u>	0.0030	<0.0005	0.0007	0.2	0.2	0.195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4003B	11.5 - 13	Commercial area	2023-01-18	<u>0.0187</u>	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
	14.5 - 16	Commercial area	2023-01-10	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4004B	10.7 - 12.2	Commercial area	2023-01-10	0.0117	0.0003	0.0003	<0.0005	0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4006	10.7 - 12.2	Residential Buffer	2023-01-10	0.460	0.0004	<0.0005	-0.0003 0 0300	0.4	<0.1	0.001			_	_	_	_	_	_	_	_		_	_	_	_	_	_	_	_		_
BH4007	10.6 - 12.1	Commercial area	2023-01-10	0.689	0.0012	<0.0005	0.0142	0.4	0.1	0.025	642	120	735	3370	0.24	1490	<5	<0.1	290	0 532	7 71	5.4	135	1 52	32.9	1800	16.9	75.0	5.63	18.5	22.6
BH4008A	10.5 - 12	Residential Buffer	2023-01-18	< 0.0005	0.0046	<0.0005	0.0465	0.2	<0.1	< 0.001	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
BH4008B	15.2 - 16.7	Residential Buffer	2023-01-18	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001			-	-	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-
BH4009A	10.5 - 12	Residential Buffer	2023-01-18	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.004	. I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
BH4009B	14.5 - 16	Residential Buffer	2023-01-18	< 0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	0.003	- I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
BH5001	1.5 - 3.05	S2	2023-01-18	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001			-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-
BH5002	1.5 - 3.05	S2	2023-01-18	< 0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	- I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1.5 - 3.05	S2	2023-01-18 Dup	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	- I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6001	9.75 - 12.8	N1	2023-01-19	0.0037	0.0005	0.0161	0.0020	0.1	<0.1	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6002	10.65 - 13.7	N1	2023-01-19	0.0699	0.423	<u>0.532</u>	<u>4.30</u>	<u>3.4</u>	0.7	0.030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6003	9.75 - 12.8	N1	2023-01-19	<u>0.0191</u>	<u>0.744</u>	<u>0.291</u>	4.69	4.2	<u>1.9</u>	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6004	9.15 - 12.2	N1	2023-01-17	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6005	9.15 - 12.2	N1	2023-01-17	<u>0.840</u>	<u>0.639</u>	<u>0.110</u>	<u>0.875</u>	<u>2.8</u>	0.5	<u>0.024</u>	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - BTEX have been subtracted from the fraction.

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Dup - Duplicate sample.

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**GROUNDWATER ANALYTICAL DATA - JANUARY 2023** 

Well ID	Saraan Internal (mbr	ua) Guidalina Bafara	CONSTITUENT	Benzene	e Toluene	Ethylbenzene	Total Xylenes	Petroleum Hydrocarbons F1 (C6-C10) <sup>b</sup>	Petroleum s Hydrocarbons F2 (>C10-C16) <sup>c</sup>	1,2- Dichloroethane	Alkalinity, Total (as CaCO <sub>3</sub> )	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (uS/cm)	Fluoride	Hardness (CaCO <sub>3</sub> )	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassiu m (filtered)	Sodium (filtered)	Sodium Adsorption Ratio (unitless)	Sulphate (filtered)	Total Dissolved Solids (TDS)	Nitrate (as N) (filtered)	Nitrate (as NO <sub>3</sub> ) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO <sub>2</sub> ) (filtered)	Nitrate + Nitrite - N
Guidelines	Screen interval (inb)	s) Guidelille Refere	anceu Sample Date																												
Domesti	c Use Aquifer Pathway			0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour I	nhalation Pathway:																														
N1	1 Area (Tier 2)			16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2	2 Area (Tier 2)			12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1	l Area (Tier 2)			0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S2	2 Area (Tier 2)			0.57	NG	NG	44	19	NG 17	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Co	ommercial area, Coarse-gra	ned		0.37	NG 45	31	20	9.1	1/	0.15	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Re	esidential/Residential Buπer esidential Fine-grained	area, Coarse-grained		0.03	45 NG	NG	44	19	NG	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Fcologia	al Soil Contact Pathway:			0.01									NO		NO						NO						NG		NO		
_conogic N1	1, N2, S1, S2 Areas (Resider	tial, most stringent of fi	ne or coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Co	ommercial area, Coarse-grai	ned	<b>,</b>	350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Re	esidential/Residential Buffer	area, Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Re	esidential, Fine-grained			100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most str	ingent guideline for Routine	Parameters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	6.5-8.5	NG	200	NG	429	500	3	NG	0.02	NG	NG
BH6006	12.2 - 15.2	N1	2023-01-19	<0.0005	6 <0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-2	8.8 - 13.41	N1	2023-01-19	0.0035	0.0005	0.0016	< 0.0005	<0.1	<0.1	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-3	8.2 - 12.8	N1	2023-01-19	<0.0005	i <0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-4	10.3 - 13.72	N1	2023-01-19	<u>0.188</u>	0.0141	0.304	<u>0.683</u>	1.9	1.0	<u>0.008</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-5	10.6 - 13.72	N1	2023-01-19	<u>5.46</u>	<u>10.1</u>	1.46	<u>6.71</u>	<u>10.2</u>	<u>1.2</u>	<u>0.131</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-6	10.6 - 13.11	N1	2023-01-19	<u>0.352</u>	0.349	1.08	<u>3.05</u>	2.4	0.7	<u>0.035</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-7	11.5 - 15.85	N1	2023-01-19	0.322	0.454	0.878	2.37	4.4	<u>1.2</u>	<u>0.051</u>	497	144	402	1980	0.13	899	<5	<0.1	131	0.576	7.41	2.2	46.7	0.68	2.5	<u>1030</u>	0.18	0.8	<0.01	<0.05	0.18
EB-Bailer-01	NA	Most Stringer	nt 2023-01-18	< 0.0005	i <0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EB-Bailer-02	2 NA	Most Stringer	nt 2023-01-19	< 0.0005	i <0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EB-Bailer-03	8 NA	Most Stringer	nt 2023-01-20	< 0.0005	i <0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EB-Hydra-07	1 NA	Most Stringer	nt 2023-01-18	< 0.0005	i <0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EB-Hydra-02	2 NA	Most Stringer	nt 2023-01-19	<0.0005	i <0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EB-Hydra-03	3 NA	Most Stringer	nt 2023-01-20	<0.0005	i <0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-0	1 NA	Most Stringer	nt 2023-01-13	< 0.0005	i <0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-0	2 NA	Most Stringer	nt 2023-01-17	< 0.0005	i <0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-0	3 NA	Most Stringer	nt 2023-01-18	< 0.0005	i <0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-0	4 NA	Most Stringer	nt 2023-01-18	< 0.0005	o <0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-0	5 NA	Most Stringer	nt 2023-01-18	< 0.0005	o <0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-0	6 NA	Most Stringer	nt 2023-01-18	<0.0005	o <0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-
Trip Blank-0	7 NA	Most Stringer	nt 2023-01-19	<0.0005	o <0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-0	8 NA	Most Stringer	nt 2023-01-19	<0.0005	o <0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-0	9 NA	Most Stringer	nt 2023-01-19	<0.0005	i <0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank-1	0 NA	Most Stringer	nt 2023-01-20	<0.0005	i <0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - BTEX have been subtracted from the fraction.

c - Naphthalene has not been subtracted from the fraction.

d - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample.

NA - Not applicable.

NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

Highlighted - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

Highlighted - Exceeds referenced guideline for the vapour inabalation pathway.

BOLD - Exceeds most stringent guideline for routine water quality parameters.



PARSO	INS	1
		Drawing No .:
	Reviewed By: MP	Date: 26-Mar-2023
	Drawn By: JDC	Ref. No.: 10-12832



## LEGEND

- —— Grade Elevation Contour (masl) (1m
- Site Boundary



- Notes: The orthophoto based on City of Calgary Basemap (WMASP), July-August 2022. Elevation data based on City of Calgary's Open Data Portal, City Online, Base Map Data service. Downloaded January 2023.

# Site Topography

Hounsfield Heights And Lion's Park 1620-14th Ave NW, Calgary, Alberta

	Drawn By: JDC	Ref. No.: 10-12832
	Reviewed By: MP	Date: 29-Mar-2023
		Drawing No .:
PARSC	INS	2









APPENDIX A

GROUNDWATER MONITORING AND SAMPLING PROCEDURES

## APPENDIX A GROUNDWATER MONITORING AND SAMPLING PROCEDURES

## HEALTH AND SAFETY

Consistent with Parsons' policy and Suncor's requirements, the completed work was carried out in accordance with a site-specific health and safety plan. This plan, as a minimum, complied with provincial requirements as well as Parsons' and Suncor's health and safety guidelines, whichever were more stringent.

## **A**PPROVALS

Prior to doing any site work, approval to proceed was obtained from the client. When monitoring or investigative work was required on public or third-party lands, the necessary approvals were obtained from the municipality or the property owner prior to commencing any work.

## MONITORING EQUIPMENT MAINTENANCE - RKI EAGLE

RKI Eagle gas monitors are maintained as per the manufacturer's specifications and calibrated daily. The RKI units are calibrated as required for zero-point measurement and using a single hexane standard in the percent of the lower explosive limit (LEL) range. Prior to use, the RKI Eagle is checked for battery charge and presence of flow rate. Prior to measurement in the field, the RKI Eagle is activated for a minimum of 15 minutes. The RKI Eagle is operated in methane elimination mode.

## **MONITORING PROCEDURE**

Groundwater monitoring and extraction wells were accessed to determine subsurface vapour concentrations using a hexane calibrated RKI Eagle with methane elimination. This was done by inserting the collection tube of the RKI Eagle into the riser pipe (approximately 0.5m below grade) and recording the peak instrument reading.

The depth to the water table and presence or absence of liquid-phase hydrocarbons (LPH) in the wells were determined with an oil/water interface probe that was cleaned with a solution of phosphate-free detergent and water and rinsed with distilled water between monitoring wells. If the interface probe indicated thicknesses of LPH less than 5 mm, the presence of product was confirmed with a clean disposable bailer. If measurable LPH is observed in any well, Parsons's protocol is not to collect a groundwater sample from that well. However, groundwater samples are collected from wells if a sheen is observed.

## **GROUNDWATER SAMPLING PROCEDURE**

Groundwater samples were collected from the groundwater monitoring and extraction wells using either a disposable bailer or HydraSleeve, as presented in Table A-1. The methodology for each sampling method is summarized below.

## APPENDIX A GROUNDWATER MONITORING AND SAMPLING PROCEDURES

Samples for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), petroleum hydrocarbon fraction F1, and 1,2-dichloroethane (1,2-DCA), were collected in septum-topped 40 mL clear glass vials (with zero headspace), pre-charged with sodium bisulphate (NaHSO<sub>4</sub>) preservative. Samples for analysis of petroleum hydrocarbon fraction F2 were collected in 100 mL amber glass bottles pre-charged with NaHSO<sub>4</sub> preservative. Samples for routine water chemistry were collected in 200 mL plastic bottles. All sample bottles were supplied by the laboratory. A trip blank composed of laboratory supplied ultra-pure water was prepared to accompany each cooler of groundwater samples for quality assurance and quality control purposes. Collected samples were shipped in ice filled, security sealed coolers with the appropriate chain of custody documentation to the laboratory.

## SAMPLING BY BAILER

Prior to the collection of groundwater samples for hydrochemical analyses, a minimum of three well casing volumes of water were purged from the monitoring/extraction well or the well was purged to dryness. Following the appropriate groundwater recovery in the wells, fresh groundwater samples were then recovered utilizing a disposable bailer and placed in appropriate sample containers supplied by the laboratory and kept cool in ice filled coolers. A fresh pair of nitrile gloves was worn for each groundwater sample collected. For every 10 groundwater samples collected, a duplicate groundwater sample was prepared from one of the sampled monitoring wells. In addition, three equipment blanks were prepared by collecting the laboratory supplied ultra-pure water which was poured through a disposable bailer.

## SAMPLING BY HYDRASLEEVE

Groundwater samples were collected for hydrochemical analyses by lowering a weighted HydraSleeve into the monitoring/extraction well so that the HydraSleeve is positioned within the well screen. The water pressure in the well keeps the bag collapsed and the check valve closed, preventing water from entering the HydraSleeve. The well is left for 20 minutes to allow the well to return to equilibrium. After which the field technician pulls up on the HydraSleeve to open the check valve to open and the HydraSleeve to fill with water. Groundwater samples were then recovered and placed in appropriate sample containers supplied by the laboratory and kept cool in ice filled coolers. A fresh pair of nitrile gloves was worn for each groundwater sample collected. The HydraSleeve weight was cleaned with a solution of phosphate-free detergent and water and rinsed with distilled water between monitoring wells. For every 10 groundwater samples collected, a duplicate groundwater sample was prepared from one of the sampled monitoring wells. In addition, three equipment blanks were prepared by collecting the laboratory supplied ultra-pure water which was poured into a disposable HydraSleeve.

-

## TABLE A-1

## **GROUNDWATER SAMPLING METHOD**

Well ID	Sampling Method	Well ID	Sampling Method	Well ID	Sampling Method
BH732	HydraSleeve	 BH1943	HydraSleeve	 BH2001	Disposable Bailer
BH912	Disposable Bailer	BH1944	Disposable Bailer	BH2002	Disposable Bailer
BH510A	HydraSleeve	BH1945	Disposable Bailer	BH2003	Disposable Bailer
BH1102	HydraSleeve	BH1946	Disposable Bailer	BH2004	Disposable Bailer
BH1701	Disposable Bailer	BH1947	Disposable Bailer	BH2005	HydraSleeve
BH1704	Disposable Bailer	BH1948	HydraSleeve	BH2006	Disposable Bailer
BH1901	HydraSleeve	BH1949	Disposable Bailer	BH2007	HydraSleeve
BH1902	HydraSleeve	BH1950A	Disposable Bailer	BH2008	Disposable Bailer
BH1903	HydraSleeve	BH1951	Disposable Bailer	BH2009	Disposable Bailer
BH1904	HydraSleeve	BH1952	HydraSleeve	BH2010	HydraSleeve
BH1905	Disposable Bailer	BH1953	HydraSleeve	BH2011	Disposable Bailer
BH1906	HydraSleeve	BH1954	HydraSleeve	BH2012	HydraSleeve
BH1907	HydraSleeve	BH1955A	Disposable Bailer	BH3001A	Disposable Bailer
BH1908	HydraSleeve	BH1956	Disposable Bailer	BH3001B	Disposable Bailer
BH1909	Disposable Bailer	BH1957	HydraSleeve	BH3001C	Disposable Bailer
BH1909	HydraSleeve	BH1958	HydraSleeve	BH3002A	Disposable Bailer
BH1911	HydraSleeve	BH1959	HydraSleeve	BH3002B	Disposable Bailer
BH1912	HydraSleeve	BH1960	Disposable Bailer	BH3003A	Disposable Bailer
BH1913	HydraSleeve	BH1961	HydraSleeve	BH3003B	Disposable Bailer
BH1914	Disposable Bailer	BH1962	Disposable Bailer	BH4002	Disposable Bailer
BH1915	Disposable Bailer	BH1963	HydraSleeve	BH4003A	Disposable Bailer
BH1916	Disposable Bailer	BH1964	Disposable Bailer	BH4003B	Disposable Bailer
BH1917	HydraSleeve	BH1965	Disposable Bailer	BH4004A	Disposable Bailer
BH1918	HydraSleeve	BH1966	HydraSleeve	BH4004B	Disposable Bailer
BH1919	HydraSleeve	BH1967	Disposable Bailer	BH4005	Disposable Bailer
BH1920	Disposable Bailer	BH1968	Disposable Bailer	BH4006	Disposable Bailer
BH1921	HydraSleeve	BH1969	Disposable Bailer	BH4007	Disposable Bailer
BH1922	HydraSleeve	BH1970	Disposable Bailer	BH4008A	Disposable Bailer
BH1923	HydraSleeve	BH1971	HydraSleeve	BH4008B	Disposable Bailer
BH1924	HydraSleeve	BH1972	Disposable Bailer	BH4009A	Disposable Bailer
BH1925	HydraSleeve	BH1973	Disposable Bailer	BH4009B	Disposable Bailer
BH1927	HydraSleeve	BH1974	Disposable Bailer	BH5001	Disposable Bailer
BH1928	HydraSleeve	BH1975	Disposable Bailer	BH5002	Disposable Bailer
BH1929	HydraSleeve	BH1976	HydraSleeve	BH6001	Disposable Bailer
BH1930	HydraSleeve	BH1977	HydraSleeve	BH6002	Disposable Bailer
BH1931	Disposable Bailer	BH1978	Disposable Bailer	BH6003	Disposable Bailer
BH1932	Disposable Bailer	BH1979	Disposable Bailer	BH6004	Disposable Bailer
BH1933	HydraSleeve	BH1980	Disposable Bailer	BH6005	Disposable Bailer
BH1934	Disposable Bailer	BH1981	HydraSleeve	BH6006	Disposable Bailer
BH1935	Disposable Bailer	BH1982	Disposable Bailer	FX1	Disposable Bailer
BH1936	HydraSleeve	BH1983	HydraSleeve	EX2	Disposable Bailer
BH1937	HydraSleeve	BH1984	HydraSleeve	FX3	Disposable Bailer
BH1938	Disposable Bailer	BH1985	HydraSleeve	FX4	Disposable Bailer
BH1939	Disposable Bailer	BH1986	Disposable Bailer	EX5	HydraSleeve
BH1941	HydraSleeve	BH1987	Disposable Bailer	EX6	Disposable Bailer
	Hudra Claove	DI 1007	Dispessible Baller		Dispessible Bailer
BH1942	nyuraSleeve	BH 1988	Disposable Baller	EX/	Disposable Baller

**APPENDIX B** 

**GROUNDWATER GUIDELINE SUMMARY** 

#### TABLE B-1

					Tier 1 <sup>a</sup>						Tie	er 2 <sup>b</sup>	
Pathway:	Protection of Domestic Use Aquifer	Ecological Direct Soil Contact	Ecological Direct Soil Contact	Ecological Direct Soil Contact	Ecological Direct Soil Contact	Vapour Inhalation Tier 1	Vapour Inhalation Tier 1	Vapour Inhalation Tier 1	Vapour Inhalation Tier 1	Vapour Inhalation Tier 2	Vapour Inhalation Tier 2	Vapour Inhalation Tier 2	Vapour Inhalation Tier 2
Grain Size:	N/A	Coarse	Coarse	Fine	Fine	Coarse	Coarse	Fine	Fine	N/A	N/A	N/A	N/A
Land Use:	N/A	Commercial	Residential	Commercial	Residential	Commercial	Residential	Commercial	Residential	N/A	N/A	N/A	N/A
Tier 2 Area for Vapour Inhalation Pathway:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N1	N2	S1	S2
Units:	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Benzene	0.005	350	61	540	100	0.37	0.03	3.9	0.57	16	12	0.67	0.57
Toluene	0.024	200	59	240	82	-	45	-	-	-	-	-	-
Ethylbenzene	0.0016	110	20	150	42	-	31	-	-	-	-	-	-
Xylenes	0.02	120	31	74	21	26	2.2	-	44	-	-	52	44
F1	2.2	11	7.1	9.9	6.5	9.1	0.81	-	19	540	420	23	19
F2	1.1	3.1	1.8	3.1	1.8	17	1.5	-	-	-	-	-	-
Naphthalene	0.47	-	-	-	-	31	2.7	-	-	-	-	-	-
1,2-Dichloroethane	0.005	-	-	-	-	0.13	0.01	1.2	0.17	0.048	0.038	0.2	0.17

#### SUMMARY OF GROUNDWATER GUIDELINES EFFECTIVE JANUARY 1, 2023

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b); freshwater aquatic life pathway excluded.

b - Calculated Tier 2 guidelines for the vapour inhalation pathway (Intrinsik, 2022), for BTEX, F1, F2, 1,2-DCA and Naphthalene.

"-" - No guideline or No Guideline Required (NGR - calculated values above compound solubility limit).

"--" - Not assessed via Tier 2.

N/A - Not applicable.

**APPENDIX C** 

HISTORICAL GROUNDWATER TABLES

#### TABLE C-1

#### SUMMARY OF 2022 GROUNDWATER ANALYTICAL DATA

Well ID	Sample Date	Duplicate	Well Screen (mbgs)	Guideline Referenced	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbons F1 (C6-C10)	Petroleum Hydrocarbons F2 (>C10-C16)	1,2- Dichloroethane	Alkalinity (Total as CaCO3)	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (µS/cm)	Fluoride	Hardness (CaCO3)	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassium (filtered)	Sodium (filtered)	SAR (unitless)	Sulphate (filtered)	TDS	Nitrate (as N) (filtered)	Nitrate (as NO3) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO2) (filtered)	Nitrate + Nitrite - N
Guidelines <sup>a</sup> :																																
Domestic Use	Aquifer Pathway				0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Inhala	tion Pathway:																															
N1 Are	a (Tier 2)				16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2 Are	a (Tier 2)				12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 Are	a (Tier 2)				0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S2 Are	a (Tier 2)				0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comm	ercial area, Coarse	-grained			0.37	NG	NG	26	9.1	1/	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ntial/Residential B	uffer area,	Coarse-grained		0.03	45	31	2.2	0.81	1.5	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ntial, Fine-grained				0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecological So	Contact Pathway	". 			61	50	20	21	6.5	1.0	NG	NG	NC	NO	NC	NO	NG	NG	NC	NC	NC	NO	NC	NC	NC	NC	NG	NO	NG	NO	NG	NC
N1, N2	51, 52 Areas (Res	sidential, m	ost stringent of fi	ine or coarse-grained)	350	200	110	120	0.5	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comm	ntial/Pecidential B	-graineu	Coarse-grained		61	59	20	31	71	18	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Pasida	ntial Fine-grained	ullel alea,	coarse-graineu		100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most stringen	t quideline for Rout	tine Param	eters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	6.5-8.5	NG	200	NG	429	500	3	NG	0.02	NG	NG
BH1102	3-Jun-2022		7.6 - 15.2	N1	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	<u> </u>																		<u> </u>		
BH1102	17-Jan-2023		7.6 - 15.2	N1	<0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	. I		-	-		-							-					-		-	
BH1701	7-Jun-2022		6.4 - 12.19	N1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001			-	-									-								
BH1704	15-Jun-2022		9.1 - 13.7	N1	0.839	2.83	0.247	12.2	5.8	5.1	0.023	- I	-	-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-
BH1704	19-Jan-2023		9.1 - 13.7	N1	0.121	0.655	0.0538	2.63	3.0	6.0	0.020	· -		-	-	-	-					-		-			-	-	-		-	-
BH1904	16-Jun-2022		12.8 - 16.8	Commercial area	0.174	< 0.0003	0.0016	0.0022	0.3	<0.1	< 0.001	· .		-	-	-			-					-	-	-	-	-	-		-	-
BH1904	18-Jan-2023		12.8 - 16.8	Commercial area	0.114	< 0.0003	< 0.0005	0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1904	18-Jan-2023	Dup	12.8 - 16.8	Commercial area	0.115	< 0.0003	< 0.0005	0.0006	<0.1	<0.1	< 0.001	· ·	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH1905	16-Jun-2022		3.1 - 6.1	Commercial area	0.036	0.0174	0.609	4.57	3.3	<u>8.1</u>	0.013	· ·		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH1906	5-Jun-2022		11.6 - 19.2	N1	2.55	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.034	479			2080	0.03	1030	<5	<0.1		0.687	7.79			0.58	31.7	<u>1100</u>	<u>31.2</u>	138	4.38	14.4	35.6
BH1906	17-Jan-2023		11.6 - 19.2	N1	<u>1.65</u>	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	0.028	462	184	<u>311</u>	1970	0.20	875	<5	<0.1	101	0.677	7.51	4.7	50.8	0.75	37.8	<u>1130</u>	31.2	138	5.39	17.7	36.6
BH1906	17-Jan-2023	Dup	11.6 - 19.2	N1	<u>1.62</u>	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	0.028	459	184	<u>314</u>	1970	0.12	871	<5	<0.1	100	0.674	7.49	4.7	50.0	0.74	37.3	<u>1130</u>	<u>31.6</u>	140	<u>5.54</u>	18.2	37.2
BH1907	3-Jun-2022		8.8 - 18.0	N1	<u>1.13</u>	7.63	0.546	<u>8.5</u>	<u>3.0</u>	0.8	<u>0.015</u>	· ·	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH1907	3-Jun-2022	Dup	8.8 - 18.0	N1	<u>1.13</u>	7.48	<u>0.541</u>	<u>8.34</u>	<u>3.4</u>	0.8	<u>0.017</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1907	17-Jan-2023		8.8 - 18.0	N1	<u>0.387</u>	2.82	0.608	4.96	2.8	0.7	0.007	· ·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1908	3-Jun-2022		12.2 - 16.8	N1	0.0007	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	< 0.001	· ·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1908	17-Jan-2023		12.2 - 16.8	N1	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1910	5-JUR-2022		11.0 - 18.0	N I	0.1/1	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	0.027	511			2030	0.07	984	<5	<0.1	100	0.638	7.85		10.0	0.63	23.8	998	0.59	2.6	< 0.01	<0.05	0.59
BH 1910 BH 1010	17-Jan-2023	Dup	11.0 - 10.0	NI N1	0.135	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.022	585	143	347	1940	0.15	917	<5	<0.1	130	0.573	7.52	3.2	46.2	0.66	27.4	1060	1.15	5.1	0.04	0.14	1.19
BH1910 BH1011	2- Jun-2022	Dup	1/1 3 - 18 3	N1	<u>0.130</u>	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<u>0.021</u>	564	143	341	1940	0.14	921	<0	<0.1	137	0.577	7.50	3.Z	40.7	0.67	21.2	1060	1.15	5.1	0.05	0.15	1.20
BH1911	17. Jan. 2022		14.3 - 18.3	N1	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001			-	-	-	-		-		-	-		-	-	-	-	-	-	-	-	-
BH1912	23-Jun-2022		13.4 - 21.0	Residential Buffer	0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.001			-			-							-		-	-	-	-			
BH1912	13-Jan-2023		13.4 - 21.0	Residential Buffer	0.0033	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.029			-			-							-				-	-			
BH1913	23-Jun-2022		6.4 - 10.0	Residential Buffer	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001			-	-		-							-		-	-	-	-		-	-
BH1913	13-Jan-2023		6.4 - 10.0	Residential Buffer	<0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	. I		-	-		-							-					-		-	-
BH1914	23-Jun-2022		1.5 - 7.3	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001			-	-									-								-
BH1914	13-Jan-2023		1.5 - 7.3	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	- I	-	-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-
BH1915	23-Jun-2022		10.4 - 18.6	Residential Buffer	0.0115	0.0007	0.0009	0.0195	0.7	0.3	0.014	· ·		-	-	-	-					-		-			-	-	-		-	-
BH1915	23-Jun-2022	Dup	10.4 - 18.6	Residential Buffer	0.011	0.0007	0.0008	0.019	0.7	0.3	0.013	· ·		-	-	-			-					-	-	-	-	-	-		-	-
BH1915	13-Jan-2023		10.4 - 18.6	Residential Buffer	0.0315	0.0006	0.0029	0.013	1.4	0.3	0.015	· ·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1915	13-Jan-2023	Dup	10.4 - 18.6	Residential Buffer	0.033	0.0007	0.0033	0.0128	1.3	0.4	0.016	· ·	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH1916	13-Jan-2023		0.91 - 6.4	Residential Buffer	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	· ·	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-
BH1917	12-Jun-2022		8.8 - 16.2	N1	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	· ·	-	-		-	-		-		-			-	-	-	-	-	-	-	-	-
BH1918	7-Jun-2022		5.8 - 13.1	N1	-		-			-	-	345	161	475	1990	< 0.01	966	<5	<0.1	137	0.022	7.63	6.1	97.5	1.37	47	<u>1130</u>	0.52	2.3	<0.01	< 0.05	0.52
BH1918	7-Jun-2022	Dup	5.8 - 13.1	N1	-	-	-	-	-	-	-	576	205	466	2130	<0.01	1070	<5	<0.1	136	0.014	7.86	5.5	93.3	1.24	47.4	<u>1310</u>	0.54	2.4	<0.01	<0.05	0.54
BH1918	19-Jan-2023		5.8 - 13.1	N1	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	585	150	389	2230	0.05	955	<5	<0.1	141	<0.005	7.69	4.9	85.1	1.20	50.1	1220	<u>9.87</u>	43.7	<0.01	<0.05	9.87
BH1919	9-Jun-2022		6.7 - 15.5	N2	<0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	· ·	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1818	19-Jan-2023		0.7 - 15.5	NZ	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022ab) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - Screen interval to be confirmed."-" - Not analyzed.

Dup - Duplicate sample.

NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

Highlighted - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway. Highlighted - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

BOLD - Exceeds most stringent guideline for routine water quality parameters.

Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

Notes: 2022 analytical data collected by Clifton Engineering Group Inc; 2022 analytical data sourced from Tables 6, 7 and 8 in the report entitled May/June 2022 Monitoring and Sampling Event (Clifton, 2022d).

#### TABLE C-1

#### SUMMARY OF 2022 GROUNDWATER ANALYTICAL DATA

Well ID	Sample Date	Duplicate	Well Screen (mbgs)	Guideline Referenced	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbons F1 (C6-C10)	Petroleum Hydrocarbons F2 (>C10-C16)	1,2- Dichloroethane	Alkalinity (Total as CaCO3)	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (µS/cm)	Fluoride	Hardness (CaCO3)	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassium (filtered)	Sodium (filtered)	SAR (unitless)	Sulphate (filtered)	TDS	Nitrate (as N) (filtered)	Nitrate (as NO3) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO2) (filtered)	Nitrate + Nitrite - N
Guidelines <sup>a</sup> :																																
Domestic U	se Aquifer Pathway				0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Inha	lation Pathway:																															
N1 A	rea (Tier 2)				16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2 A	rea (Tier 2)				12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 A	rea (Tier 2)				0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
SZ A	rea (Tier 2) marcial area. Caarea				0.37	NG	NG	26	91	17	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Com	mercial area, Coarse	e-grained	Coorce grained		0.03	45	31	20	0.81	15	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	lential Fine-grained	l	coarse-graineu		0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecological	oil Contact Pathway	v:												NO		NO						NO						NO		110		
N1. I	2. S1. S2 Areas (Res	, . sidential. m	ost stringent of fi	ine or coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Com	mercial area, Coarse	e-grained	<b>3</b>		350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	dential/Residential B	Buffer area,	Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	dential, Fine-grained	1			100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most string	ent guideline for Rou	itine Param	eters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	6.5-8.5	NG	200	NG	429	500	3	NG	0.02	NG	NG
BH1921	9-Jun-2022		8.8 - 18.9	N1	<u>0.0348</u>	0.0019	0.044	0.002	0.7	0.2	0.038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1921	9-Jun-2022	Dup	8.8 - 18.9	N1	0.0349	0.0021	0.0461	0.0022	0.8	0.2	0.036	· ·		-		-	-		-		-	-	-		-	-	-	-	-	-	-	-
BH1922	9-Jun-2022		7.9 - 19.2	N2	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1922	19-Jan-2023		7.9 - 19.2	N2	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	· ·		-		-	-	-	-		-			-	-	-	-	-	-	-	-	-
BH1923	9-Jun-2022		7.6 - 15.9	N1	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	· ·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1924	2-Jun-2022		14.9 - 19.8	N1	<u>1.43</u>	0.0009	< 0.0005	0.0691	<0.1	<0.1	<u>0.07</u>	· ·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1925	12-Jun-2022		16.4 - 19.8	N1	0.0022	<0.0003	< 0.0005	0.0012	0.2	0.1	0.004	574	-	-	1850	0.05	970	<5	<0.1	-	0.319	7.85	-	-	0.55	111	<u>1100</u>	1.74	7.7	<0.01	<0.05	1.74
BH1925	19-Jan-2023		16.4 - 19.8	N1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	486	70.0	106	1480	0.15	669	<5	<0.1	120	< 0.005	7.86	2.2	48.5	0.82	158	814	2.76	12.2	<0.01	< 0.05	2.76
BH 1927	7-JUN-2022		12.2 - 22.3	N I	< 0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	350	121	88.6	860	0.11	515	<5	<0.1	51.8	<0.005	7.87	2.7	17.3	0.33	33.9	<u>530</u>	<0.02	<0.5	<0.01	<0.05	<0.02
DH 1920	12-Juli-2022		6.4 - 10.0	N2 N2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	0.3	0.005	545	-	-	3400	< 0.03	1630	<5	<0.1	-	0.024	7.84	-	-	0.98	39.5	2120	<u>62.1</u>	2/5	< 0.01	<0.10	62.1
BH1020	3_ lun_2022		5.5 - 14.9	N2 N2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	530	268	<u>/9/</u>	3380	0.15	1520	<5	<0.1	207	0.014	1.54	b.3	110	1.23	40.9	<u>1950</u>	43.8	194	0.03	0.11	43.9
BH1020	18- Jan-2022		5.5 - 14.9	N2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1929	18-Jan-2023		5.5 - 14.9	N2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001			-		-	-		-		-	-			-	-	-	-	-	-	-	-
BH1930	9-Jun-2022		6.4 - 18.3	N2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001																					
BH1930	19-Jan-2023		6.4 - 18.3	N2	0.0029	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	. I					-		-								-		-	-	-	
BH1933	2-Jun-2022		8.8 - 17.1	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	. I.					-		-											-		
BH1933	18-Jan-2023		8.8 - 17.1	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	- I	-	-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-
BH1934	2-Jun-2022		5.8 - 8.5	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	· -				-	-		-						-		-		-	-	-	
BH1934	18-Jan-2023		5.8 - 8.5	Residential Buffer	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1935	2-Jun-2022		1.5 - 5.2	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	· ·	-	-		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH1935	18-Jan-2023		1.5 - 5.2	Residential Buffer	<0.0005	<0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	· ·		-		-	-		-		-	-			-	-	-	-	-	-	-	-
BH1936	3-Jun-2022		5.3 - 14.7	S1	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1936	20-Jan-2023		5.3 - 14.7	S1	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	· ·	-	-		-	-		-		-	-		-	-	-	-	-	-	-	-	-
BH1936	20-Jan-2023		5.3 - 14.7	S1	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1937	5-Jun-2022		5.3 - 14.7	S1	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	· ·	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1937	19-Jan-2023		5.3 - 14.7	S1	< 0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH 1939	7-JUN-2022	Dur	8.1-8.7	51	0.0009	< 0.0003	< 0.0005	< 0.0005	<0.1	0.2	0.062	· ·	-	-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-
BH1030	7-JUII-2022	Dup	0.1-0.7	51	0.0009	<0.0003	<0.0005	<0.0005	<0.1	0.2	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RH10/1	3-Jun-2023		73-113	\$2	<0.0005	<0.0003	<0.0005	<0.0005	<u.1< td=""><td><u.1< td=""><td>C 0.01</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></u.1<></td></u.1<>	<u.1< td=""><td>C 0.01</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></u.1<>	C 0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1942	5-Jun-2022		4.4 - 8.5	S2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1942	19-Jan-2023		4.4 - 8.5	S2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001																			-		
BH1942	19-Jan-2023	Dup	4.4 - 8.5	S2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001		-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1943	5-Jun-2022		7.3 - 14.0	S1	0.256	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.013			-			-		-			-	-			-	-		-	-	-	
BH1944	15-Jun-2022		5.9 - 7.6	S1	0.0438	<0,0003	<0.0005	<0.0005	0.1	<0.1	<0.001	394			784	0.11	495	<5	<0.1		0.288	8,13			0.23	42.6	493	2.64	11.7	0.04	0.12	2.68
BH1944	19-Jan-2023		5.9 - 7.6	S1	0.0155	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	469	107	25.6	959	0.12	524	<5	<0.1	62.3	0.260	7.75	2.9	12.2	0.23	46.3	554	2.48	11.0	0.05	0.16	2.53

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample. NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

 Highlighted
 Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

 Highlighted
 Exceeds referenced guideline for the vapour inhalation pathway.

BOLD - Exceeds most stringent guideline for routine water quality parameters.

Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

Notes: 2022 analytical data collected by Clifton Engineering Group Inc; 2022 analytical data sourced from Tables 6, 7 and 8 in the report entitled May/June 2022 Monitoring and Sampling Event (Clifton, 2022d).
### SUMMARY OF 2022 GROUNDWATER ANALYTICAL DATA

Well ID	Sample Date	Duplicate	Well Screen (mbgs)	Guideline Referenced	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbons F1 (C6-C10)	Petroleum Hydrocarbons F2 (>C10-C16)	1,2- Dichloroethane	Alkalinity (Total as CaCO3)	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (µS/cm)	Fluoride	Hardness (CaCO3)	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassium (filtered)	Sodium (filtered)	SAR (unitless)	Sulphate (filtered)	TDS	Nitrate (as N) (filtered)	Nitrate (as NO3) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO2) (filtered)	Nitrate + Nitrite - N
Guidelines <sup>a</sup> :																																-
Domestic Us	e Aquifer Pathway				0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Inhal	lation Pathway:																															
N1 Ar	rea (Tier 2)				16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2 Ar	rea (Tier 2)				12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 Ar	ea (Tier 2)				0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S2 Ar	ea (Tier 2)				0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comr	nercial area, Coarse	e-grained			0.02	NG	NG 21	20	9.1	17	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resid	lential/Residential B	Buffer area,	Coarse-grained		0.03	40 NG	31 NG	2.2	10	1.5	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resid	iential, Fine-grained	a 			0.57	NO	NO	44	15	NO	0.17	NO	NO	NG	NO	NG	NO	NO	NO	140	NO	NG	NO	NO	NO	NO	NO	NG	NO	NG	NO	NO
Ecological S	2 S1 S2 Aroas (Par	y: cidential m	oct stringent of fi	no or ocorroo grainad)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NC	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comr	z, 31, 32 Aleds (Nes	o-grained	ost stringent of h	ne or coarse-graineu)	350	200	110	120	11	31	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resid	lential/Residential B	e-grameu Buffer area	Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resid	lential. Fine-grained	d	oouloo gluiiou		100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most stringe	nt guideline for Rou	utine Param	eters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	6.5-8.5	NG	200	NG	429	500	3	NG	0.02	NG	NG
BH1945	2-Jun-2022		3.7 - 6.4	S2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001		-			-	-						-	-	-			-	-	-	-	-
BH1945	18-Jan-2023		3.7 - 6.4	S2	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001					-			-					-	-		-	-	-	-	-	-
BH1946	2-Jun-2022		4.3 - 6.4	S2	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1947	7-Jun-2022		4.3 - 6.1	S2	<0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1950A	15-Jun-2022		8.5 - 11.1	N1	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001		-	-		-		-		-	-	-	-	-	-		-	-	-	-	-	-
BH1950A	19-Jan-2023		8.5 - 11.1	N1	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1951	2-Jun-2022		2.0 - 4.1	Residential	< 0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001		-	-		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH1951	18-Jan-2023		2.0 - 4.1	Residential	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1952	3-Jun-2022		7.9 - 18.6	N1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DH 1932	7 Jun 2022		1.9 - 10.0	NI N1	<0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1053	19- Jan-2022		11.3 - 18.6	N1	-	-	-		-	-	-	638	229	354	2010	<0.01	1090	<5	<0.1	127	0.096	7.61	5.4	77.8	1.02	43	1230	0.5	2.2	<0.01	<0.05	0.5
BH1954	3- lun-2023		55-131	S1	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	< 0.001	100	180	324	2120	0.12	1000	<0	<0.1	131	0.182	1.58	5./	78.0	1.07	41.0	1210	9.87	43.7	<0.01	<0.05	9.87
BH1954	18-Jan-2023		5.5 - 13.1	S1	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.009					-			-					-	-		-	-	-		-	
BH1955A	2-Jun-2022		8.5 - 11.0 <sup>b</sup>	S2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.002																					
BH1955A	18-Jan-2023		8.5 - 11.0 <sup>b</sup>	S2	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	< 0.001					-			-	-					-				-		-	-
BH1956	15-Jun-2022		5.8 - 14.6	N2	0.0019	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	349			1080	0.1	682	<5	<0.1	-	< 0.005	8.01			0.16	49.2	677	15.9	70.5	< 0.01	<0.05	15.9
BH1957	16-Jun-2022		5.8 - 14.1	Commercial area	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1957	18-Jan-2023		5.8 - 14.1	Commercial area	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001					-			-	-				-	-		-	-	-		-	-
BH1958	16-Jun-2022		5.8 - 14.9	Commercial area	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	469			1460	0.16	674	<5	<0.1	-	< 0.005	7.84	-	-	0.79	36.6	830	2.37	10.5	< 0.01	< 0.05	2.37
BH1958	18-Jan-2023		5.8 - 14.9	Commercial area	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	482	140	238	1600	0.16	707	<5	<0.1	86.7	< 0.005	7.67	4.0	61.4	1.01	38.3	874	2.42	10.7	<0.01	< 0.05	2.42
BH1961	9-Jun-2022		8.5 - 11.9	N2	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1961	20-Jan-2023		8.5 - 11.9	N2	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1962	9-Jun-2022		9.8 - 12.5	N2	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001		-	-		-		-		-	-	-	-	-	-		-	-	-	-	-	-
BH1962	20-Jan-2023		9.8 - 12.5	N2	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	319	69.1	5.0	580	0.28	293	<5	<0.1	29.3	0.169	7.97	1.9	16.0	0.41	20.6	338	0.16	0.7	0.02	0.07	0.18
BH1963	9-Jun-2022		5.5 - 11.3	N2	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	279	-	-	551	0.25	287	<5	<0.1	-	0.131	8.07	-	-	0.48	18	305	<0.02	<0.5	<0.01	<0.05	<0.02
BH1963	20-Jan-2023		5.5 - 11.3	N2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001		-	-		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
BH1964	9-Jun-2022		7.6-8.5	N2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH 1964	20-Jan-2023		7.0-0.0	NZ N1	<0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001		-	-		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH1966	3-Juli-2022		7.3 - 10.5	NI N1	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1967	7-lun-2022		55-85	N1	0.117	0.0003	0.0241	0.0015	2.7	<u.1< th=""><th>0.001</th><th></th><th></th><th></th><th></th><th>-</th><th>-</th><th></th><th>-</th><th>-</th><th>-</th><th></th><th></th><th>-</th><th>-</th><th></th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th></u.1<>	0.001					-	-		-	-	-			-	-		-	-	-	-	-	-
BH1967	7-Jun-2022	Dup	5.5 - 8.5	N1	0.111	0.0002	0.0347	0.0013	2.7	0.4	0.022					-	-						-	-					-		-	
BH1967	17-Jan-2023	200	5.5 - 8.5	N1	0.0900	0.0079	0.0114	0.0009	2.1	0.3	0.019		-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
BH1971	3-Jun-2022		7.3 - 11.0	N1	0.0076	0.0008	0.0168	<0.0005	10	0.0	0.047		-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
BH1971	3-Jun-2022	Dup	7.3 - 11.0	N1	0.0059	0,0007	0.0146	<0.0005	0.9	0.1	0.051					-							-	-								
BH1971	17-Jan-2023		7.3 - 11.0	N1	0.0037	0.0004	0.0083	<0.0005	1.4	0.2	0.046	· .	-	-			-				-		-	-				-	-		-	-
BH1972	15-Jun-2022		8.2 - 11.0	N2	< 0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001		-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
BH1972	19-Jan-2023		8.2 - 11.0	N2	< 0.0005	<0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022ab) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - Screen interval to be confirmed."-" - Not analyzed.

Dup - Duplicate sample.

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 Italics
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 Highlighted
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 Highlighted
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BOLD - Exceeds most stringent guideline for routine water quality parameters.

Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

### SUMMARY OF 2022 GROUNDWATER ANALYTICAL DATA

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Guidelines <sup>a</sup> :																																
Domestic Use	e Aquifer Pathway				0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Inhala	ation Pathway:																															
N1 Are	ea (Tier 2)				16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2 Are	ea (Tier 2)				12	NG	NG	NG 52	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 Are	ea (Tier 2)				0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
SZ AR	a (Tier Z)	o arainad			0.37	NG	NG	26	91	17	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ential/Residential	e-granieu Buffer area	Coarse-grained		0.03	45	31	2.2	0.81	1.5	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ential. Fine-grained	d	oouloo glamoa		0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecological So	oil Contact Pathwa	y:																														
N1, N2	2, S1, S2 Areas (Re	sidential, m	lost stringent of fi	ine or coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comm	ercial area, Coars	e-grained			350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ential/Residential I	Buffer area,	Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ential, Fine-grained	d			100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most stringer	nt guideline for Ro	utine Param	ieters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	0.0-0.0	NG	200	NG	429	500	3	NG	0.02	NG	NG
BH1973	3-Jun-2022		1.5 - 6.4	N1	0.0038	0.0013	0.0094	0.0011	0.4	0.2	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1973	17-Jan-2023		1.5 - 6.4	N1	0.0034	0.0007	<u>0.0067</u>	< 0.0005	0.8	0.2	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH 1974	3-JUN-2022		7.6 10.4	NI N1	0.0024	0.0005	< 0.0005	<0.0005	0.2	<0.1	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1974 BH1076	17-Jan-2023		7.0 - 10.4	N1	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1976	2-Juli-2022		9.4 - 14.3	N1	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1977	2-Jun-2022		3.1 - 7.6	S2	0.0000	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.001		-		-	-			-			-		-			-			-		
BH1977	18-Jan-2023		3.1 - 7.6	S2	0.0552	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.002		-		-	-			-			-	-	-		-	-	-	-	-	-	
BH1978	2-Jun-2022		0.9 - 3.0	S2	< 0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001		-						-			-		-			-			-		
BH1978	18-Jan-2023		0.9 - 3.0	S2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-		-	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-
BH1979	5-Jun-2022		2.8 - 6.7	S1	1.8	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1979	19-Jan-2023		2.8 - 6.7	S1	1.11	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.009	-	-			-			-			-		-			-			-	-	
BH1980	5-Jun-2022		4.3 - 6.1	S2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1980	19-Jan-2023		4.3 - 6.1	S2	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1981	3-Jun-2022		3.0 - 9.1	S1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.027	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1981	18-Jan-2023	-	3.0 - 9.1	S1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1981	18-Jan-2023	Dup	3.0 - 9.1	S1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.026	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1982	15-Jun-2022	Dur	1.5 - 7.9	S1	0.298	0.0013	0.0032	< 0.0005	0.3	<0.1	0.046	478	-	-	1100	0.15	649	<5	0.8	-	0.678	8.1	-	-	0.44	47.6	<u>670</u>	3.07	13.6	0.02	0.08	3.1
BH1902 BH1082	10-Juli-2022	Dup	1.5 - 7.9	S1 91	0.291	0.0013	0.0032	<0.0005	0.3	<0.1	0.05	514	-	-	1140	0.15	650	<5	0.8	-	0.681	8.07	-	-	0.44	47.4	689	3	13.3	<0.01	<0.05	3
BH1982	19-Jan-2023	Dun	1.5 - 7.9	S1	0.0463	0.005	0.0301	0.0029	0.4	<0.1	0.097		-			-			-			-		-		-	-	-		-	-	
BH1983A	16-Jun-2022	bup	3.7 - 5.2 <sup>b</sup>	Commercial area	<0.0005	<0.000	<0.0005	<0.0001	<0.4	0.1	<0.001																					
BH1983A	18-Jan-2023		3.7 - 5.2 <sup>b</sup>	Commercial area	< 0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-		-	-			-					-	-	-	-	-	-	-	-	-
BH1984	16-Jun-2022		7.3 - 15.5	Commercial area	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	514	-		1180	0.21	600	<5	<0.1		0.299	7.83	-	-	0.46	37.6	696	6.33	28	<0.01	< 0.05	6.33
BH1984	18-Jan-2023		7.3 - 15.5	Commercial area	0.0019	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	538	114	150	1450	0.19	729	<5	<0.1	108	0.574	7.72	4.1	27.2	0.44	41.3	811	8.54	37.8	0.15	0.50	8.69
BH1985	16-Jun-2022		6.4 - 17.4	Residential Buffer	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1985	18-Jan-2023		6.4 - 17.4	Residential Buffer	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2001	2-Jun-2022		3.4 - 4.9	S2	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2001	18-Jan-2023		3.4 - 4.9	S2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.002	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2002	5-Jun-2022		1.6 - 3.8	S2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2002	18-Jan-2023		1.6 - 3.8	S2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2003	15-Jun-2022	Dur	1.5 - 4.6	52	<0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	427	-	-	1570	0.14	604	<5	<0.1	-	0.327	8.14	-	-	2.36	56.9	897	0.41	1.8	< 0.01	< 0.05	0.41
BH2003	15-JUN-2022	Dup	1.5 - 4.0	52	· ·	-	-	-	-	-	-	403	-	-	1540	0.12	601	<5	<0.1	- 74 7	0.325	8.18	-	-	2.33	56.8	882	0.43	1.9	<0.01	<0.05	0.43
BH2003	13-Jan-2023		1.5 - 4.0	S2 S2	-0.0005	- 0.000	-0.0005	-0.0005	-	-	-	400	100	141	1320	0.12	545	<0	<u.1< th=""><th>/1./</th><th>0.044</th><th>1.01</th><th>3.1</th><th>/4./</th><th>1.39</th><th>00.3</th><th>/49</th><th>U.18</th><th>0.8</th><th>&lt;0.01</th><th>&lt;0.05</th><th>0.18</th></u.1<>	/1./	0.044	1.01	3.1	/4./	1.39	00.3	/49	U.18	0.8	<0.01	<0.05	0.18
BH2004	5-Jun-2022		4.9 - 6.4	S2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
BH2004	19-Jan-2023		4.9 - 6.4	S2	<0.0005	<0.0003	<0.0003	<0.0005	<0.1	<0.1	<0.001		-		-	-			-			-	-	-	-	-	-			-	-	-
BH2004	19-Jan-2023	Dup	4.9 - 6.4	S2	<0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		•			0.0000	0.0000	0.0000	0.0000	V.1		0.001	L																				

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection.

b - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample.

NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

 Highlighted
 Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

 Highlighted
 Exceeds referenced guideline for the vapour inhalation pathway.

 BOLD
 Exceeds soft stringent guideline for routine water quality parameters.

Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

### SUMMARY OF 2022 GROUNDWATER ANALYTICAL DATA

Well ID	Sample Date Du	uplicate Well S (mb	Screen bgs)	Guideline Referenced	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbons F1 (C6-C10)	Petroleum Hydrocarbons F2 (>C10-C16)	1,2- Dichloroethane	Alkalinity (Total as CaCO3)	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (µS/cm)	Fluoride	Hardness (CaCO3)	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassium (filtered)	Sodium (filtered)	SAR (unitless)	Sulphate (filtered)	TDS	Nitrate (as N) (filtered)	Nitrate (as NO3) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO2) (filtered)	Nitrate + Nitrite - N
Guidelines <sup>a</sup> :																																
Domestic Use	e Aquifer Pathway				0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Inhala	ation Pathway:								540																							
N1 Are	ea (Tier 2)				10	NG	NG	NG	540 420	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
NZ AR	ea (Tier 2)				0.67	NG	NG	52	420	NG	0.030	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 Are	a (Tier 2)				0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comm	ercial area. Coarse-or	ained			0.37	NG	NG	26	9.1	17	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ential/Residential Buffe	er area, Coarse-g	rained		0.03	45	31	2.2	0.81	1.5	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ential, Fine-grained				0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecological So	oil Contact Pathway:																															
N1, N2	, S1, S2 Areas (Reside	ential, most string	gent of fine	or coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comm	ercial area, Coarse-gr	ained			350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ential/Residential Buffe	er area, Coarse-g	rained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ential, Fine-grained	. D			100 NG	82 NG	42 NG	21 NG	6.5 NG	1.8 NG	NG	NG	NG	NG 120	NG	NG 1.5	NG	NG	NG 03	NG	NG 0.02	NG 65-85	NG	NG 200	NG	NG 429	NG 500	NG 3	NG	NG 0.02	NG	NG
Most stringen	a his sooo	e Parameters	5 7	00		110		110	110		110	NO	NO	120	110	1.0	NO	NO	0.0	NO	0.02	0.0 0.0	NO	200	110	425	000	0	NO	0.02	NO	NO
BH2005	2-JUR-2022	3.9: Dun 3.0	5-7	52	0.226	<0.0003	<0.0005	<0.0005	0.2	<0.1	0.005		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
BH2005	18-Jan-2023	3.9	5-7	S2	0.0010	<0.0003	<0.0005	<0.0005	0.2 <0.1	<0.1	0.003					-			-		-			-	-	-		-	-			
BH2006	2-Jun-2022	2.3	- 4.9	S2	< 0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	0.003		-				-		-		-			-	-	-	-		-	-		
BH2006	18-Jan-2023	2.3	- 4.9	S2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.005		-	-	-	-	-	-	-		-	-		-	-	-	-	-	-	-	-	-
BH2007	2-Jun-2022	12.8	- 18.3	Residential Buffer	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001										-				-	-	-	-	-			
BH2007	17-Jan-2023	12.8	- 18.3	Residential Buffer	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2008	2-Jun-2022	5.2 -	- 12.8	Residential Buffer	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2008	17-Jan-2023	5.2 -	- 12.8	Residential Buffer	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001		-		-	-	-		-		-	-		-	-	-	-	-	-	-	-	-
BH2010	5-Jun-2022	14.0	- 18.9	Residential Buffer	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	292	-	-	827	0.18	432	<5	<0.1	-	0.067	7.97	-	-	0.18	33.6	412	2.8	12.4	<u>0.17</u>	0.55	2.97
BH2010	19-Jan-2023	14.0	- 18.9	Residential Buffer	< 0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	< 0.001	359	91.5	34.7	778	0.12	403	<5	<0.1	42.4	0.080	7.83	2.9	6.8	0.15	35.4	446	2.80	12.4	<u>0.14</u>	0.46	2.94
DH2011	3-JUII-2022	9.4 -	- 14.0	Residential Buller	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001		-	-	-	-	-		-	-	-	-		-	-	-	-	-	-	-	-	
BH2012	5- Jun-2023		- 14.0	Residential Buffer	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	205	-	-	- 1750	- 0.11	-	-		-	- 0.152	- 7.06	-	-	-	-	-	- 146	-	-	- 0.05	-
BH2012	20-Jan-2023	13.4	- 18.3	Residential Buffer	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	473	141	305	1860	0.11	875	<5	<0.1	127	0.152	7.66	4.6	45.3	0.02	62.0	1060	18.4	81.5	0.01	0.05	14.0
BH3001A	2-Jun-2022	1.5 -	- 3.05	Residential	< 0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-0.1	-	-	-	-		-	-	-	-	-	-	-	-
BH3001A	18-Jan-2023	1.5 -	- 3.05	Residential	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	591	161	278	1950	0.11	904	<5	<0.1	122	< 0.005	7.91	4.5	65.4	0.95	53.3	1100	13.5	59.7	< 0.01	<0.05	13.5
BH3001B	2-Jun-2022	3.7	- 4.3	Residential	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3001B	18-Jan-2023	3.7	- 4.3	Residential	<0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3001C	2-Jun-2022	5.2	- 6.1	Residential	<0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-		-	-		-	-	-			-	-	-	-	-	-	-	-	-
BH3001C	18-Jan-2023	5.2	- 6.1	Residential	<0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3002A	2-Jun-2022	1.8	- 3.8	Residential	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3002R	2_lun_2022	61	- 3.0	Residential	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3002B	18-Jan-2023	6.1	- 7.6	Residential	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001					-			-		-			-	-	-		-	-			
BH3003A	2-Jun-2022	2.18	3 - 2.9	Residential	< 0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001		-				-		-		-			-	-	-	-		-	-		
BH3003A	18-Jan-2023	2.18	3 - 2.9	Residential	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001		-	-	-		-		-		-			-	-	-	-	-	-	-	-	
BH3003B	2-Jun-2022	6.9	- 7.9	Residential	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001								-		-			-	-	-	-		-			
BH3003B	18-Jan-2023	6.9	- 7.9	Residential	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4002	15-Jun-2022	11.7	- 13.2	Residential Buffer	0.0073	0.0838	< 0.0005	<u>1.5</u>	1.3	0.3	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4002	18-Jan-2023	11.7	- 13.2	Residential Buffer	<u>0.0071</u>	<u>0.140</u>	0.0005	2.66	1.9	0.5	<0.001		-		-	-	-		-		-			-	-	-	-	-	-	-	-	-
BH4003A	15-Jun-2022	10.5	5 - 12	Commercial area	2.04	0.0041	< 0.0005	0.0789	0.9	0.2	0.255	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
BH4003A	18-Jan-2023	10.5	16 /	Commercial area	2.33	0.0030	< 0.0005	0.0567	0.2	0.2	0.195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4003B	13-JUII-2022 18- Jan-2023	14.9	- 10.4	Commercial area	0.0107	<0.0003	<0.0005	<0.0005	<u.1< th=""><th>U.1</th><th>&lt;0.001</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th></u.1<>	U.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4004A	16-Jun-2022	14.5	5 - 13	Commercial area	<0.000F	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4004A	18-Jan-2023	11.5	5 - 13	Commercial area	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001				-		-				-				-	-	-		-	-		
BH4004B	16-Jun-2022	14.5	5 - 16	Commercial area	< 0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001													-	-	-						
BH4004B	16-Jun-2022	Dup 14.5	5 - 16	Commercial area	< 0.0005	< 0.0003	<0.0005	< 0.0005	<0.1	<0.1	<0.001	-			-	-		-	-		-	-		-	-	-		-	-	-	-	-
BH4004B	18-Jan-2023	14.5	5 - 16	Commercial area	<0.0005	< 0.0003	<0.0005	<0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022ab) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection. b - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample.

NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

Highlighted - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

Highlighted - Exceeds referenced guideline for the vapour inahalation pathway. BOLD - Exceeds most stringent guideline for routine water quality parameters.

Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

### SUMMARY OF 2022 GROUNDWATER ANALYTICAL DATA

Well ID	Sample Date	Duplicate	Well Screen (mbgs)	Guideline Referenced	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbons F1 (C6-C10)	Petroleum Hydrocarbons F2 (>C10-C16)	1,2- Dichloroethane	Alkalinity (Total as CaCO3)	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (µS/cm)	Fluoride	Hardness (CaCO3)	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassium (filtered)	Sodium (filtered)	SAR (unitless)	Sulphate (filtered)	TDS	Nitrate (as N) (filtered)	Nitrate (as NO3) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO2) (filtered)	Nitrate + Nitrite - N
Guidelines <sup>a</sup> :					0.005	0.024	0.0016	0.02	2.2	11	0.005	NC	NC	10	NC	10	NC	NC	NC	NC	NC		NC	NC	NC	NC	NC		NC		NC	NC
Domestic U	se Aquifer Pathway				0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
vapour inna	alation Pathway:				16	NG	NG	NG	540	NG	0.048	NG	NG	NC	NG	NC	NG	NG	NG	NG	NG	NC	NG	NG	NG	NG	NG	NC	NG	NC	NG	NG
NI A	rea (Tier 2)				12	NG	NG	NG	420	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 4	rea (Tier 2)				0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S2 A	rea (Tier 2)				0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Com	mercial area Coars	e-arained			0.37	NG	NG	26	9.1	17	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	dential/Residential E	e-gramea Buffer area	Coarse-grained		0.03	45	31	2.2	0.81	1.5	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	dential. Fine-grained	d	, <b>3</b>		0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecological S	Soil Contact Pathwa	y:																														
N1, I	N2, S1, S2 Areas (Re	sidential, n	nost stringent of fi	ne or coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Com	mercial area, Coars	e-grained			350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	dential/Residential E	Buffer area	, Coarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Resi	dential, Fine-grained	d			100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most string	ent guideline for Rou	utine Paran	neters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	6.5-8.5	NG	200	NG	429	500	3	NG	0.02	NG	NG
BH4005	16-Jun-2022		10.7 - 12.2	Commercial area	0.0129	0.0006	0.0109	< 0.0005	0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4005	18-Jan-2023		10.7 - 12.2	Commercial area	<u>0.0117</u>	0.0004	<u>0.0048</u>	< 0.0005	0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4006	16-Jun-2022		10.7 - 12.2	Residential Buffer	0.408	0.0033	< 0.0005	0.0573	0.7	0.1	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4006	18-Jan-2023		10.7 - 12.2	Residential Buffer	<u>0.460</u>	0.0010	< 0.0005	0.0309	0.4	<0.1	0.023	· ·		-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-
BH4007	16-Jun-2022		10.6 - 12.1	Commercial area	0.988	0.001	< 0.0005	0.0123	0.5	0.2	0.028	612		-	2610	0.22	1210	<5	<0.1		0.421	7.77	-	-	1.12	28	1440	17.3	76.5	3.41	11.2	20.7
BH4007	18-Jan-2023		10.6 - 12.1	Commercial area	0.689	0.0012	< 0.0005	0.0142	0.1	0.1	0.025	642	120	735	3370	0.24	1490	<5	<0.1	290	0.532	7.71	5.4	135	1.52	32.9	1800	16.9	75.0	5.63	18.5	22.6
BH4008A	15-Jun-2022		10.5 - 12	Residential Buffer	<0.0005	0.0103	< 0.0005	0.246	0.5	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4008A	18-Jan-2023		10.5 - 12	Residential Buffer	<0.0005	0.0046	< 0.0005	0.0465	0.2	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4008B	15-Jun-2022		15.2 - 16.7	Residential Buffer	< 0.0005	<0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001			-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH4008B	18-Jan-2023		15.2 - 16.7	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001			-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH4009A	15-Jun-2022		10.5 - 12	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.004			-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
BH4009A	18-Jan-2023		10.5 - 12	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4009B	15-Jun-2022		14.5 - 16	Residential Buffer	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DH4009D	7 Jun 2022		14.5 - 10	Residential buller	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	0.003	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5001	7-JUII-2022		1.5 - 3.05	52	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5007	7_lun_2022		1.5 - 3.05	52	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5002	18-Jan-2023		1.5 - 3.05	S2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001			-	-	-		-	-				-		-		-	-	-	-	-	-
BH5002	18-Jan-2023	Dun	1.5 - 3.05	S2	<0.0005	<0.0003	<0.0005	<0.0005	<0.1	<0.1	<0.001			-	-	-		-	-						-		-	-	-	-	-	-
BH510A	12-Jun-2022	Dub	11.3 - 17.4	N1	0.327	0.0000	0.406	0.0003	0.7	0.2	0.022																					
BH510A	12-Jun-2022		11.3 - 17.4	N1	0.276	0.012	0.365	0.051	0.8	0.4	0.019			-	-	-		-	-				-		-		-	-	-	-	-	-
BH5104	19- Jan-2023		113-174	N1	0.100	0.0115	0.249	0.0000	1.1	0.0	0.010																					
DUE10A	10 Jan 2022	Due	11.0 17.4	N1	0.109	0.0115	0.340	0.0200	1.1	0.2	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DID IUA	19-Jan-2023	Dup	0.75 12.9	NI N1	0.172	0.0114	0.358	0.0193	1.0	0.1	0.020	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6001	9-Juli-2022		9.75 - 12.0	N1	0.00179	0.005	0.01/2	0.0019	0.2	0.1	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6002	9- lun-2023		10.65 - 13.7	N1	0.0037	0.0005	0.0101	2.51	0.1	<0.1 0.5	0.021			-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-
BH6002	19-Jan-2023		10.65 - 13.7	N1	0.0540	0.37	0.532	<u>2.31</u> 1.30	3.4	0.5	0.034			-	-	-		-	-				-		-		-	-	-	-	-	-
BH6003	9-Jun-2022		9.75 - 12.8	N1	0.0101	0.925	0.0237	0.258	14	1	0.030																					
BH6003	19-Jan-2023		9.75 - 12.8	N1	0.0101	0.0204	0.201	4.69	4.2	19	0.012																					
BH6004	7-Jun-2022		9.15 - 12.2	N1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.012				-	-			-						-					-	-	-
BH6004	17-Jan-2023		9.15 - 12.2	N1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	0.009				-	-			-						-					-	-	-
BH6005	7-Jun-2022		9.15 - 12.2	N1	1.46	1.13	0.224	1.88	1.7	0.6	0.027				-				-						-					-		-
BH6005	17-Jan-2023		9.15 - 12.2	N1	0.840	0.639	0.110	0.875	2.8	0.5	0.024	-		-		-	-	-					-							-	-	-
BH6006	15-Jun-2022		12.2 - 15.2	N1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	0.2	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6006	19-Jan-2023		12.2 - 15.2	N1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001			-		-	-	-					-					-		-	-	-
BH732	3-Jun-2022		4.3 - 14.9	N2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	- I		-		-	-	-	-		-		-	-	-		-	-		-	-	-
BH732	19-Jan-2023		4.3 - 14.9	N2	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
BH912	2-Jun-2022		1.5 - 6.1	S1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-				-			-				-		-		-			-		-
BH912	18-Jan-2023		1.5 - 6.1	S1	< 0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	< 0.001	-		-	-	-	-	-			-		-		-		-	-	-			-

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection. b - Screen interval to be confirmed.

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NG - No Guideline.

 Italics
 - Exceeds guideline for the domestic use aquifer pathway solely.

 Highlighted
 - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

 Highlighted
 - Exceeds referenced guideline for the vapour inhalation pathway.

BOLD - Exceeds most stringent guideline for routine water quality parameters. Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

### SUMMARY OF 2022 GROUNDWATER ANALYTICAL DATA

Well ID	Sample Date D	uplicate	Well Screen (mbgs)	Guideline Referenced	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbons F1 (C6-C10)	Petroleum Hydrocarbons F2 (>C10-C16)	1,2- Dichloroethane	Alkalinity (Total as CaCO3)	Calcium (filtered)	Chloride (filtered)	Electrical Conductivity (µS/cm)	Fluoride	Hardness (CaCO3)	Hydroxide (OH)	Iron (filtered)	Magnesium (filtered)	Manganese (filtered)	pH (unitless)	Potassium (filtered)	Sodium (filtered)	SAR (unitless)	Sulphate (filtered)	TDS	Nitrate (as N) (filtered)	Nitrate (as NO3) (filtered)	Nitrite (as N) (filtered)	Nitrite (as NO2) (filtered)	Nitrate + Nitrite - N
Guidelines <sup>a</sup> :																																
Domestic Use	Aquifer Pathway				0.005	0.024	0.0016	0.02	2.2	1.1	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Vapour Inhala	tion Pathway:																															
N1 Are	a (Tier 2)				16	NG	NG	NG	540	NG	0.048	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
N2 Are	a (Tier 2)				12	NG	NG	NG	420	NG	0.038	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S1 Are	a (Tier 2)				0.67	NG	NG	52	23	NG	0.2	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
S2 Are	a (Tier 2)				0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comm	ercial area, Coarse-gr	rained			0.37	NG	NG	26	9.1	17	0.13	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ntial/Residential Buff	fer area, C	oarse-grained		0.03	45	31	2.2	0.81	1.5	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ntial, Fine-grained				0.57	NG	NG	44	19	NG	0.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Ecological So	I Contact Pathway:																															
N1, N2	S1, S2 Areas (Reside	lential, mo	st stringent of fine	or coarse-grained)	61	59	20	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Comm	ercial area, Coarse-gr	rained			350	200	110	120	11	3.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ntial/Residential Buff	fer area, C	oarse-grained		61	59	20	31	7.1	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Reside	ntial, Fine-grained				100	82	42	21	6.5	1.8	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Most stringen	guideline for Routin	ne Paramet	ters		NG	NG	NG	NG	NG	NG	NG	NG	NG	120	NG	1.5	NG	NG	0.3	NG	0.02	0.0-0.0	NG	200	NG	429	500	3	NG	0.02	NG	NG
EX-1	15-Jun-2022		11.7 - 14.63	N1	<u>1.18</u>	0.0066	<u>0.0472</u>	0.0051	0.2	<0.1	0.038	-	-	-	-	-	-		-		-			-	-	-	-			-		
EX-1	15-Jun-2022	Dup	11.7 - 14.63	N1	<u>1.11</u>	0.0065	<u>0.0472</u>	0.0052	0.2	<0.1	<u>0.04</u>	-	-	-	-	-	-		-		-			-	-	-	-			-		
EX-2	15-Jun-2022		8.8 - 13.41	N1	0.0353	0.0031	0.0346	0.0078	0.7	<0.1	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-2	19-Jan-2023		8.8 - 13.41	N1	0.0035	0.0005	0.0016	<0.0005	<0.1	<0.1	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-3	7-Jun-2022		8.2 - 12.8	N1	<0.0005	< 0.0003	< 0.0005	< 0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-3	19-Jan-2023		8.2 - 12.8	N1	< 0.0005	< 0.0003	< 0.0005	<0.0005	<0.1	<0.1	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-4	16-Jun-2022		10.3 - 13.72	N1	<u>0.151</u>	0.0091	0.301	0.543	1.6	1.2	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-4	19-Jan-2023		10.3 - 13.72	N1	<u>0.188</u>	0.0141	0.304	0.683	1.9	1.0	<u>0.008</u>	· ·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-5	12-Jun-2022	-	10.6 - 13.72	N1	3.94	8.94	0.932	5.3	5.0	0.8	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-5	12-Jun-2022	Dup	10.6 - 13.72	N1	<u>3.99</u>	<u>9.1</u>	0.925	<u>5.44</u>	<u>4.2</u>	0.8	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-5	19-Jan-2023		10.6 - 13.72	N1	<u>5.46</u>	<u>10.1</u>	<u>1.46</u>	6.71	<u>10.2</u>	<u>1.2</u>	0.131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-b	15-Jun-2022		10.6 - 13.11	N1	0.412	<u>0.352</u>	<u>1.07</u>	<u>3.3</u>	<u>7.7</u>	0.7	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-6	19-Jan-2023		10.6 - 13.11	N1	0.352	<u>0.349</u>	<u>1.08</u>	<u>3.05</u>	2.4	0.7	<u>0.035</u>		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
EX-/	9-Jun-2022		11.5 - 15.85	N1	0.769	0.0729	<u>0.551</u>	<u>0.969</u>	1.8	<u>1.2</u>	0.079	468	-	-	1780	0.22	905	<5	<0.1	-	0.807	7.67	-	-	0.7	5.3	<u>940</u>	<0.02	<0.5	<0.01	<0.05	<0.02
EX-/	19-Jan-2023		11.5 - 15.65	IN I	0.322	<u>0.454</u>	<u>0.878</u>	<u>2.37</u>	<u>4.4</u>	<u>1.2</u>	0.051	497	144	<u>402</u>	1980	0.13	899	<5	<0.1	131	<u>0.576</u>	7.41	2.2	46.7	0.68	2.5	<u>1030</u>	0.18	0.8	<0.01	<0.05	0.18

a - Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines (AEP, 2022a/b) with the freshwater aquatic life pathway eliminated; Tier 2 calculated guidelines for the vapour inhalation pathway (Intrinsik, 2022); For fine-grained or coarse-grained soil, commercial or residential land use; Refer to report text for additional information on guideline selection. b - Screen interval to be confirmed.

"-" - Not analyzed.

Dup - Duplicate sample.

NG - No Guideline.

Italics - Exceeds guideline for the domestic use aquifer pathway solely.

Highlighted - Exceeds referenced guideline for the ecological soil contact pathway but not the vapour inhalation pathway.

 Highlighted
 Exceeds referenced guideline for the vapour inabalation pathway.

 BOLD
 Exceeds referenced guideline for routine water quality parameters.

Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

APPENDIX D

QUALITY ASSURANCE AND QUALITY CONTROL

#### RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES PETROLEUM HYDROCARBON PARAMETERS, 1-2-DICHLOROETHANE, AND ROUTINE PARAMETERS

SAMPLE LOCATIONS	BH1915		Dup-01			BH1936		Dup-12			
			FIELD DUPLICATE					FIELD DUPLICATE			
			BH1915					BH1936			
AGAT Certificate of Analysis No.	23C988133	RDL	23C988133	RDL	RPD	23C990277	RDL	23C990277	RDL	RPD	RPD ALERT LIMITS (%) <sup>a</sup>
AGAT Sample ID	4685365		4685366			4705533		4705534			
Screen Interval (mbgs)	10.4 - 18.6		10.4 - 18.6			5.3 - 14.7		5.3 - 14.7			
Date Sampled (yyyy/mm/dd)	2023/01/13		2023/01/13			2023/01/20		2023/01/20			
PARAMETERS											
Benzene	0.0315	0.0005	0.033	0.0005	5%	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Toluene	0.0006	0.0003	0.0007	0.0003	NC	< 0.0003	0.0003	<0.0003	0.0003	NC	80
Ethylbenzene	0.0029	0.0005	0.0033	0.0005	13%	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Total Xylenes	0.013	0.0005	0.0128	0.0005	2%	<0.0005	0.0005	<0.0005	0.0005	NC	80
Petroleum Hydrocarbons F1 (C6-C10) <sup>b</sup>	1.4	0.1	13	0.1	7%	<0.1	0.1	<0.1	0.1	NC	80
Petroleum Hydrocarbons F2 (>C10-C16) <sup>c</sup>	0.3	0.1	0.4	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
	0.5	0.1	0.4	0.1	NO	~0.1	0.1	-0.1	0.1	NG	00
1,2-Dichloroethane	0.015	0.001	0.016	0.001	6%	<0.001	0.001	<0.001	0.001	NC	80
Alkalinity (PP as CaCO3)	-	NA	-	NA	NA	-	NA		NA	NA	50
Alkalinity, Total (as CaCO3)	-	NA	-	NA	NA	-	NA		NA	NA	50
Conductivity (uS/cm)	-	NA	-	NA	NA		NA	-	NA	NA	50
Dissolved Calcium	-	NA	-	NA	NA	-	NA		NA	NA	50
Dissolved Chloride	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Iron	-	NA	-	NA	NA		NA	-	NA	NA	50
Dissolved Magnesium	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Manganese	-	NA	-	NA	NA		NA	-	NA	NA	50
Dissolved Nitrate (as N)	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Nitrate (NO3)	-	NA		NA	NA		NA		NA	NA	50
Dissolved Nitrite (as N)	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Nitrite (NO2)	-	NA	-	NA	NA		NA	-	NA	NA	50
Nitrate+Nitrite-N - Dissolved	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Potassium	-	NA		NA	NA		NA		NA	NA	50
Dissolved Sodium	-	NA		NA	NA		NA		NA	NA	50
Fluoride	-	NA	-	NA	NA		NA	-	NA	NA	50
Hardness (mg CaCO3/L)	-	NA		NA	NA		NA		NA	NA	50
Hydroxide	-	NA	-	NA	NA		NA	-	NA	NA	50
pH (pH Units)	-	NA	-	NA	NA		NA	-	NA	NA	50
Sodium Adsorption Ratio	-	NA	-	NA	NA		NA	-	NA	NA	50
Sulphate	-	NA	-	NA	NA		NA	-	NA	NA	50
TDS (Calculated)	-	NA	-	NA	NA		NA	-	NA	NA	50

a - Alert limits used for field duplicate samples.

b - BTEX have been subtracted from the fraction.

- c Naphthalene has not been subtracted from the fraction.
- NA Not applicable.

NC - Not calculated.

- RDL Reportable Detection Limit.
- RPD Relative Percent Difference (not calculated when one or both results are less than 5X RDL).
- "-" Not analyzed.
- mbgs metres below ground surface
- BOLD Exceeds RPD alert limit.

#### RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES PETROLEUM HYDROCARBON PARAMETERS, 1-2-DICHLOROETHANE, AND ROUTINE PARAMETERS

SAMPLE LOCATIONS	BH1906		DUP-02			BH1910		DUP-03			
			FIELD DUPLICATE					FIELD DUPLICATE			
			BH1906					BH1910			
AGAT Certificate of Analysis No.	23C989369	RDL	23C989369	RDL	RPD	23C989369	RDL	23C989369	RDL	RPD	RPD ALERT LIMITS (%) <sup>a</sup>
AGAT Sample ID	4697540		4697618			4697626		4697627			
Screen Interval (mbgs)	11.6 - 19.2		11.6 - 19.2			11.0 - 18.6		11.0 - 18.6			
Date Sampled (yyyy/mm/dd)	2023/01/17		2023/01/17			2023/01/17		2023/01/17			
PARAMETERS											
Benzene	1.65	0.0005	1.62	0.0005	2%	0.135	0.0005	0.136	0.0005	1%	80
Toluene	<0.0003	0.0003	<0.0003	0.0003	NC	< 0.0003	0.0003	<0.0003	0.0003	NC	80
Ethylbenzene	<0.0005	0.0005	<0.0005	0.0005	NC	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Total Xylenes	<0.0005	0.0005	<0.0005	0.0005	NC	<0.0005	0.0005	<0.0005	0.0005	NC	80
Petroleum Hydrocarbons F1 (C6-C10) <sup>6</sup>	<0.1	0.1	<0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
Petroleum Hydrocarbons F2 (>C10-C16) <sup>c</sup>	<0.1	0.1	<0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
1,2-Dichloroethane	0.028	0.001	0.028	0.001	0%	0.022	0.001	0.021	0.001	5%	80
Alkalinity (PP as CaCO3)	<5	5	<5	5	NC	<5	5	<5	5	NC	50
Alkalinity, Total (as CaCO3)	462	5	459	5	1%	585	5	584	5	0%	50
Conductivity (uS/cm)	1970	5	1970	5	0%	1940	5	1940	5	0%	50
Dissolved Calcium	184	0.3	184	0.3	0%	143	0.3	143	0.3	0%	50
Dissolved Chloride	311	1.0	314	1.0	1%	347	1.0	341	1.0	2%	50
Dissolved Iron	<0.1	0.1	<0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	50
Dissolved Magnesium	101	0.2	100	0.2	1%	136	0.2	137	0.2	1%	50
Dissolved Manganese	0.677	0.005	0.674	0.005	0%	0.573	0.005	0.577	0.005	1%	50
Dissolved Nitrate (as N)	31.2	0.02	31.6	0.02	1%	1.15	0.02	1.15	0.02	0%	50
Dissolved Nitrate (NO3)	138	1.0	140	1.0	1%	5.1	1.0	5.1	1.0	0%	50
Dissolved Nitrite (as N)	5.39	0.01	5.54	0.01	3%	0.04	0.01	0.05	0.01	NC	50
Dissolved Nitrite (NO2)	17.7	0.05	18.2	0.05	3%	0.14	0.05	0.15	0.05	NC	50
Nitrate+Nitrite-N - Dissolved	36.6	0.02	37.2	0.02	2%	1.19	0.02	1.20	0.02	1%	50
Dissolved Potassium	4.7	0.6	4.7	0.6	0%	3.2	0.6	3.2	0.6	0%	50
Dissolved Sodium	50.8	0.6	50.0	0.6	2%	46.2	0.6	46.7	0.6	1%	50
Fluoride	0.20	0.01	0.12	0.01	<u>50%</u>	0.15	0.01	0.14	0.01	7%	50
Hardness (mg CaCO3/L)	875	0.5	871	0.5	0%	917	0.5	921	0.5	0%	50
Hydroxide	<5	5	<5	5	NC	<5	5	<5	5	NC	50
pH (pH Units)	7.51	NA	7.49	NA	0%	7.52	NA	7.56	NA	1%	50
Sodium Adsorption Ratio	0.75	NA	0.74	NA	1%	0.66	NA	0.67	NA	2%	50
Sulphate	37.8	1.0	37.3	1.0	1%	27.4	1.0	27.2	1.0	1%	50
TDS (Calculated)	1130	0.6	1130	0.6	0%	1060	0.6	1060	0.6	0%	50

a - Alert limits used for field duplicate samples.

b - BTEX have been subtracted from the fraction.

- c Naphthalene has not been subtracted from the fraction.
- NA Not applicable.

NC - Not calculated.

- RDL Reportable Detection Limit.
- RPD Relative Percent Difference (not calculated when one or both results are less than 5X RDL).
- "-" Not analyzed.
- mbgs metres below ground surface
- BOLD Exceeds RPD alert limit.

#### RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES PETROLEUM HYDROCARBON PARAMETERS, 1-2-DICHLOROETHANE, AND ROUTINE PARAMETERS

SAMPLE LOCATIONS	BH1904		DUP-04			BH1981		DUP-05			
			FIELD DUPLICATE					FIELD DUPLICATE			
			BH1904					BH1981			
AGAT Certificate of Analysis No.	23C989826	RDL	23C989826	RDL	RPD	23C989826	RDL	23C989826	RDL	RPD	RPD ALERT LIMITS (%) <sup>a</sup>
AGAT Sample ID	4701816		4701817			4701831		4701832			
Screen Interval (mbgs)	12.8 - 16.8		12.8 - 16.8			3.0 - 9.1		3.0 - 9.1			
Date Sampled (yyyy/mm/dd)	2023/01/18		2023/01/18			2023/01/18		2023/01/18			
PARAMETERS											
Benzene	0.114	0.0005	0.115	0.0005	1%	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Toluene	< 0.0003	0.0003	<0.0003	0.0003	NC	< 0.0003	0.0003	<0.0003	0.0003	NC	80
Ethylbenzene	< 0.0005	0.0005	<0.0005	0.0005	NC	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Total Xylenes	0.0005	0.0005	0.0006	0.0005	NC	<0.0005	0.0005	<0.0005	0.0005	NC	80
Petroleum Hydrocarbons F1 (C6-C10)°	<0.1	0.1	<0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
Petroleum Hydrocarbons F2 (>C10-C16)°	<0.1	0.1	<0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
1,2-Dichloroethane	<0.001	0.001	<0.001	0.001	NC	0.027	0.001	0.026	0.001	4%	80
Alkalinity (PP as CaCO3)		NA	-	NA	NA		NA	-	NA	NA	50
Alkalinity Total (as CaCO3)		NA		NA	NA		NA		NA	NA	50
Conductivity (uS/cm)		NA	-	NA	NA		NA		NA	NA	50
Dissolved Calcium		NA		NA	NA		NA		NA	NA	50
Dissolved Chloride		NA		NA	NA		NA		NA	NA	50
Dissolved Iron		NA		NA	NA		NA		NA	NA	50
Dissolved Magnesium		NA		NA	NA		NA		NA	NA	50
Dissolved Manganese		NA		NA	NA		NA		NA	NA	50
Dissolved Nitrate (as N)		NA		NA	NA		NA		NA	NA	50
Dissolved Nitrate (NO3)		NA		NA	NA		NA		NA	NA	50
Dissolved Nitrite (as N)		NA		NA	NA	-	NA		NA	NA	50
Dissolved Nitrite (NO2)		NA		NA	NA		NA		NA	NA	50
Nitrate+Nitrite-N - Dissolved		NA		NA	NA		NA		NA	NA	50
Dissolved Potassium		NA		NA	NA		NA		NA	NA	50
Dissolved Sodium	-	NA	-	NA	NA		NA	-	NA	NA	50
Fluoride		NA		NA	NA		NA		NA	NA	50
Hardness (mg CaCO3/L)	-	NA	-	NA	NA		NA	-	NA	NA	50
Hvdroxide	-	NA	-	NA	NA	-	NA	-	NA	NA	50
pH (pH Units)	-	NA	-	NA	NA		NA	-	NA	NA	50
Sodium Adsorption Ratio	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Sulphate	-	NA	-	NA	NA	-	NA	-	NA	NA	50
TDS (Calculated)	-	NA	-	NA	NA	-	NA	-	NA	NA	50

a - Alert limits used for field duplicate samples.

b - BTEX have been subtracted from the fraction.

- c Naphthalene has not been subtracted from the fraction.
- NA Not applicable.

NC - Not calculated.

- RDL Reportable Detection Limit.
- RPD Relative Percent Difference (not calculated when one or both results are less than 5X RDL).
- "-" Not analyzed.
- mbgs metres below ground surface
- BOLD Exceeds RPD alert limit.

#### RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES PETROLEUM HYDROCARBON PARAMETERS, 1-2-DICHLOROETHANE, AND ROUTINE PARAMETERS

SAMPLE LOCATIONS	BH1929		DUP-06			BH5002		DUP-07			
			FIELD DUPLICATE					FIELD DUPLICATE			
			BH1929					BH5002			
AGAT Certificate of Analysis No.	23C989826	RDL	23C989826	RDL	RPD	23C989826	RDL	23C989826	RDL	RPD	RPD ALERT LIMITS (%) <sup>a</sup>
AGAT Sample ID	4701833		4701834			4701853		4701854			
Screen Interval (mbgs)	5.5 - 14.9		5.5 - 14.9			1.5 - 3.05		1.5 - 3.05			
Date Sampled (yyyy/mm/dd)	2023/01/18		2023/01/18			2023/01/18		2023/01/18			
PARAMETERS											
Benzene	< 0.0005	0.0005	< 0.0005	0.0005	NC	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Toluene	< 0.0003	0.0003	< 0.0003	0.0003	NC	< 0.0003	0.0003	<0.0003	0.0003	NC	80
Ethylbenzene	< 0.0005	0.0005	< 0.0005	0.0005	NC	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Total Xylenes	< 0.0005	0.0005	< 0.0005	0.0005	NC	<0.0005	0.0005	<0.0005	0.0005	NC	80
5 · · · · · · · · · · · · · · · · · · ·											
Petroleum Hydrocarbons F1 (Cb-C10)"	<0.1	0.1	<0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
Petroleum Hydrocarbons F2 (>C10-C16)*	<0.1	0.1	<0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
1,2-Dichloroethane	<0.001	0.001	<0.001	0.001	NC	<0.001	0.001	<0.001	0.001	NC	80
Alkalinity (PP as CaCO3)		NΔ		NΔ	NΔ		NΔ	-	NΔ	NΔ	50
Alkalinity (11 us 00000)		NΔ		NΔ	NΔ		NA		NΔ	NΔ	50
Conductivity (uS/cm)		NΔ		NΔ	NΔ		NA		NΔ	NΔ	50
Dissolved Calcium		NΔ		NA	NΔ		NA		NΔ	NΔ	50
Dissolved Chloride		NΔ		NΔ	NΔ		NA		NΔ	NΔ	50
Dissolved Iron		NA	_	NA	NA		NA	-	NA	NA	50
Dissolved Magnesium		NA		NA	NA		NA		NA	NA	50
Dissolved Magneolani		NA		NA	NA		NA		NA	NA	50
Dissolved Nitrate (as N)		NA		NA	NA		NA		NA	NA	50
Dissolved Nitrate (NO3)		NA		NA	NA		NA		NA	NA	50
Dissolved Nitrite (as N)		NA		NA	NA		NA		NA	NA	50
Dissolved Nitrite (NO2)		NA		NA	NA		NA		NA	NA	50
Nitrate+Nitrite-N - Dissolved		NA		NA	NA		NA		NA	NA	50
Dissolved Potassium		NA		NA	NA		NA		NA	NA	50
Dissolved Sodium		NA		NA	NA		NA		NA	NA	50
Fluoride		NA		NA	NA		NA		NA	NA	50
Hardness (mg CaCO3/L)		NA		NA	NA		NA		NA	NA	50
Hydroxide		NA		NA	NA		NA		NA	NA	50
pH (pH Units)	-	NA		NA	NA	-	NA	-	NA	NA	50
Sodium Adsorption Ratio	-	NA		NA	NA	-	NA	-	NA	NA	50
Sulphate	-	NA		NA	NA	-	NA	-	NA	NA	50
TDS (Calculated)	-	NA		NA	NA	-	NA	-	NA	NA	50

a - Alert limits used for field duplicate samples.

b - BTEX have been subtracted from the fraction.

- c Naphthalene has not been subtracted from the fraction.
- NA Not applicable.

NC - Not calculated.

- RDL Reportable Detection Limit.
- RPD Relative Percent Difference (not calculated when one or both results are less than 5X RDL).
- "-" Not analyzed.
- mbgs metres below ground surface
- BOLD Exceeds RPD alert limit.

#### RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES PETROLEUM HYDROCARBON PARAMETERS, 1-2-DICHLOROETHANE, AND ROUTINE PARAMETERS

SAMPLE LOCATIONS	BH510A		DUP-08			BH2004		DUP-09			
			FIELD DUPLICATE					FIELD DUPLICATE			
			BH510A					BH2004			
AGAT Certificate of Analysis No.	23C990183	RDL	23C990183	RDL	RPD	23C990183	RDL	23C990183	RDL	RPD	RPD ALERT LIMITS (%) <sup>a</sup>
AGAT Sample ID	4705065		4705066			4705074		4705075			
Screen Interval (mbgs)	11.3 - 17.4		11.3 - 17.4			4.9 - 6.4		4.9 - 6.4			
Date Sampled (yyyy/mm/dd)	2023/01/19		2023/01/19			2023/01/19		2023/01/19			
PARAMETERS											
Benzene	0.169	0.0005	0.172	0.0005	2%	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Toluene	0.0115	0.0003	0.0114	0.0003	1%	< 0.0003	0.0003	<0.0003	0.0003	NC	80
Ethylbenzene	0.348	0.0005	0.358	0.0005	3%	< 0.0005	0.0005	<0.0005	0.0005	NC	80
Total Xylenes	0.0208	0.0005	0.0193	0.0005	7%	<0.0005	0.0005	<0.0005	0.0005	NC	80
Petroleum Hydrocarbons E1 (C6-C10) <sup>b</sup>	1.1	0.1	1.0	0.1	109/	-0.1	0.1	-0.1	0.1	NC	90
Petroleum Hydrocarbons F2 (>C10,C16) <sup>c</sup>	1.1	0.1	1.0	0.1	10%	10.1	0.1	<0.1 ±0.1	0.1	NC	00
	0.2	0.1	0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
1,2-Dichloroethane	0.019	0.001	0.020	0.001	5%	<0.001	0.001	<0.001	0.001	NC	80
Alkalinity (PP as CaCO3)	-	NA		NA	NA	-	NA		NA	NA	50
Alkalinity, Total (as CaCO3)	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Conductivity (uS/cm)	-	NA		NA	NA	-	NA		NA	NA	50
Dissolved Calcium	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Chloride	-	NA		NA	NA	-	NA		NA	NA	50
Dissolved Iron	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Magnesium	-	NA		NA	NA	-	NA		NA	NA	50
Dissolved Manganese	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Nitrate (as N)	-	NA		NA	NA	-	NA		NA	NA	50
Dissolved Nitrate (NO3)	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Nitrite (as N)	-	NA		NA	NA	-	NA		NA	NA	50
Dissolved Nitrite (NO2)	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Nitrate+Nitrite-N - Dissolved	-	NA		NA	NA	-	NA		NA	NA	50
Dissolved Potassium	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Sodium	-	NA		NA	NA	-	NA		NA	NA	50
Fluoride	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Hardness (mg CaCO3/L)	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Hydroxide	-	NA		NA	NA	-	NA	-	NA	NA	50
pH (pH Units)	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Sodium Adsorption Ratio	-	NA	-	NA	NA	-	NA	-	NA	NA	50
Sulphate	-	NA	-	NA	NA	-	NA	-	NA	NA	50
TDS (Calculated)	-	NA	-	NA	NA	-	NA	-	NA	NA	50
	1										

a - Alert limits used for field duplicate samples.

b - BTEX have been subtracted from the fraction.

- c Naphthalene has not been subtracted from the fraction.
- NA Not applicable.

NC - Not calculated.

- RDL Reportable Detection Limit.
- RPD Relative Percent Difference (not calculated when one or both results are less than 5X RDL).
- "-" Not analyzed.
- mbgs metres below ground surface
- BOLD Exceeds RPD alert limit.

#### RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES PETROLEUM HYDROCARBON PARAMETERS, 1-2-DICHLOROETHANE, AND ROUTINE PARAMETERS

SAMPLE LOCATIONS	BH1942		DUP-10			BH1982		DUP-11			
			FIELD DUPLICATE					FIELD DUPLICATE			
			BH1942					BH1982			
AGAT Certificate of Analysis No.	23C990183	RDL	23C990183	RDL	RPD	23C990183	RDL	23C990183	RDL	RPD	RPD ALERT LIMITS (%) <sup>a</sup>
AGAT Sample ID	4705229		4705230			4705233		4705234			
Screen Interval (mbgs)	4.4 - 8.5		4.4 - 8.5			1.5 - 7.9		1.5 - 7.9			
Date Sampled (yyyy/mm/dd)	2023/01/19		2023/01/19			2023/01/19		2023/01/19			
PARAMETERS											
Benzene	<0.0005	0.0005	< 0.0005	0.0005	NC	0.0477	0.0005	0.0463	0.0005	3%	80
Toluene	< 0.0003	0.0003	< 0.0003	0.0003	NC	0.0055	0.0003	0.006	0.0003	9%	80
Ethylbenzene	<0.0005	0.0005	< 0.0005	0.0005	NC	0.0301	0.0005	0.0331	0.0005	9%	80
Total Xylenes	<0.0005	0.0005	< 0.0005	0.0005	NC	0.0029	0.0005	0.0031	0.0005	7%	80
Petroleum Hydrocarbons F1 (C6-C10) <sup>o</sup>	<0.1	0.1	<0.1	0.1	NC	0.4	0.1	0.4	0.1	NC	80
Petroleum Hydrocarbons F2 (>C10-C16) <sup>c</sup>	<0.1	0.1	<0.1	0.1	NC	<0.1	0.1	<0.1	0.1	NC	80
1,2-Dichloroethane	< 0.001	0.001	<0.001	0.001	NC	0.097	0.001	0.111	0.001	13%	80
Alkalinity (PP as CaCO3)		NA		NA	NA	-	NA		NA	NA	50
Alkalinity, Total (as CaCO3)		NA		NA	NA	-	NA		NA	NA	50
Conductivity (uS/cm)		NA		NA	NA	-	NA		NA	NA	50
Dissolved Calcium		NA		NA	NA	-	NA	-	NA	NA	50
Dissolved Chloride		NA		NA	NA	-	NA		NA	NA	50
Dissolved Iron		NA		NA	NA	-	NA		NA	NA	50
Dissolved Magnesium		NA		NA	NA	-	NA		NA	NA	50
Dissolved Manganese		NA		NA	NA	-	NA		NA	NA	50
Dissolved Nitrate (as N)		NA		NA	NA	-	NA		NA	NA	50
Dissolved Nitrate (NO3)		NA		NA	NA	-	NA		NA	NA	50
Dissolved Nitrite (as N)		NA	-	NA	NA	-	NA	-	NA	NA	50
Dissolved Nitrite (NO2)		NA		NA	NA	-	NA		NA	NA	50
Nitrate+Nitrite-N - Dissolved		NA		NA	NA	-	NA		NA	NA	50
Dissolved Potassium		NA		NA	NA	-	NA		NA	NA	50
Dissolved Sodium		NA		NA	NA	-	NA		NA	NA	50
Fluoride		NA		NA	NA	-	NA		NA	NA	50
Hardness (mg CaCO3/L)		NA		NA	NA	-	NA		NA	NA	50
Hydroxide		NA	-	NA	NA	-	NA	-	NA	NA	50
pH (pH Units)		NA	-	NA	NA	-	NA	-	NA	NA	50
Sodium Adsorption Ratio		NA	-	NA	NA	-	NA	-	NA	NA	50
Sulphate		NA	-	NA	NA	-	NA	-	NA	NA	50
TDS (Calculated)		NA	-	NA	NA	-	NA	-	NA	NA	50

a - Alert limits used for field duplicate samples.

b - BTEX have been subtracted from the fraction.

c - Naphthalene has not been subtracted from the fraction.

NA - Not applicable.

NC - Not calculated.

RDL - Reportable Detection Limit.

RPD - Relative Percent Difference (not calculated when one or both results are less than 5X RDL).

"-" - Not analyzed.

mbgs - metres below ground surface

BOLD - Exceeds RPD alert limit.

## GROUNDWATER FIELD BLANK AND TRIP BLANK DATA PETROLEUM HYDROCARBON PARAMETERS AND 1,2-DICHLOROETHANE

SAMPLE LOCATIONS AGAT Certificate of Analysis No. AGAT Sample ID Date Sampled (yyyy/mm/dd)	RDL	EQUIPMENT BLANK EB-Bailer-01 23C989826 4701837 2023/01/18	EXCEEDS ALERT LIMIT (yes/no)	EQUIPMENT BLANK EB-Bailer-02 23C990183 4705082 2023/01/19	EXCEEDS ALERT LIMIT (yes/no)	EQUIPMENT BLANK EB-Bailer-03 23C990277 4705541 2023/01/20	EXCEEDS ALERT LIMIT (yes/no)
PARAMETERS							
Benzene Toluene Ethylbenzene Total Xylenes	0.0005 0.0003 0.0005 0.0005	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No
Petroleum Hydrocarbons F1 (C6-C10) <sup>a</sup> Petroleum Hydrocarbons F2 (>C10-C16) <sup>b</sup> 1,2-Dichloroethane	0.1 0.1 0.001	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No

a - BTEX have been subtracted from the fraction.

b - Naphthalene has not been subtracted from the fraction.

RDL - Reportable Detection Limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons fractions F1 and F2.

## GROUNDWATER FIELD BLANK AND TRIP BLANK DATA PETROLEUM HYDROCARBON PARAMETERS AND 1,2-DICHLOROETHANE

SAMPLE LOCATIONS AGAT Certificate of Analysis No. AGAT Sample ID Date Sampled (yyyy/mm/dd)	RDL	EQUIPMENT BLANK EB-Hydra-01 23C989826 4701836 2023/01/18	EXCEEDS ALERT LIMIT (yes/no)	EQUIPMENT BLANK EB-Hydra-02 23C990183 4705081 2023/01/19	EXCEEDS ALERT LIMIT (yes/no)	EQUIPMENT BLANK EB-Hydra-03 23C990277 4705540 2023/01/20	EXCEEDS ALERT LIMIT (yes/no)
PARAMETERS							
Benzene Toluene Ethylbenzene Total Xylenes	0.0005 0.0003 0.0005 0.0005	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No
Petroleum Hydrocarbons F1 (C6-C10) <sup>a</sup> Petroleum Hydrocarbons F2 (>C10-C16) <sup>b</sup> 1,2-Dichloroethane	0.1 0.1 0.001	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No

a - BTEX have been subtracted from the fraction.

b - Naphthalene has not been subtracted from the fraction.

RDL - Reportable Detection Limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons fractions F1 and F2.

## GROUNDWATER FIELD BLANK AND TRIP BLANK DATA PETROLEUM HYDROCARBON PARAMETERS AND 1,2-DICHLOROETHANE

SAMPLE LOCATIONS AGAT Certificate of Analysis No. AGAT Sample ID Date Sampled (yyyy/mm/dd)	RDL	TRIP BLANK 'Trip Blank -01 23C988133 4685368 2023/01/13	EXCEEDS ALERT LIMIT (yes/no)	TRIP BLANK 'Trip Blank-02 23C989369 4697635 2023/01/17	EXCEEDS ALERT LIMIT (yes/no)	TRIP BLANK 'Trip Blank-03 23C989826 4701838 2023/01/18	EXCEEDS ALERT LIMIT (yes/no)
PARAMETERS							
Benzene Toluene Ethylbenzene Total Xylenes	0.0005 0.0003 0.0005 0.0005	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No
Petroleum Hydrocarbons F1 (C6-C10) <sup>a</sup> Petroleum Hydrocarbons F2 (>C10-C16) <sup>b</sup> 1,2-Dichloroethane	0.1 0.1 0.001	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No

a - BTEX have been subtracted from the fraction.

b - Naphthalene has not been subtracted from the fraction.

RDL - Reportable Detection Limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons fractions F1 and F2.

## GROUNDWATER FIELD BLANK AND TRIP BLANK DATA PETROLEUM HYDROCARBON PARAMETERS AND 1,2-DICHLOROETHANE

SAMPLE LOCATIONS AGAT Certificate of Analysis No. AGAT Sample ID Date Sampled (yyyy/mm/dd)	RDL	TRIP BLANK 'Trip Blank-03 23C989369 4697636 2023/01/17	EXCEEDS ALERT LIMIT (yes/no)	TRIP BLANK 'Trip Blank-04 23C989826 4701839 2023/01/18	EXCEEDS ALERT LIMIT (yes/no)	TRIP BLANK 'Trip Blank-05 23C989826 4701857 2023/01/18	EXCEEDS ALERT LIMIT (yes/no)
PARAMETERS							
Benzene Toluene Ethylbenzene Total Xylenes	0.0005 0.0003 0.0005 0.0005	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No
Petroleum Hydrocarbons F1 (C6-C10) <sup>a</sup> Petroleum Hydrocarbons F2 (>C10-C16) <sup>b</sup> 1,2-Dichloroethane	0.1 0.1 0.001	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No

a - BTEX have been subtracted from the fraction.

b - Naphthalene has not been subtracted from the fraction.

RDL - Reportable Detection Limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons fractions F1 and F2.

## GROUNDWATER FIELD BLANK AND TRIP BLANK DATA PETROLEUM HYDROCARBON PARAMETERS AND 1,2-DICHLOROETHANE

SAMPLE LOCATIONS AGAT Certificate of Analysis No. AGAT Sample ID Date Sampled (yyyy/mm/dd)	RDL	TRIP BLANK 'Trip Blank-06 23C989826 4701858 2023/01/18	EXCEEDS ALERT LIMIT (yes/no)	TRIP BLANK 'Trip Blank-07 23C990183 4705083 2023/01/19	EXCEEDS ALERT LIMIT (yes/no)	TRIP BLANK 'Trip Blank-08 23C990183 4705084 2023/01/19	EXCEEDS ALERT LIMIT (yes/no)
PARAMETERS							
Benzene Toluene Ethylbenzene Total Xylenes	0.0005 0.0003 0.0005 0.0005	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No
Petroleum Hydrocarbons F1 (C6-C10) <sup>a</sup> Petroleum Hydrocarbons F2 (>C10-C16) <sup>b</sup> 1,2-Dichloroethane	0.1 0.1 0.001	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No

a - BTEX have been subtracted from the fraction.

b - Naphthalene has not been subtracted from the fraction.

RDL - Reportable Detection Limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons fractions F1 and F2.

## GROUNDWATER FIELD BLANK AND TRIP BLANK DATA PETROLEUM HYDROCARBON PARAMETERS AND 1,2-DICHLOROETHANE

SAMPLE LOCATIONS AGAT Certificate of Analysis No. AGAT Sample ID Date Sampled (yyyy/mm/dd)	RDL	TRIP BLANK 'Trip Blank - 09 23C990183 4705243 2023/01/19	EXCEEDS ALERT LIMIT (yes/no)	TRIP BLANK 'Trip-10 23C990277 4705539 2023/01/20	EXCEEDS ALERT LIMIT (yes/no)
PARAMETERS					
Benzene Toluene Ethylbenzene Total Xylenes	0.0005 0.0003 0.0005 0.0005	<0.0005 <0.0003 <0.0005 <0.0005	No No No	<0.0005 <0.0003 <0.0005 <0.0005	No No No
Petroleum Hydrocarbons F1 (C6-C10) <sup>a</sup> Petroleum Hydrocarbons F2 (>C10-C16) <sup>b</sup> 1,2-Dichloroethane	0.1 0.1 0.001	<0.1 <0.1 <0.001	No No No	<0.1 <0.1 <0.001	No No No

a - BTEX have been subtracted from the fraction.

b - Naphthalene has not been subtracted from the fraction.

RDL - Reportable Detection Limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons 1

#### GROUNDWATER FIELD BLANK AND TRIP BLANK DATA VOLATILE ORGANIC COMPOUNDS

SAMPLE LOCATIONS		EQUIPMENT BLANK		EQUIPMENT BLANK		TRIP BLANK		TRIP BLANK	
		EB-Bailer-03		EB-Hyrda-03		'Trip Blank-02		'Trip Blank-03	
AGAT Certificate of Analysis No.	RDL	23C990277	LIMIT (ves/no)	23C990277	LIMIT (ves/no)	23C989369	LIMIT (ves/no)	23C989826	LIMIT (ves/no)
AGAT Sample ID		4705541	2	4705540	2 (joo,o)	4697635	2 (joo,o)	4701838	2 (joo,o)
Date Sampled (yyyy/mm/dd)		2023/01/20		2023/01/20		2023/01/17		2023/01/18	
PARAMETERS									
2-Butanone	0.01	<0.01	No	<0.01	No	<0.01	No	<0.01	No
Acetone	0.01	<0.01	No	<0.01	No	<0.01	No	<0.01	No
Bromodichloromethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Bromoform	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Bromomethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Carbon Tetrachloride	0.0005	<0.0005	No	<0.0005	No	<0.0005	No	<0.0005	No
Chlorobenzene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Chloroethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Chloroform	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Chloromethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Dibromochloromethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,2-Dibromoethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,2-Dichlorobenzene	0.0005	<0.0005	No	<0.0005	No	<0.0005	No	<0.0005	No
1,3-Dichlorobenzene	0.0005	<0.0005	No	<0.0005	No	<0.0005	No	<0.0005	No
1,4-Dichlorobenzene	0.0005	<0.0005	No	< 0.0005	No	<0.0005	No	<0.0005	No
1,1-Dichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,1-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
cis-1,2-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
trans-1,2-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,2-Dichloropropane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
cis-1,3-Dichloropropene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
trans-1,3-Dichloropropene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
2-Hexanone	0.02	<0.02	No	<0.02	No	<0.02	No	<0.02	No
Hexone	0.01	<0.01	No	<0.01	No	<0.01	No	<0.01	No
Methyl t-Butyl Ether	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Methylene Chloride	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Styrene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,1,1,2-Tetrachloroethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,1,2,2-Tetrachloroethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Tetrachloroethene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,2,4-Trichlorobenzene	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,1,1-Trichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
1,1,2-Trichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Trichloroethene	0.0003	<0.0003	No	<0.0003	No	<0.0003	No	< 0.0003	No
Trichlorofluoromethane	0.001	<0.001	No	<0.001	No	<0.001	No	<0.001	No
Vinyl Chloride	0.0008	<0.0008	No	<0.0008	No	<0.0008	No	<0.0008	No

RDL - Reportable detection limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons fractions F1 to F4. Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

#### GROUNDWATER FIELD BLANK AND TRIP BLANK DATA VOLATILE ORGANIC COMPOUNDS

SAMPLE LOCATIONS		TRIP BI ANK		TRIP BI ANK		TRIP BI ANK	
0/iiii 22 200/iii0ii0		'Trin Blank-03		'Trin Blank-04		'Trin Blank-07	
AGAT Certificate of Analysis No	RDI	230989369	EXCEEDS ALERT	230989826	EXCEEDS ALERT	230990183	EXCEEDS ALERT
AGAT Sample ID		4697636	LIMIT (yes/no)	4701839	LIMIT (yes/no)	4705083	LIMIT (yes/no)
Date Sampled (vvvv/mm/dd)		2023/01/17		2023/01/18		2023/01/19	
PARAMETERS							
2-Butanone	0.01	<0.01	No	<0.01	No	<0.01	No
Acetone	0.01	<0.01	No	<0.01	No	<0.01	No
Bromodichloromethane	0.001	<0.001	No	<0.001	No	<0.001	No
Bromoform	0.001	<0.001	No	<0.001	No	<0.001	No
Bromomethane	0.001	<0.001	No	<0.001	No	<0.001	No
Carbon Tetrachloride	0.0005	< 0.0005	No	<0.0005	No	< 0.0005	No
Chlorobenzene	0.001	<0.001	No	<0.001	No	<0.001	No
Chloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
Chloroform	0.001	<0.001	No	<0.001	No	<0.001	No
Chloromethane	0.001	<0.001	No	<0.001	No	<0.001	No
Dibromochloromethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,2-Dibromoethane	0.001	<0.001	No	< 0.001	No	<0.001	No
1,2-Dichlorobenzene	0.0005	< 0.0005	No	<0.0005	No	<0.0005	No
1,3-Dichlorobenzene	0.0005	< 0.0005	No	<0.0005	No	<0.0005	No
1,4-Dichlorobenzene	0.0005	< 0.0005	No	<0.0005	No	<0.0005	No
1,1-Dichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,1-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No
cis-1,2-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No
trans-1,2-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No
1,2-Dichloropropane	0.001	<0.001	No	<0.001	No	<0.001	No
cis-1,3-Dichloropropene	0.001	<0.001	No	<0.001	No	<0.001	No
trans-1,3-Dichloropropene	0.001	<0.001	No	<0.001	No	<0.001	No
2-Hexanone	0.02	<0.02	No	<0.02	No	<0.02	No
Hexone	0.01	<0.01	No	<0.01	No	<0.01	No
Methyl t-Butyl Ether	0.001	<0.001	No	<0.001	No	<0.001	No
Methylene Chloride	0.001	<0.001	No	<0.001	No	<0.001	No
Styrene	0.001	<0.001	No	<0.001	No	<0.001	No
1,1,1,2-Tetrachloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,1,2,2-Tetrachloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
Tetrachloroethene	0.001	<0.001	No	<0.001	No	<0.001	No
1,2,4-Trichlorobenzene	0.001	<0.001	No	<0.001	No	<0.001	No
1,1,1-Trichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,1,2-Trichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
Trichloroethene	0.0003	<0.0003	No	<0.0003	No	<0.0003	No
Trichlorofluoromethane	0.001	<0.001	No	<0.001	No	<0.001	No
Vinyl Chloride	0.0008	<0.0008	No	<0.0008	No	<0.0008	No

RDL - Reportable detection limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons fractions F1 to F4. Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

#### GROUNDWATER FIELD BLANK AND TRIP BLANK DATA VOLATILE ORGANIC COMPOUNDS

SAMPLE LOCATIONS		TRIP BLANK		TRIP BLANK		TRIP BLANK	
		'Trip Blank-08		'Trip Blank - 09		'Trip-10	
AGAT Certificate of Analysis No.	RDL	23C990183	EXCEEDS ALERT	23C990183	EXCEEDS ALERT	23C990277	EXCEEDS ALERT
AGAT Sample ID		4705084	LIMII (yes/no)	4705243	LIMIT (yes/no)	4705539	LIMIT (yes/no)
Date Sampled (yyyy/mm/dd)		2023/01/19		2023/01/19		2023/01/20	
PARAMETERS							
2-Butanone	0.01	<0.01	No	<0.01	No	<0.01	No
Acetone	0.01	<0.01	No	<0.01	No	<0.01	No
Bromodichloromethane	0.001	<0.001	No	<0.001	No	<0.001	No
Bromoform	0.001	<0.001	No	<0.001	No	<0.001	No
Bromomethane	0.001	<0.001	No	<0.001	No	<0.001	No
Carbon Tetrachloride	0.0005	< 0.0005	No	<0.0005	No	< 0.0005	No
Chlorobenzene	0.001	<0.001	No	<0.001	No	<0.001	No
Chloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
Chloroform	0.001	<0.001	No	<0.001	No	<0.001	No
Chloromethane	0.001	<0.001	No	<0.001	No	<0.001	No
Dibromochloromethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,2-Dibromoethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,2-Dichlorobenzene	0.0005	< 0.0005	No	<0.0005	No	<0.0005	No
1,3-Dichlorobenzene	0.0005	< 0.0005	No	<0.0005	No	<0.0005	No
1,4-Dichlorobenzene	0.0005	< 0.0005	No	<0.0005	No	<0.0005	No
1,1-Dichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,1-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No
cis-1,2-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No
trans-1,2-Dichloroethene	0.001	<0.001	No	<0.001	No	<0.001	No
1,2-Dichloropropane	0.001	<0.001	No	<0.001	No	<0.001	No
cis-1,3-Dichloropropene	0.001	<0.001	No	<0.001	No	<0.001	No
trans-1,3-Dichloropropene	0.001	<0.001	No	<0.001	No	<0.001	No
2-Hexanone	0.02	<0.02	No	<0.02	No	<0.02	No
Hexone	0.01	<0.01	No	<0.01	No	<0.01	No
Methyl t-Butyl Ether	0.001	<0.001	No	<0.001	No	<0.001	No
Methylene Chloride	0.001	<0.001	No	<0.001	No	<0.001	No
Styrene	0.001	<0.001	No	<0.001	No	<0.001	No
1,1,1,2-Tetrachloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,1,2,2-Tetrachloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
Tetrachloroethene	0.001	<0.001	No	<0.001	No	<0.001	No
1,2,4-Trichlorobenzene	0.001	<0.001	No	<0.001	No	<0.001	No
1,1,1-Trichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
1,1,2-Trichloroethane	0.001	<0.001	No	<0.001	No	<0.001	No
Trichloroethene	0.0003	<0.0003	No	<0.0003	No	<0.0003	No
Trichlorofluoromethane	0.001	<0.001	No	<0.001	No	<0.001	No
Vinyl Chloride	0.0008	<0.0008	No	<0.0008	No	<0.0008	No

RDL - Reportable detection limit.

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and lead; 2x RDL for petroleum hydrocarbons fractions F1 to F4. Results for all parameters are reported in milligrams per litre (mg/L), unless otherwise specified.

# DATA QUALITY REVIEW CHECKLIST

Consultant: Parsons Inc.				Sampling Date: 2023/01/13		
Location: <u>1620 - 14th Av</u>	enue NW, Ca	algary, AB	Laboratory : AGAT Laboratories			
Consultant Project Number: <u>10-</u>	-12832			Sample Submission Number: 23C988133		
Are All Laboratory QC Samples Wit	nin Acceptan	nce Criteria	(Yes, No,	, Not Applicable)?		
Surrogate Recovery Method Blank Concentration Matrix Duplicate RPD Matrix Spike Recovery Other Quality Control Data	Yes X X X X X	No	NA	Comments All lab QC met acceptance criteria.		
Are All Field QC Samples Within Al	ert Limits (Y	es, No, No	t Applical	ble)?		
Equipment Blank Concentration Trip Blank Concentration Field Duplicate RPD	Yes X X	No	NA X	Comments All field QC samples have met alert limits. All field QC samples have met the acceptable RPD limits.		
Has CoA been signed off (Yes/No)?: Were all samples analyzed within ho All volatiles samples methanol extrac Is Chain of Custody completed and s Were sample temperatures acceptable	ld times (Yes eted, if requin igned (Yes/N e when they n	s/No)?: red, within 4 No)?: reached lab	48 hours ( (Yes/No)	(Yes, No or N/A)?: $ $		
Is data considered to be reliable (Yes If answer is "No", describe and provi	/No)?: de rationale:			Yes		
Performed by (Print): <u>Da</u> Reviewed by (Print): <u>Mi</u> Reviewed date: <u>20</u> .	nielle Smith chelle Patter 23/05/02	'son		Reviewed by (Signature):		



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## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP **BOX 1720 STN M** CALGARY, AB T2P 0A2 **ATTENTION TO: Michelle Patterson** PROJECT: 10-12832 AGAT WORK ORDER: 23C988133 TRACE ORGANICS REVIEWED BY: Joanne Wudrich, Laboratory Manager DATE REPORTED: Jan 18, 2023 PAGES (INCLUDING COVER): 7 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (403) 735-2005

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
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## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

## ATTENTION TO: Michelle Patterson

DATE REPORTED: 2023-01-18

#### SAMPLED BY:Gavin Clarke

# SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

DATE RECEIVED: 2023	-01-13
---------------------	--------

		SAMPLE DESCRIPTION:	BH1912	BH1913	BH1914	BH1915	Dup-01	BH1916	Trip Blank -01	
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-13	2023-01-13	2023-01-13	2023-01-13	2023-01-13	2023-01-13	2023-01-13	
Parameter	Unit	G/S RDL	4685361	4685363	4685364	4685365	4685366	4685367	4685368	
Benzene	mg/L	0.0005	0.007	<0.0005	<0.0005	0.0315	0.033	<0.0005	<0.0005	
Toluene	mg/L	0.0003	<0.0003	<0.0003	< 0.0003	0.0006	0.0007	< 0.0003	< 0.0003	
Ethylbenzene	mg/L	0.0005	< 0.0005	<0.0005	< 0.0005	0.0029	0.0033	< 0.0005	<0.0005	
m,p-Xylenes	mg/L	0.0005	< 0.0005	<0.0005	<0.0005	0.0108	0.0107	< 0.0005	<0.0005	
o-Xylene	mg/L	0.0005	< 0.0005	<0.0005	< 0.0005	0.0022	0.0021	<0.0005	<0.0005	
Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	0.013	0.0128	<0.0005	<0.0005	
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	<0.1	1.4	1.3	<0.1	<0.1	
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	1.4	1.3	<0.1	<0.1	
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	0.3	0.4	<0.1	<0.1	
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	86	85	83	82	84	80	85	
o-Terphenyl (F2-F4)	%	60-140	109	112	109	109	110	109	110	

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

4685361-4685368 The F1 (C6 - C10) fraction is determined by integrating the FID chromatogram from the beginning of the nC6 peak to the apex of the last nC10 peak.

The C6 - C10 fraction is calculated from the FID toluene response factor.

The F2 (C10 - C16) fraction is determined by integrating the FID chromatogram from the apex of the nC10 peak to the apex of the nC16 peak.

The F2 (C10 - C16) fraction is calculated using the average response factor for nC10, nC16, and nC34.

Quality control for the calibration follows the guidelines set out in the CCME Contaminated Sites Method for Soils.

C6 – C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>10 – C16 (F2- Napthalene) is a calculated parameter. The calculated value is F2 - Napthalene (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

Extraction and holding times were met for this sample.

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Joanne Wudrich



AGAT WORK ORDER: 23C988133 PROJECT: 10-12832

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### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### **ATTENTION TO: Michelle Patterson**

SAMPLED BY:Gavin Clarke

		Volatile Organic Compounds in Water - 1,2-DCA									
DATE RECEIVED: 2023-01-13								I	DATE REPORT	ED: 2023-01-18	
		SAMPLE DES SAM DATE	CRIPTION: PLE TYPE: SAMPLED:	BH1912 Water 2023-01-13	BH1913 Water 2023-01-13	BH1914 Water 2023-01-13	BH1915 Water 2023-01-13	Dup-01 Water 2023-01-13	BH1916 Water 2023-01-13	Trip Blank -01 Water 2023-01-13	
Parameter	Unit	G/S	RDL	4685361	4685363	4685364	4685365	4685366	4685367	4685368	
1,2-Dichloroethane Surrogate	mg/L <b>Unit</b>	Acceptal	0.001 Die Limits	0.015	<0.001	<0.001	0.015	0.016	<0.001	<0.001	
Toluene-d8	%	50-	140	86	84	87	72	73	81	83	

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

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Joanne Wudrich



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# **Quality Assurance**

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

### PROJECT: 10-12832

#### SAMPLING SITE:

AGAT WORK ORDER: 23C988133 ATTENTION TO: Michelle Patterson SAMPLED BY:Gavin Clarke

# **Trace Organics Analysis**

			1												
RPT Date: Jan 18, 2023				UPLICAT	E		REFEREN	ICE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lir	ptable nits	Recovery	Acce Lin	ptable nits	Recovery	Acce Lir	ptable nits
		Ia					value	Lower	Upper		Lower	Upper		Lower	Upper
SUNCOR - Petroleum Hydrocarbo	ns (BTE)	K/F1-F2) in	Water												
Benzene	4804	4685363	<0.0005	<0.0005	NA	< 0.0005	90%	60%	140%	88%	60%	140%	77%	60%	140%
Toluene	4804	4685363	<0.0003	<0.0003	NA	< 0.0003	90%	60%	140%	94%	60%	140%	84%	60%	140%
Ethylbenzene	4804	4685363	<0.0005	<0.0005	NA	< 0.0005	84%	60%	140%	94%	60%	140%	82%	60%	140%
m,p-Xylenes	4804	4685363	<0.0005	<0.0005	NA	< 0.0005	82%	60%	140%	98%	60%	140%	88%	60%	140%
o-Xylene	4804	4685363	<0.0005	<0.0005	NA	< 0.0005	82%	60%	140%	98%	60%	140%	88%	60%	140%
Xylenes	4804	4685363	<0.0005	<0.0005	NA	< 0.0005	82%	60%	140%	98%	60%	140%	88%	60%	140%
C6 - C10 (F1)	4804	4685363	<0.1	<0.1	NA	< 0.1	85%	60%	140%	104%	60%	140%	104%	60%	140%
C>10 - C16	8020	4685363	<0.1	<0.1	NA	< 0.1	86%	60%	140%	79%	60%	140%	83%	60%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

#### Volatile Organic Compounds in Water - 1,2-DCA

	1,2-Dichloroethane	4552	4685361	0.015	0.015	NA	< 0.001	101%	50%	140%	96%	60%	130%	100%	50%	14
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Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

Certified By:

Voanne Wudrich

### **AGAT** QUALITY ASSURANCE REPORT (V1)

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# **Method Summary**

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

#### SAMPLING SITE:

AGAT WORK ORDER: 23C988133 ATTENTION TO: Michelle Patterson SAMPLED BY:Gavin Clarke

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis	ŀ	·	•
Benzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Toluene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Ethylbenzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
m,p-Xylenes	TO-0542	EPA SW-846 5021/8260-W	GC/MS
o-Xylene	TO-0542	EPA SW-846 5021/8260-W	GC/MS
Xylenes	TO 0332	EPA SW-846 5021 & 8260	GC/MS
C6 - C10 (F1)	TO 0542	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0542	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO-0543	EPA SW-846 5021 & 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Sediment	TO-0511	CCME Tier 1 Method	GC/FID
1,2-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Toluene-d8	TO-0330	EPA SW-846 5030 & 8260	GC/MS

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PO/AFE#:							MV			lity.	BTE	HUN HUN	H H		- S	3 Clas	Total						DAYS	DAYS.
		1.2.2.5		127	СОМ	MENTS	# OF	CONTA	INERS	Sali	/AB :	EXS,	als: [	etals	Wate	DAE	:s	Size:					301	301
LABORATORY USE (LAB ID #)	SAMPLE IDENTIFICATION	DEPTH	DATE/TIME SAMPLED	SAMPLE	(FILTERED, HAZA *ADDIT	PRESERVED, RDOUS*) IONAL FEE	VIALS / JARS	BAGS	BOTTLES	Detailed		CIBC: BI	Soil Met	Water M	Routine	Landfill:	Coliform	Particle	1,2 DCA	VOC			HOLD FOI	HOLD FOI
1	BH1912		01/13/2023	G.W	Fiese	weil			6		X								X					
2	BH1913								6		$ \chi $								X					_
3	BH1914								6		X								X					
4	BM1915								6		X							Ľ	$\times$					
5	PUP-DI								6		X								X					
6	BH1916		3	V					6		$\times$	_	_		_			Ľ	X	_		_		
7	Trip Black-01		Je .	Other-					D		X								X					
8										-		_		-					_			_	-	_
9																								
10												Ì												
Samples Relinquished By P	int Name and Sign Dra- Unit	Date/Time 01/13/2	2/23 1 5:00 Samples Re	ceived By (Prin	Name and Sig	apera	A			Date,	N 1	3 20	23	Pir	nk Co	ру - (	Client		F	Page	1	of		
Samples Relinquished By (P Samples Relinquished By (P	rint Name and Sign):	Date/Time '	Samples Re Samples Re	ceived By (Print	t Name and Sig	n): /		T		Date/	Time			Yell Wr	low C nite C	ору - ору-	· AGAT AGAT	N°	': AB	4				
Desumont Ex DB/ EQ 150	7007								_					1			_				Date F	texised: /	or 20.	2023

agat Lat	SAMPLE INTEGRITY RECEIPT FORM
RECEIVING BASICS - Shipping         Company/Consultant:       Parson       /Sunor         Courier:       0/0       Prepaid       Collect         Waybill#	Temperature (Bottles/Jars only) N/A if only Soil Bags ReceivedFROZEN (Please Circle if samples received Frozen)1 (Bottle/Jar)/2 + $\frac{13}{2}$ + $\frac{13}{2}$ = $\frac{13}{2}$ °C2 (Bottle/Jar) + + = = °C3 (Bottle/Jar) + + + = °C4 (Bottle/Jar) + + = °C5 (Bottle/Jar) + + + = °C6 (Bottle/Jar) + + = °C7 (Bottle/Jar) + + + = °C8 (Bottle/Jar) + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + + = °C9 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + + + = °C10 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + + + = °C10 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + + + = °C10 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + + + + = °C10 (Bottle/Jar) + + + = °C10 (Bottle/Jar) + + + + + + + + + + + + + + + + + + +
Cooler Quantity:	Workorder No: 23008/33 Samples Damaged: Yes No If YES why?
ALREADY EXCEEDED HOLD TIME? Yes No Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* , Chloroamines* Earliest Expiry:	Other:
Hydrocarbons: Earliest Expiry SAMPLE INTEGRITY - Shipping	General Comments:
Hazardous Samples: YES NO Precaution Taken: Legal Samples: Yes No International Samples: Yes No Tape Sealed: Yes No Coolant Used: Icepack Bagged Ce Free Ice Free Water None	

\* Subcontracted Analysis (See CPM)

Date issued: March 11, 2020 Document ID: SR-9505.004

# DATA QUALITY REVIEW CHECKLIST

Consultant: Parsons Inc.				Sampling Date: 2023/01/17
Location: <u>1620 - 14th</u> 2	Avenue NW, Ca	lgary, AB		Laboratory : AGAT Laboratories
Consultant Project Number:	0-12832			Sample Submission Number: 23C989369
Are All Laboratory QC Samples W	ithin Acceptan	ce Criteria	(Yes, No	Not Applicable)?
Surrogate Recovery Method Blank Concentration Matrix Duplicate RPD Matrix Spike Recovery Other Quality Control Data	Yes X X X X X X	No	NA	Comments <i>All lab QC met acceptance criteria.</i>
Are All Field QC Samples Within	Alert Limits (Y	es, No, Not	t Applical	ble)?
Equipment Blank Concentration Trip Blank Concentration Field Duplicate RPD	Yes X X	No	NA X	Comments All field QC samples have met alert limits. The field duplicate (DUP-02) for fluoride (50%) is beyond the acceptable limits. All other field QC samples met the alert limits.
Has CoA been signed off (Yes/No) Were all samples analyzed within H All volatiles samples methanol extr Is Chain of Custody completed and Were sample temperatures acceptal	?: nold times (Yes. racted, if require l signed (Yes/N ble when they r	/No)?: ed, within 4 o)?: eached lab	48 hours ( (Yes/No)	(Yes, No or N/A)?:  Yes $N/AYesYesYes$
Is data considered to be reliable (Y If answer is "No", describe and pro	es/No)?: vide rationale:			Yes
Performed by (Print): 1 Reviewed by (Print): 7 Reviewed date: 2	Danielle Smith Michelle Patter: 2023/05/02	son		Reviewed by (Signature):



2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP **BOX 1720 STN M** CALGARY, AB T2P 0A2 ATTENTION TO: Stephen D'Abadie PROJECT: 10-12832 AGAT WORK ORDER: 23C989369 TRACE ORGANICS REVIEWED BY: Elena Gorobets, Report Writer WATER ANALYSIS REVIEWED BY: Thomas Yoo, Report Writer DATE REPORTED: Jan 25, 2023 PAGES (INCLUDING COVER): 17 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (403) 735-2005

\*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

**AGAT** Laboratories (V1)

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(APEGA)	
Western Enviro-Agricultural Laboratory Association (WEALA)	
Environmental Services Association of Alberta (ESAA)	

Page 1 of 17

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AGAT WORK ORDER: 23C989369 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

# CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

## SAMPLED BY:

ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-20

# SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

### DATE RECEIVED: 2023-01-17

							•		-D. 2020 01 20	
		SAMPLE DESCRIPTION:	BH1966	BH1102	BH1906	DUP-02	BH1971	BH1907	BH1973	BH1911
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-17 10:51	2023-01-17 11:00	2023-01-17 11:20	2023-01-17 11:20	2023-01-17 11:40	2023-01-17 11:50	2023-01-17 12:10	2023-01-17 12:30
Parameter	Unit	G/S RDL	4697535	4697539	4697540	4697618	4697620	4697621	4697622	4697623
Benzene	mg/L	0.0005	<0.0005	<0.0005	1.65	1.62	0.0037	0.387	0.0034	<0.0005
Toluene	mg/L	0.0003	< 0.0003	< 0.0003	< 0.0003	<0.0003	0.0004	2.82	0.0007	< 0.0003
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0083	0.608	0.0067	<0.0005
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	3.96	< 0.0005	< 0.0005
o-Xylene	mg/L	0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	1.00	<0.0005	< 0.0005
Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	4.96	< 0.0005	<0.0005
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	1.6	1.6	1.5	11.6	0.9	<0.1
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	1.4	2.8	0.8	<0.1
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.7	0.2	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	101	107	90	89	109	131	116	102
o-Terphenyl (F2-F4)	%	60-140	107	105	107	106	103	107	106	106

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C989369 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

BH1908

Water

2023-01-17

14:10

4697632

< 0.0005

< 0.0003

< 0.0005

< 0.0005

< 0.0005

< 0.0005

# CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

# SAMPLED BY: SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

ATTENTION TO: Stephen D'Abadie

#### DATE RECEIVED: 2023-01-17 DATE REPORTED: 2023-01-20 DUP-03 SAMPLE DESCRIPTION: BH1976 BH1910 BH1974 BH6004 BH1967 BH6005 SAMPLE TYPE: Water Water Water Water Water Water Water DATE SAMPLED: 2023-01-17 2023-01-17 2023-01-17 2023-01-17 2023-01-17 2023-01-17 2023-01-17 12:40 12:45 12:45 13:00 13:20 13:30 13:45 Parameter Unit G/S RDL 4697624 4697626 4697627 4697628 4697629 4697630 4697631 Benzene mg/L 0.0005 < 0.0005 0.135 0.136 < 0.0005 < 0.0005 0.0900 0.840 Toluene mg/L 0.0003 < 0.0003 < 0.0003 < 0.0003 < 0.0003 < 0.0003 0.0072 0.639 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 0.0114 0.110 Ethylbenzene < 0.0005 mg/L m,p-Xylenes mg/L 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 0.0009 0.726 < 0.0005 o-Xylene mg/L 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 0.149 Xylenes mg/L 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 0.0009 0.875

C6 - C10 (F1)	mg/L	0.1	<0.1	0.1	0.1	<0.1	<0.1	2.5	5.3	<0.1
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.4	2.8	<0.1
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.5	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Surrogate Toluene-d8 (BTEX)	Unit %	Acceptable Limits 60-140	107	89	96	103	118	129	125	93

# Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C989369 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

# CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

# ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

# SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-17

	Ę	SAMPLE DESCRIPTION:	BH2008	BH2007	Trip Blank-02	Trip Blank-03	
		SAMPLE TYPE:	Water	Water	Water	Water	
		DATE SAMPLED:	2023-01-17 14:15	2023-01-17 14:30	2023-01-17 14:50	2023-01-17 15:00	
Parameter	Unit	G/S RDL	4697633	4697634	4697635	4697636	
Senzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
oluene	mg/L	0.0003	< 0.0003	< 0.0003	<0.0003	< 0.0003	
thylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
n,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
-Xylene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
ylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	
6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	
>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	
ediment			Not Present	Not Present	Not Present	Not Present	
Surrogate	Unit	Acceptable Limits					
oluene-d8 (BTEX)	%	60-140	109	127	104	104	
-Terphenyl (F2-F4)	%	60-140	106	106	104	106	

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

4697535-4697636 The F1 (C6 - C10) fraction is determined by integrating the FID chromatogram from the beginning of the nC6 peak to the apex of the last nC10 peak.

The C6 - C10 fraction is calculated from the FID toluene response factor.

The F2 (C10 - C16) fraction is determined by integrating the FID chromatogram from the apex of the nC10 peak to the apex of the nC16 peak.

The F2 (C10 - C16) fraction is calculated using the average response factor for nC10, nC16, and nC34.

Quality control for the calibration follows the guidelines set out in the CCME Contaminated Sites Method for Soils.

C6 – C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>10 - C16 (F2- Napthalene) is a calculated parameter. The calculated value is F2 - Napthalene (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

Extraction and holding times were met for this sample.

Analysis performed at AGAT Calgary (unless marked by \*)

Elena Gotobets

**DATE REPORTED: 2023-01-20** 



AGAT WORK ORDER: 23C989369

PROJECT: 10-12832

# CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

Volatile Organic Compounds in Water									
DATE RECEIVED: 2023-01-17					DATE REPORTED: 2023-01-19				
	S	AMPLE DESCRIPTION:	Trip Blank-02	Trip Blank-03					
		SAMPLE TYPE:	Water	Water					
		DATE SAMPLED:	2023-01-17	2023-01-17					
Deve exclusion	11.5		14:50	15:00					
Parameter	Unit	G/S RDL	4697635	4697636					
	mg/L	0.001	<0.001	<0.001					
Promomothono	mg/L	0.0006	<0.0006	<0.0008					
Chlaraethara	mg/L	0.001	<0.001	<0.001					
	mg/L	0.001	<0.001	<0.001					
	mg/L	0.001	<0.001	<0.001					
	mg/L	0.01	<0.01	<0.01					
1,1-Dichloroethylene	mg/L	0.001	<0.001	<0.001					
Methylene Chloride	mg/L	0.001	<0.001	<0.001					
Methyl Tert-Butyl Ether	mg/L	0.001	<0.001	<0.001					
Methyl Ethyl Ketone	mg/L	0.01	<0.01	<0.01					
trans-1,2-Dichloroethylene	mg/L	0.001	<0.001	<0.001					
1,1-Dichloroethane	mg/L	0.001	<0.001	<0.001					
cis-1,2-Dichloroethylene	mg/L	0.001	<0.001	<0.001					
Chloroform	mg/L	0.001	<0.001	<0.001					
1,2-Dichloroethane	mg/L	0.001	<0.001	<0.001					
1,1,1-Trichloroethane	mg/L	0.001	<0.001	<0.001					
Carbon Tetrachloride	mg/L	0.0005	<0.0005	<0.0005					
Benzene	mg/L	0.0005	<0.0005	<0.0005					
1,2-Dichloropropane	mg/L	0.001	<0.001	<0.001					
Trichloroethylene	mg/L	0.00030	<0.0003	<0.0003					
Bromodichloromethane	mg/L	0.001	<0.001	<0.001					
trans-1,3-Dichloropropene	mg/L	0.001	<0.001	<0.001					
Methyl Isobutyl Ketone	mg/L	0.01	<0.01	<0.01					
cis-1,3-Dichloropropene	mg/L	0.001	<0.001	<0.001					
1,1,2-Trichloroethane	mg/L	0.001	<0.001	<0.001					
Toluene	mg/L	0.0003	<0.0003	<0.0003					
2-Hexanone	mg/L	0.02	<0.02	<0.02					
Dibromochloromethane	mg/L	0.001	<0.001	<0.001					
Ethylene Dibromide	mg/L	0.001	<0.001	<0.001					

Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C989369

PROJECT: 10-12832

Volatile Organic Compounds in Water

CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

				• .	
DATE RECEIVED: 2023-01-17					DATE REPORTED: 2023-01-19
		SAMPLE DESCRIPTION:	Trip Blank-02	Trip Blank-03	
		SAMPLE TYPE:	Water	Water	
		DATE SAMPLED:	2023-01-17 14:50	2023-01-17 15:00	
Parameter	Unit	G/S RDL	4697635	4697636	
Tetrachloroethene	mg/L	0.001	<0.001	<0.001	
1,1,1,2-Tetrachloroethane	mg/L	0.001	<0.001	<0.001	
Chlorobenzene	mg/L	0.0010	<0.001	<0.001	
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	
Bromoform	mg/L	0.001	<0.001	<0.001	
Styrene	mg/L	0.001	<0.001	<0.001	
1,1,2,2-Tetrachloroethane	mg/L	0.001	<0.001	<0.001	
o-Xylene	mg/L	0.0005	<0.0005	<0.0005	
1,3-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	
1,4-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	
1,2-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	
1,2,4-Trichlorobenzene	mg/L	0.001	<0.001	<0.001	
Xylenes	mg/L	0.0005	<0.0005	<0.0005	
Surrogate	Unit	Acceptable Limits			
Toluene-d8	%	50-140	94	97	

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

4697635-4697636 1,1,2,2-Tetrachloroethane reported only for samples matrices which can be purged. Otherwise N/A.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Elena GotoBets

2910 12TH STREET NE

http://www.agatlabs.com

CALGARY, ALBERTA

CANADA T2E 7P7

TEL (403)735-2005 FAX (403)735-2771


AGAT WORK ORDER: 23C989369

PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

			Vola	itile Organ	ic Compour	nds in Wate	er - 1,2-DCA				
DATE RECEIVED: 2023-01-17								l	DATE REPORT	ED: 2023-01-19	
		SAMPLE DES	CRIPTION:	BH1966	BH1102	BH1906	DUP-02	BH1971	BH1907	BH1973	BH1911
		SAM	PLE TYPE:	Water							
		DATES	SAMPLED:	2023-01-17 10:51	2023-01-17 11:00	2023-01-17 11:20	2023-01-17 11:20	2023-01-17 11:40	2023-01-17 11:50	2023-01-17 12:10	2023-01-17 12:30
Parameter	Unit	G/S	RDL	4697535	4697539	4697540	4697618	4697620	4697621	4697622	4697623
1,2-Dichloroethane	mg/L		0.001	<0.001	<0.001	0.028	0.028	0.046	0.007	0.018	<0.001
Surrogate	Unit	Acceptab	le Limits								
oluene-d8 %		50-1	140	90	92	76	80	91	110	99	92
		SAMPLE DES	CRIPTION:	BH1976	BH1910	DUP-03	BH1974	BH6004	BH1967	BH6005	BH1908
		SAM	PLE TYPE:	Water							
		DATES	SAMPLED:	2023-01-17 12:40	2023-01-17 12:45	2023-01-17 12:45	2023-01-17 13:00	2023-01-17 13:20	2023-01-17 13:30	2023-01-17 13:45	2023-01-17 14:10
Parameter	Unit	G/S	RDL	4697624	4697626	4697627	4697628	4697629	4697630	4697631	4697632
1,2-Dichloroethane	mg/L		0.001	<0.001	0.022	0.021	<0.001	0.009	0.019	0.024	<0.001
Surrogate	Unit	Acceptab	le Limits								
Toluene-d8	%	50-1	140	91	83	84	97	102	103	107	98
		SAMPLE DES	CRIPTION:	BH2008	BH2007						
		SAM	PLE TYPE:	Water	Water						
		DATES	SAMPLED:	2023-01-17 14:15	2023-01-17 14:30						
Parameter	Unit	G/S	RDL	4697633	4697634						
1,2-Dichloroethane	mg/L		0.001	<0.001	<0.001						
Surrogate	Unit	Acceptab	le Limits								
Toluene-d8	%	50-7	140	98	118						

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

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C989369 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-23

SAMPLED BY:

## Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-17

		SAMPLE DESC	RIPTION:	BH1906	DUP-02	BH1910	DUP-03	
		SAMP	LE TYPE:	Water	Water	Water	Water	
		DATE S	AMPLED:	2023-01-17 11:20	2023-01-17 11:20	2023-01-17 12:45	2023-01-17 12:45	
Parameter	Unit	G/S	RDL	4697540	4697618	4697626	4697627	
рН	pH Units	7.0-10.5	N/A	7.51	7.49	7.52	7.56	
p - Alkalinity (as CaCO3)	mg/L		5	<5	<5	<5	<5	
T - Alkalinity (as CaCO3)	mg/L		5	462	459	585	584	
Bicarbonate	mg/L		5	577	572	724	723	
Carbonate	mg/L		5	<5	<5	<5	<5	
Hydroxide	mg/L		5	<5	<5	<5	<5	
Electrical Conductivity	uS/cm		5	1970	1970	1940	1940	
Chloride	mg/L	(250)	1.0	311	314	347	341	
Fluoride	mg/L	1.5	0.01	0.20	0.12	0.15	0.14	
Nitrate	mg/L	45	1.0	138	140	5.1	5.1	
Nitrate-N	mg/L	10	0.02	31.2	31.6	1.15	1.15	
Nitrite	mg/L	3	0.05	17.7	18.2	0.14	0.15	
Nitrite-N	mg/L	1	0.01	5.39	5.54	0.04	0.05	
Nitrate+Nitrite - Nitrogen	mg/L		0.02	36.6	37.2	1.19	1.20	
Sulfate	mg/L	(500)	1.0	37.8	37.3	27.4	27.2	
Dissolved Calcium	mg/L		0.3	184	184	143	143	
Dissolved Magnesium	mg/L		0.2	101	100	136	137	
Dissolved Sodium	mg/L	(200)	0.6	50.8	50.0	46.2	46.7	
Dissolved Potassium	mg/L		0.6	4.7	4.7	3.2	3.2	
Dissolved Iron	mg/L	(0.3)	0.1	<0.1	<0.1	<0.1	<0.1	
Dissolved Manganese	mg/L	0.12 (0.02)	0.005	0.677	0.674	0.573	0.577	
Sodium Adsorption Ratio				0.75	0.74	0.66	0.67	
Calculated TDS	mg/L		0.6	1130	1130	1060	1060	
Hardness	mg CaCO3/L		0.5	875	871	917	921	
Ion Balance	%		1	92	91	92	93	
Lab Filtration on Routine for IC				Complete	Complete	Complete	Complete	
Lab Filtration on Routine for Metals				Complete	Complete	Complete	Complete	

Certified By:



AGAT WORK ORDER: 23C989369 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

### Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-17

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 2020 Canadian Drinking Water Quality MAC (AO) 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.

4697540-4697627 < - Values refer to Report Detection Limits.

SAR is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. If sodium results in mg/L are less than detection, SAR is non-calculable and is reported as 0. Ion Balance is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. Hardness is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Calculated TDS is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

DATE REPORTED: 2023-01-23

Certified By:



# Quality Assurance

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

### PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989369

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

## Trace Organics Analysis

					•										
RPT Date:	Date:			DUPLICATE			REFERE	NCE MA	TERIAL	METHOD	BLAN	( SPIKE	MAT	RIX SP	IKE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Method Blank Measured Value		eptable mits	Recovery	Acce	eptable nits	Recovery	Acce Lir	⇒ptable mits
		I III					value	Lower	Upper		Lower	Upper		Lower	Upper
SUNCOR - Petroleum Hydrocarbo	ns (BTE)	X/F1-F2) in	Water											-	
Benzene	4554	4697539	<0.0005	<0.0005	NA	< 0.0005	94%	60%	140%	89%	60%	140%	87%	60%	140%
Toluene	4554	4697539	<0.0003	<0.0003	NA	< 0.0003	95%	60%	140%	89%	60%	140%	88%	60%	140%
Ethylbenzene	4554	4697539	<0.0005	<0.0005	NA	< 0.0005	92%	60%	140%	82%	60%	140%	82%	60%	140%
m,p-Xylenes	4554	4697539	<0.0005	<0.0005	NA	< 0.0005	92%	60%	140%	92%	60%	140%	92%	60%	140%
o-Xylene	4554	4697539	<0.0005	<0.0005	NA	< 0.0005	91%	60%	140%	92%	60%	140%	92%	60%	140%
Xvlenes	4554	4697539	<0.0005	<0.0005	NA	< 0.0005	92%	60%	140%	92%	60%	140%	92%	60%	140%
C6 - C10 (F1)	4554	4697539	<0.1	<0.1	NA	< 0.1	118%	60%	140%	126%	60%	140%	121%	60%	140%
C>10 - C16	8025	4697539	<0.1	<0.1	NA	< 0.1	117%	60%	140%	99%	60%	140%	96%	60%	140%
	0020	1001000	\$0.1	\$0.1		< 0.1	111 /0	0070	11070	0070	0070	11070	0070	0070	,.
Comments: Duplicate NA: results are The sample spikes and dups are not	less than from the s	5X the RDI ame sample	L and RDP e ID.	will not be	calculate	ed.									
Volatile Organic Compounds in W	/ater - 1,2	2-DCA													
1,2-Dichloroethane	4554	4697539	<0.001	<0.001	NA	< 0.001	102%	50%	140%	96%	60%	130%	94%	50%	140%
Comments: Duplicate NA: results are The sample spikes and dups are not	less than from the s	5X the RDI ame sample	L and RDP e ID.	will not be	calculate	ed.									
Volatile Organic Compounds in W	/ater														
Chloromethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	104%	50%	140%	92%	50%	140%	127%	50%	140%
Vinyl Chloride	4554	4697539	< 0.0008	< 0.0008	NA	< 0.0008	96%	50%	140%	88%	50%	140%	88%	50%	140%
Bromomethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	118%	50%	140%	104%	50%	140%	101%	50%	140%
Chloroethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	110%	50%	140%	96%	50%	140%	96%	50%	140%
Trichlorofluoromethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	121%	50%	140%	109%	60%	130%	103%	50%	140%
Acetone	4554	4697539	< 0.01	< 0.01	NA	< 0.01	74%	50%	140%	74%	50%	140%	102%	50%	140%
1,1-Dichloroethylene	4554	4697539	< 0.001	< 0.001	NA	< 0.001	126%	50%	140%	109%	60%	130%	106%	50%	140%
Methylene Chloride	4554	4697539	< 0.001	< 0.001	NA	< 0.001	107%	50%	140%	98%	60%	130%	95%	50%	140%
Methyl tert-Butyl Ether	4554	4697539	< 0.001	< 0.001	NA	< 0.001	125%	50%	140%	115%	60%	130%	103%	50%	140%
Methyl Ethyl Ketone	4554	4697539	< 0.01	< 0.01	NA	< 0.01	70%	50%	140%	80%	50%	140%	105%	50%	140%
trans-1 2-Dichloroethylene	1551	1607530	~ 0.001	< 0.001	NΔ	~ 0.001	118%	50%	1/10%	106%	60%	130%	102%	50%	1/10%
1 1-Dichloroethane	4554	4697539	< 0.001	< 0.001	NΔ	< 0.001	105%	50%	140%	94%	60%	130%	93%	50%	140%
cis-1 2-Dichloroethylene	4554	4697539	< 0.001	< 0.001	NΔ	< 0.001	126%	50%	140%	108%	60%	130%	105%	50%	140%
Chloroform	4554	4697539	< 0.001	< 0.001	NΔ	< 0.001	100%	50%	140%	92%	60%	130%	90%	50%	140%
1 2-Dichloroethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	102%	50%	140%	96%	60%	130%	94%	50%	140%
	1001	1001000	0.001	0.001		0.001	10270	0070	11070	0070	0070	10070	01/0	0070	11070
1,1,1-Trichloroethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	113%	50%	140%	102%	60%	130%	98%	50%	140%
Carbon Tetrachloride	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	111%	50%	140%	105%	60%	130%	99%	50%	140%
Benzene	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	91%	50%	140%	93%	60%	130%	93%	50%	140%
1,2-Dichloropropane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	83%	50%	140%	88%	60%	130%	88%	50%	140%
Trichloroethylene	4554	4697539	< 0.00030	< 0.00030	) NA	< 0.00030	0 96%	50%	140%	98%	60%	130%	71%	50%	140%
Bromodichloromethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	85%	50%	140%	88%	60%	130%	89%	50%	140%
trans-1,3-Dichloropropene	4554	4697539	< 0.001	< 0.001	NA	< 0.001	91%	50%	140%	100%	60%	130%	92%	50%	140%
Methyl Isobutyl Ketone	4554	4697539	< 0.01	< 0.01	NA	< 0.01	70%	50%	140%	94%	50%	140%	103%	50%	140%

### AGAT QUALITY ASSURANCE REPORT (V1)

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# Quality Assurance

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

### PROJECT: 10-12832

#### SAMPLING SITE:

AGAT WORK ORDER: 23C989369 ATTENTION TO: Stephen D'Abadie SAMPLED BY:

## Trace Organics Analysis (Continued)

RPT Date:	DUPLICATE				REFEREN	METHOD	BLANK	SPIKE	E MATRIX SPIKE						
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lir	ptable nits	Recovery	Acce Lir	ptable nits	Recovery	Acce Lin	ptable nits
		iu iu					value	Lower	Upper		Lower	Upper		Lower	Upper
cis-1,3-Dichloropropene	4554	4697539	< 0.001	< 0.001	NA	< 0.001	83%	50%	140%	96%	60%	130%	96%	50%	140%
1,1,2-Trichloroethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	85%	50%	140%	85%	60%	130%	88%	50%	140%
Toluene	4554	4697539	< 0.0003	< 0.0003	NA	< 0.0003	94%	50%	140%	96%	60%	130%	94%	50%	140%
2-Hexanone	4554	4697539	< 0.02	< 0.02	NA	< 0.02	70%	50%	140%	84%	50%	140%	85%	50%	140%
Dibromochloromethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	96%	50%	140%	103%	60%	130%	104%	50%	140%
Ethylene Dibromide	4554	4697539	< 0.001	< 0.001	NA	< 0.001	95%	50%	140%	103%	60%	130%	103%	50%	140%
Tetrachloroethene	4554	4697539	< 0.001	< 0.001	NA	< 0.001	110%	50%	140%	111%	60%	130%	107%	50%	140%
1,1,1,2-Tetrachloroethane	4554	4697539	< 0.001	< 0.001	NA	< 0.001	106%	50%	140%	107%	60%	130%	109%	50%	140%
Chlorobenzene	4554	4697539	< 0.0010	< 0.0010	NA	< 0.0010	88%	50%	140%	102%	60%	130%	100%	50%	140%
Ethylbenzene	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	90%	50%	140%	105%	60%	130%	101%	50%	140%
m,p-Xylenes	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	88%	50%	140%	99%	60%	130%	96%	50%	140%
Bromoform	4554	4697539	< 0.001	< 0.001	NA	< 0.001	100%	50%	140%	104%	60%	130%	108%	50%	140%
Styrene	4554	4697539	< 0.001	< 0.001	NA	< 0.001	106%	50%	140%	116%	60%	130%	110%	50%	140%
o-Xylene	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	88%	50%	140%	96%	60%	130%	93%	50%	140%
1,3-Dichlorobenzene	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	92%	50%	140%	98%	60%	130%	97%	50%	140%
1,4-Dichlorobenzene	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	77%	50%	140%	104%	60%	130%	99%	50%	140%
1,2-Dichlorobenzene	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	100%	50%	140%	104%	60%	130%	105%	50%	140%
1,2,4-Trichlorobenzene	4554	4697539	< 0.001	< 0.001	NA	< 0.001	102%	50%	140%	107%	60%	130%	108%	50%	140%
Xylenes	4554	4697539	< 0.0005	< 0.0005	NA	< 0.0005	88%	50%	140%	98%	60%	130%	95%	50%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

Certified By:

Elena GotoBets

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#### **AGAT** QUALITY ASSURANCE REPORT (V1)



# Quality Assurance

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989369

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

### Water Analysis

RPT Date:				DUPLICATE			REFEREN	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lir	ptable nits	Recovery	Acce Lir	ptable nits	Recovery	Acce Lin	ptable nits
		iù		-			value	Lower	Upper		Lower	Upper		Lower	Upper
Water Package - Routine Chemist	ry Water	Analysis -	Lab Filter	ed Cation	IS										
рН	4697626	4697626	7.52	7.54	0.3%	N/A	101%	90%	110%						
p - Alkalinity (as CaCO3)	4697626	4697626	<5	<5	NA	< 5	NA	80%	120%						
T - Alkalinity (as CaCO3)	4697626	4697626	585	584	0.1%	< 5	103%	80%	120%						
Bicarbonate	4697626	4697626	724	723	0.1%	8	NA								
Carbonate	4697626	4697626	<5	<5	NA	< 5	NA								
Hydroxide	4697626	4697626	<5	<5	NA	< 5	NA								
Electrical Conductivity	4697626	4697626	1940	1930	0.3%	< 5	101%	90%	110%						
Chloride	4697540	4697540	311	320	2.7%	< 1.0	100%	70%	130%	90%	80%	120%	NA	70%	130%
Fluoride	4697540	4697540	<0.1	<0.1	NA	< 0.01	99%	70%	130%	89%	80%	120%	96%	70%	130%
Nitrate	4697540	4697540	138	141	1.9%	< 0.5	100%	70%	130%	95%	80%	120%	NA	70%	130%
Nitrite	4697540	4697540	17.5	17.6	0.5%	< 0.05	101%	70%	130%	93%	80%	120%	98%	70%	130%
Sulfate	4697540	4697540	32.7	34.6	5.7%	< 1.0	101%	70%	130%	95%	80%	120%	98%	70%	130%
Dissolved Calcium	4697549		<0.3	<0.3	NA	< 0.3	91%	70%	130%	96%	80%	120%	96%	70%	130%
Dissolved Magnesium	4697549		<0.2	<0.2	NA	< 0.2	95%	70%	130%	89%	80%	120%	95%	70%	130%
Dissolved Sodium	4697549		<0.6	<0.6	NA	< 0.6	97%	70%	130%	94%	80%	120%	97%	70%	130%
Dissolved Potassium	4697549		<0.6	<0.6	NA	< 0.6	86%	70%	130%	86%	80%	120%	90%	70%	130%
Dissolved Iron	4697549		<0.1	<0.1	NA	< 0.1	102%	70%	130%	105%	80%	120%	107%	70%	130%
Dissolved Manganese	4697549		<0.005	<0.005	NA	< 0.005	100%	70%	130%	104%	80%	120%	105%	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated. Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

pH has been analyzed past the recommended holding time of 15 minutes from sampling (field measurement ideal if more accurate data required)

Nitrate and Nitrite: The regulatory hold time for the analysis of nitrate and/or nitrite in water is 72 hours.

Certified By:

#### **AGAT** QUALITY ASSURANCE REPORT (V1)

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# Method Summary

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989369 ATTENTION TO: Stephen D'Abadie SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis		•	
Benzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Toluene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Ethylbenzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
m,p-Xylenes	TO-0542	EPA SW-846 5021/8260-W	GC/MS
o-Xylene	TO-0542	EPA SW-846 5021/8260-W	GC/MS
Xylenes	TO 0332	EPA SW-846 5021 & 8260	GC/MS
C6 - C10 (F1)	TO 0542	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0542	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO-0543	EPA SW-846 5021 & 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Sediment	TO-0511	CCME Tier 1 Method	GC/FID
Chloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Vinyl Chloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Bromomethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Trichlorofluoromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Acetone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methylene Chloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl tert-Butyl Ether	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl Ethyl Ketone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
trans-1,2-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
cis-1,2-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chloroform	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,1-Trichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Carbon Tetrachloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Benzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2-Dichloropropane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Trichloroethylene	TO-0330	EPA SW-846 8260	GC/MS
Bromodichloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
trans-1,3-Dichloropropene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl Isobutyl Ketone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
cis-1,3-Dichloropropene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,2-Trichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Toluene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
2-Hexanone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Dibromochloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Ethylene Dibromide	TO-0330	EPA SW-846 8260	GC/MS
Tetrachloroethene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,1,2-Tetrachloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Ethylbenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
m,p-Xylenes	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Bromoform	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Styrene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,2,2-Tetrachloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS



# Method Summary

CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989369 ATTENTION TO: Stephen D'Abadie

O/ WIT EINO OTTE:		ONNI LED DI :	
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
o-Xylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,3-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,4-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2,4-Trichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Xylenes	TO 0330	EPA SW-846 8260	GC/MS
Toluene-d8	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Water Analysis			
рН	INST 0101, INST 0104	SM 4500 H+	PH METER
p - Alkalinity (as CaCO3)	INST-0100, INST-0101	SM 2320 B	TITRATION
T - Alkalinity (as CaCO3)	INST 0101	SM 2320 B	TITRATION
Bicarbonate	INST 0101	SM 2320 B	PC TITRATE
Carbonate	INST 0101	SM 2320 B	PC TITRATE
Hydroxide	INST 0101	SM 2320 B	PC TITRATE
Electrical Conductivity	INST 0101, INST 0120	SM 2510 B	CONDUCTIVITY METER
Chloride	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Fluoride	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrate	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrate-N	INST 0150	SM 4110 B	CALCULATION
Nitrite	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrite-N	INST 0150	SM 4110 B	CALCULATION
Nitrate+Nitrite - Nitrogen	INST 0150	SM 4110 B	CALCULATION
Sulfate	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Dissolved Calcium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Magnesium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Sodium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Potassium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Iron	INST 0140	SM 3120B – R	ICP/OES
Dissolved Manganese	INST 0140	SM 3120B – R	ICP/OES
Sodium Adsorption Ratio		CARTER & GREGORICH 2007	CALCULATION
Calculated TDS		SM 1030E	CALCULATION
Hardness		SM 2340 B	CALCULATION
Ion Balance		SM 1030E	CALCULATION
Lab Filtration on Routine for IC			N/A
Lab Filtration on Routine for Metals			N/A

Chain of Custody Record Emerge	_aboratori	es B Hotline	P: 4	103-73	5-2005 webe	• F: 40 • arth.ag 245)	3-73 gatla	5-27 bs.c	771 om	AGAT Job Number: 230 Date and Time:						999369			
Report Information         Company:       PARSONS         Contact:       Michelle Patterson         Address:       #100, 318 – 11 Ave SE, Calgary AB T2G 0Y2         Phone:       (403)294-4215         Fax:       (403)294-4215         Fax:       (403)294-4240         LSD:       1624 14th Street NW, Calgary, AB	Report Informatic         1. Name:       Michelle         Email:       michelle         2. Name:       Calgary:         Email:       Calgary:         3. Name:       Email:         Email:       Langary:	DN Patterson .patterson@ Lab Report labreport@j	oparsons.com parsons.com			Turna Regula Rush T Date Re	roun Ir TA AT	d Ti	Three Four [	Busi lours ay / Day Day (2	iness (200 Next (50% 25%)	(TAT Days D%) Day ( 5)	) 5 (100)	%)		SEE SU BRI CONTA FOR INF	BACK RCHAR EAKDO CT YOU ADDITI ORMAT	FOR RGE WN. JR CPM IONAL TION	
Client Project #:       10-12832         Sampled By:       9445         Outlet #:       9445         Invoice To       Same Yes [] / No [2]         Company:       Suncor Energy Products Partnership         Contact:       Stephen D'Abadie         Address:       P.O. Box 2844, 150 – 6 Avenue S.W.         Calgary, AB T2P 3E3         Phone:       587-223-4146         PO/AFE#:         LABORATORY         USE (LAB ID #)	Requirements (Select         CCME         Agricultural         Industrial         Residential/Park         Commercial         FWAL         Drinking Water         Other:	tion may imp AB Ti AB Ti Agr Ind Cor Cor Alber Chr Acu SAMPLE MATRIX	er 1 ficultural ustrial sidential/Park mmercial tural Area ta Surface Water ronic ute COMMENTS (FILTERED, PRESERVED, HAZAROOUS*)	Acti Asse A1 [ AR E Rem RE [ RI E Cont MV E # OF	ivity submitte ivity sesemen A2 [ AV [ ediation RA [ ainemen agemen MWE CONTAIL	used d t l l l l l l l l l l l l l l l l l	ailed Salinity: DAB DSK DBC DD50	CME/AB : BTEX/F1-F4	C: BTEXS/VPH/EPH	Metals: □HWS-B □SP-B □Hg □Cr <sup>e+</sup>	er Metals: □ Dissolved □ Total □ Hg □ Cr <sup>e+</sup>	tine Water Chemistry	forms: 🗆 Total 🛛 Eccal 🗠 Eccoli	ticle Size: 🗆 Sieve (75µm) 🛛 Texture	oca 1,2 Dichlor change			D FOR 30 DAYS NO ANALYSIS (Additional Fee)	
1 Bh 1966 2 BH 102	arlide 10:54	Gew	*ADDITIONAL FEE	VIALS	BAGS		Detr		SK: B	Soll	Wat	Lan	Coli	Par	V00			HOL	
4         0000-02           5         1341671           6         1341907           7         1341973           8         1341973	11:20 11:20 11:20 11:50 12:10 12:30					-766666		× * * *				*			× × × ×				
9 BM 1976	17240) V 17240					5		*			2	*		3	×				

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Decament ID: DIV-50-1507.007

Date Revised: Apr 20, 2021

Chain of Custody Record Emerge	Lat	) Supp	catori	es s Hotling	P: . • <b>1-855-AGAT 245</b>	403-73 ( <b>1-85</b> !	Calga 35-200 web 5-242-	2910 ary, Alb 5 • F: 40 bearth.a <b>8245)</b>	12 S erta 0 <b>3-7</b> agatl	Stree T2E <b>35-2</b> abs.	et NE 7P7 2 <b>771</b> com	Lak Arri AG/ Dat	val 1 \T Jo e an	tory emp b Nu id Tin	Use erat mbe ne:	e On ture: er: AM	ly	<mark>ک ر</mark>				
Report Information         Company: PARSONS         Contact: Michelle Patterson         Address:       #100, 318 - 11 Ave SE, Calgary AB T2G 0Y2         Phone:       (403)294-4215       Fax: (403)294-4240         LSD:       1624 14th Street NW, Calgary, AB	2. 3.	P <b>port</b> Nam Emai Nam Emai Nam Emai	Informati e: Michelle il: michelle e: Calgary il: Calgary e: e:	on e Pattersor e.patterson Lab Report labreport@	n @parsons.com t ⊉parsons.com			Turna Regul Rush Date F	arou ar T/ TAT Requi	nd 1	<b>1 5 to</b> 1 < 24 1 Two 1 Thre 1 Fou	Req 7 Bu Hour Day , e Da r Day	uire sine s (2 / Ne: y (50 (255	ed (T ss Da 00%) xt Da 0%) %)	AT) ays ) y (1	.00%	)	TAN EVOLUTION ACT	SEE SU BRI CONTA FOR	BACK RCHAI AKDC CT YOI ADDIT DRMA	FOR RGE )WN. UR CJ IONA TION	PIM L
Client Project #: 10-12832         Sampled By:         Outlet #:       9445         Invoice To       Same Yes [] / No [2]         Company:       Suncor Energy Products Partnership         Contact:       Stephen D'Abadie         Address:       P.O. Box 2844, 150 – 6 Avenue S.W.         Calgary, AB T2P 3E3         Phone:       587-223-4146         PO/AFE#:		quirer CCME Agrid Indu Resi Com FWA Drinkir Other:	ments (Selec cultural istrial dential/Parl imercial iL ng Water	tion may in AB 1 Ag In K Re CC Na Albe CP Ac	ppact detection limits) <b>Fier 1</b> gricultural dustrial esidential/Park ommercial atural Area <b>rta Surface Water</b> aronic sute	Act Asse A1 AR RE RI Con Mar MV	ivity esseme A2 A2 AV ediatio RX RA taineme agemen MW	nt Int Inn Inn Int Int Int	alinity: DAB DSK DBC D50	3: BTEX/F1-F4 Z CCME/AB: BTEX /F1-F2	S/VPH/EPH 🗆 BC: LEPH/HEPH	VH/C11-C22, C23-C60 : 미 HWS-B 미 SP-B 미 마셔	als:	ter Chemistry	AB Class 2 DBC DSK	D Total D Fecal D E.coli	e: LSieve (75um) LIExture				DAYS NO ANALYSIS (Additional Fee)	
LABORATORY USE (LAB ID #) SAMPLE IDENTIFICATION D	EPTH	D/ S,	ate/time Ampled	SAMPLE MATRIX	COMMENTS (FILTERED, PRESERVED, HAZARDOUS*) *ADDITIONAL FEE	VIALS / #	Sola	INERS SITLO	Detailed Sa		D BC: BTEX	SK: BTEX/1 Soil Metals	Water Meta	Routine Wa	Landfill: []	Coliforms:	Paricie Siz 1,2 DCA	VOC			HOLD FOR 30	
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5 846005			3:46					6		×			-		+		K	$\neg$		-		
6 BH1908	_		14:10					6		×				-			R				1	Γ
7 200 S			14:15					6		X				1			X					
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9 Trip Blank-02			14:60	CAL.				6		x								X				
10 Trip Blank-03		V	1 1500	N.				6		×			-					Ż			+	_
Samples Relinguished By (Print Name and Sign); Date	the	ime Samples Received By (Print Name and Sign):							Date/Time					Pink Copy - Client						of Z	-	-
Samples Relinquished By (Print Name and Sign):	Time Samples Received By (Print Name and Sign):								Date/	Time		-	White Copy- AGAT White Copy- AGAT									

Decument ID: DIV 50-1507-007

Date Revised: Apr 20, 2021

agat La	SAMPLE INTEGRITY RECEIPT FORM
RECEIVING BASICS - Shipping	Temperature (Bottles/Jars only) N/A if only Soil Bags Received
Company/Consultant: Parsons	FROZEN (Please Circle if samples received Frozen)
Courier: D/C Prepaid Collect	1 (Bottle/Jar) $7 + 7 + 7 = 7 \circ C$ 2(Bottle/Jar) $7 + 6 + 5 = 6 \circ C$
	3 (Bottle/Jar)++=°C
	5 (Bottle/Jar)++= <sup>o</sup> C 6 (Bottle/Jar)++= <sup>o</sup> C
Branch: EDM GP FN FM RD VAN LYD FSJ EST SASK Other	7 (Bottle/Jar)++=°C 8 (Bottle/Jar)++=°C
If multiple sites were submitted at once: Yes	9 (Bottle/Jar)++=°C 10 (Bottle/Jar)++=°C
Custody Seal Intact: Yes No NA	(If more than 10 coolers are received use another sheet of paper and attach)
TAT: <24hr 24-48hr 48-72hr Reg Other	LOGISTICS USE ONLY
Cooler Quantity: 2 arg	Workorder No:
TIME SENSITIVE ISSUES - Shipping	Samples Damaged: Yes No If YES why?
ALREADY EXCEEDED HOLD TIME? Yes	No Bubble Wrap Frozen Courier Other:
Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* ,	Account Project Manager:have they been notified of the above issues: Yes No
Chloroamines*	Whom spoken to: Date/Time:
Earliest Expiry: 1/20/23 11:20	CPM Initial
Hydrocarbons: Earliest Expiry	General Comments:
SAMPLE INTEGRITY - Shipping	
Hazardous Samples: YES NO Precaution Taken:	
Legal Samples: Yes No	
International Samples: Yes No	· · · · · · · · · · · · · · · · · · ·
Tape Sealed: Yes No	
Coolant Used: Icepack Bagged Ice Free Ice Free Water None	

\* Subcontracted Analysis (See CPM)

Date issued: March 11, 2020 Document ID: SR-9505.004

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Page 1 of 1

### DATA QUALITY REVIEW CHECKLIST

Consultant: Parsons Inc.		Sampling Date: 2023/01/18
Location: 1620 - 14th Avenue NW, Calgary, A	AB	Laboratory : AGAT Laboratories
Consultant Project Number: <u>10-12832</u>		Sample Submission Number: 23C989819
Are All Laboratory QC Samples Within Acceptance Crite	eria (Yes, No,	Not Applicable)?
Yes No	o NA	Comments
Surrogate RecoveryXMethod Blank ConcentrationXMatrix Duplicate RPDXMatrix Spike RecoveryXOther Quality Control DataX		All lab QC met acceptance criteria.
Are All Field QC Samples Within Alert Limits (Yes, No,	Not Applical	ble)?
Yes No	o NA	Comments
Equipment Blank Concentration Trip Blank Concentration Field Duplicate RPD	X X X	No field QC samples were submitted.
Has CoA been signed off (Yes/No)?: Were all samples analyzed within hold times (Yes/No)?: All volatiles samples methanol extracted, if required, with Is Chain of Custody completed and signed (Yes/No)?: Were sample temperatures acceptable when they reached	hin 48 hours ( lab (Yes/No)	(Yes, No or N/A)?: $ $
Is data considered to be reliable (Yes/No)?: If answer is "No", describe and provide rationale:		Yes
Performed by (Print): Danielle Smith Reviewed by (Print): Michelle Patterson Reviewed date: 2023/05/08		Reviewed by (Signature):



CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP **BOX 1720 STN M** CALGARY, AB T2P 0A2 ATTENTION TO: Stephen D'Abadie PROJECT: 10-12832 AGAT WORK ORDER: 23C989819 TRACE ORGANICS REVIEWED BY: Elena Gorobets, Report Writer WATER ANALYSIS REVIEWED BY: Thomas Yoo, Report Writer DATE REPORTED: Jan 26, 2023 PAGES (INCLUDING COVER): 12 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (403) 735-2005

\*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

**AGAT** Laboratories (V1)

Member of: Association of Professional Engineers and Geoscientists of Alberta	
(APEGA)	
Western Enviro-Agricultural Laboratory Association (WEALA)	
Environmental Services Association of Alberta (ESAA)	

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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 and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. Measurement Uncertainty is not taken into consideration when stating conformity with a specified requirement.



AGAT WORK ORDER: 23C989819

PROJECT: 10-12832

1.2 - DCA in Water

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

## ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Oscar Wronski

					1,2-004 11	i watei					
DATE RECEIVED: 2023-01-18								I	DATE REPORT	ED: 2023-01-20	
		SAMPLE DES	CRIPTION:	BH4004A	BH4004B	BH4005	BH4003A	BH4003B	BH4002	BH4008A	BH4008B
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2023-01-18 07:50	2023-01-18 07:55	2023-01-18 08:00	2023-01-18 08:05	2023-01-18 08:10	2023-01-18 08:15	2023-01-18 08:20	2023-01-18 08:25
Parameter	Unit	G / S	RDL	4701730	4701746	4701747	4701748	4701749	4701750	4701751	4701752
1,2-Dichloroethane	mg/L		0.001	<0.001	<0.001	<0.001	0.195	<0.001	<0.001	<0.001	<0.001
Surrogate	Unit	Acceptab	ole Limits								
Toluene-d8	%	50-	140	91	96	85	76	97	90	92	92
		SAMPLE DES	CRIPTION:	BH4009A	BH4009B	BH4006	BH1983A	BH4007	BH1984	BH1985	
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2023-01-18 08:30	2023-01-18 08:35	2023-01-18 09:00	2023-01-18 08:15	2023-01-18 08:30	2023-01-18 08:40	2023-01-18 10:30	
Parameter	Unit	G/S	RDL	4701753	4701754	4701755	4701756	4701758	4701760	4701763	
1,2-Dichloroethane	mg/L		0.001	0.004	0.003	0.023	<0.001	0.025	<0.001	<0.001	
Surrogate	Unit	Acceptab	ole Limits								
Toluene-d8	%	50-	140	100	96	80	100	78	104	97	

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

4701730-4701763 1,1,2,2-Tetrachloroethane reported only for samples matrices which can be purged. Otherwise N/A.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Elena GotoBets



AGAT WORK ORDER: 23C989819 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### ATTENTION TO: Stephen D'Abadie SAMPLED BY:Oscar Wronski

## SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-18

DATE RECEIVED: 2023 OF 10							L		_D. 2020 01 20	
		SAMPLE DESCRIPTION:	BH4004A	BH4004B	BH4005	BH4003A	BH4003B	BH4002	BH4008A	BH4008B
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-18 07:50	2023-01-18 07:55	2023-01-18 08:00	2023-01-18 08:05	2023-01-18 08:10	2023-01-18 08:15	2023-01-18 08:20	2023-01-18 08:25
Parameter	Unit	G/S RDL	4701730	4701746	4701747	4701748	4701749	4701750	4701751	4701752
Benzene	mg/L	0.0005	<0.0005	<0.0005	0.0117	2.33	0.0187	0.0071	<0.0005	<0.0005
Toluene	mg/L	0.0003	< 0.0003	< 0.0003	0.0004	0.0030	<0.0003	0.140	0.0046	<0.0003
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	0.0048	<0.0005	<0.0005	0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/L	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	1.89	0.0179	< 0.0005
o-Xylene	mg/L	0.0005	<0.0005	<0.0005	< 0.0005	0.0563	<0.0005	0.765	0.0286	< 0.0005
Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	0.0567	<0.0005	2.66	0.0465	< 0.0005
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	0.1	2.6	<0.1	4.7	0.3	<0.1
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	0.1	0.2	<0.1	1.9	0.2	<0.1
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.5	<0.1	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	107	114	93	89	101	102	106	103
o-Terphenyl (F2-F4)	%	60-140	101	99	101	101	100	102	100	101

Certified By:

Elena Gorobets

DATE REPORTED: 2023-01-23



AGAT WORK ORDER: 23C989819 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

## ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-23

SAMPLED BY:Oscar Wronski

## SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-18

	:	SAMPLE DESCRIPTION:	BH4009A	BH4009B	BH4006	BH1983A	BH4007	BH1984	BH1985	
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-18 08:30	2023-01-18 08:35	2023-01-18 09:00	2023-01-18 08:15	2023-01-18 08:30	2023-01-18 08:40	2023-01-18 10:30	
Parameter	Unit	G/S RDL	4701753	4701754	4701755	4701756	4701758	4701760	4701763	
Benzene	mg/L	0.0005	<0.0005	<0.0005	0.460	<0.0005	0.689	0.0019	<0.0005	
Toluene	mg/L	0.0003	< 0.0003	< 0.0003	0.0010	< 0.0003	0.0012	< 0.0003	<0.0003	
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	
o-Xylene	mg/L	0.0005	<0.0005	<0.0005	0.0306	<0.0005	0.0140	<0.0005	<0.0005	
Xylenes	mg/L	0.0005	< 0.0005	< 0.0005	0.0309	< 0.0005	0.0142	<0.0005	<0.0005	
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	0.9	<0.1	0.8	<0.1	<0.1	
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	0.4	<0.1	0.1	<0.1	<0.1	
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	116	118	90	111	93	124	102	
o-Terphenyl (F2-F4)	%	60-140	99	100	99	100	99	98	98	

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

4701730-4701763 The F1 (C6 - C10) fraction is determined by integrating the FID chromatogram from the beginning of the nC6 peak to the apex of the last nC10 peak.

The C6 - C10 fraction is calculated from the FID toluene response factor.

The F2 (C10 - C16) fraction is determined by integrating the FID chromatogram from the apex of the nC10 peak to the apex of the nC16 peak.

The F2 (C10 - C16) fraction is calculated using the average response factor for nC10, nC16, and nC34.

Quality control for the calibration follows the guidelines set out in the CCME Contaminated Sites Method for Soils.

C6 – C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>10 - C16 (F2- Napthalene) is a calculated parameter. The calculated value is F2 - Napthalene (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

Extraction and holding times were met for this sample.

Analysis performed at AGAT Calgary (unless marked by \*)

Elena Corobers

Certified By:



AGAT WORK ORDER: 23C989819

PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

## ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-25

SAMPLED BY:Oscar Wronski

## Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-18

	S	SAMPLE DESC	RIPTION:	BH4007	BH1984	
		SAMP	LE TYPE:	Water	Water	
		DATE S	AMPLED:	2023-01-18	2023-01-18	
Deveryeter	1.1			08:30	08:40	
Parameter	Unit	G/S	RUL	4/01/56	4701760	
	pH Units	7.0-10.5	N/A	7.71	1.12	
p - Alkalinity (as CaCO3)	mg/L		5	<5	<5	
I - Alkalinity (as CaCO3)	mg/L		5	642	538	
Bicarbonate	mg/L		5	/9/	667	
Carbonate	mg/L		5	<5	<5	
Hydroxide	mg/L		5	<5	<5	
Electrical Conductivity	uS/cm		5	3370	1450	
Chloride	mg/L	(250)	1.0	735	150	
Fluoride	mg/L	1.5	0.01	0.24	0.19	
Nitrate	mg/L	45	0.5	75.0	37.8	
Nitrate-N	mg/L	10	0.02	16.9	8.54	
Nitrite	mg/L	3	0.05	18.5	0.50	
Nitrite-N	mg/L	1	0.01	5.63	0.15	
Nitrate+Nitrite - Nitrogen	mg/L		0.02	22.6	8.69	
Sulfate	mg/L	(500)	1.0	32.9	41.3	
Dissolved Calcium	mg/L		0.3	120	114	
Dissolved Magnesium	mg/L		0.2	290	108	
Dissolved Sodium	mg/L	(200)	0.6	135	27.2	
Dissolved Potassium	mg/L		0.6	5.4	4.1	
Dissolved Iron	mg/L	(0.3)	0.1	<0.1	<0.1	
Dissolved Manganese	mg/L	0.12 (0.02)	0.005	0.532	0.574	
Sodium Adsorption Ratio				1.52	0.44	
Calculated TDS	mg/L		0.6	1800	811	
Hardness	mg CaCO3/L		0.5	1490	729	
Ion Balance	%		1	99	95	
Lab Filtration on Routine for IC				Complete	Complete	
Lab Filtration on Routine for Metals				Complete	Complete	
				-		

Certified By:



AGAT WORK ORDER: 23C989819 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Oscar Wronski

### Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-18

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 2020 Canadian Drinking Water Quality MAC (AO) 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.

4701758-4701760 < - Values refer to Report Detection Limits.

SAR is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. If sodium results in mg/L are less than detection, SAR is non-calculable and is reported as 0. Ion Balance is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. Hardness is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Calculated TDS is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

DATE REPORTED: 2023-01-25

Certified By:



## Quality Assurance

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

#### PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989819 ATTENTION TO: Stephen D'Abadie SAMPLED BY:Oscar Wronski

## **Trace Organics Analysis**

RPT Date:			C	UPLICAT	E		REFEREN	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lir	ptable nits	Recovery	Acce Lir	ptable nits	Recovery	Acce	ptable nits
		Ia					value	Lower	Upper		Lower	Upper		Lower	Upper
SUNCOR - Petroleum Hydrocarbo	ns (BTEX	(/F1-F2) in	Water												
Benzene	4556	4691235	<0.0005	<0.0005	NA	< 0.0005	87%	60%	140%	87%	60%	140%	88%	60%	140%
Toluene	4556	4691235	<0.0003	<0.0003	NA	< 0.0003	92%	60%	140%	90%	60%	140%	90%	60%	140%
Ethylbenzene	4556	4691235	<0.0005	<0.0005	NA	< 0.0005	i 91%	60%	140%	82%	60%	140%	84%	60%	140%
m,p-Xylenes	4556	4691235	<0.0005	<0.0005	NA	< 0.0005	88%	60%	140%	87%	60%	140%	91%	60%	140%
o-Xylene	4556	4691235	<0.0005	<0.0005	NA	< 0.0005	88%	60%	140%	87%	60%	140%	91%	60%	140%
Xylenes	4556	4691235	<0.0005	<0.0005	NA	< 0.0005	88%	60%	140%	87%	60%	140%	91%	60%	140%
C6 - C10 (F1)	4556	4691235	<0.1	<0.1	NA	< 0.1	91%	60%	140%	95%	60%	140%	124%	60%	140%
C>10 - C16	8023	4701730	<0.1	<0.1	NA	< 0.1	88%	60%	140%	99%	60%	140%	88%	60%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

SUNCOR - Petroleum Hydrocarbo	ns (BTE	X/F1-F2) in	Water												
Benzene	4557	4701758	0.689	0.777	12.0%	< 0.0005	98%	60%	140%	96%	60%	140%	99%	60%	140%
Toluene	4557	4701758	0.0012	0.0012	NA	< 0.0003	100%	60%	140%	93%	60%	140%	95%	60%	140%
Ethylbenzene	4557	4701758	<0.0005	<0.0005	NA	< 0.0005	98%	60%	140%	81%	60%	140%	84%	60%	140%
m,p-Xylenes	4557	4701758	<0.0005	<0.0005	NA	< 0.0005	109%	60%	140%	99%	60%	140%	102%	60%	140%
o-Xylene	4557	4701758	0.0140	0.0167	17.6%	< 0.0005	112%	60%	140%	99%	60%	140%	102%	60%	140%
Xylenes	4557	4701758	0.0142	0.0170	17.9%	< 0.0005	109%	60%	140%	99%	60%	140%	102%	60%	140%
C6 - C10 (F1)	4557	4701758	0.8	0.8	0.0%	< 0.1	86%	60%	140%	105%	60%	140%	103%	60%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

1,2-DCA in Water

1,2-Dichloroethane	4556	4691235	<0.001	<0.001	NA	< 0.001	87%	50%	140%	98%	60%	130%	101%	50%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

1,2-DCA in Water															
1,2-Dichloroethane	4557	4701758	0.025	0.025	0.0%	< 0.001	98%	50%	140%	91%	60%	130%	97%	50%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

Certified By:

Elena GotoBets

Page 7 of 12

#### **AGAT** QUALITY ASSURANCE REPORT (V1)



# Quality Assurance

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

#### PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989819

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Oscar Wronski

### Water Analysis

RPT Date:			C	UPLICAT	E		REFEREN	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lin	ptable nits	Recovery	Acce Lin	ptable nits	Recovery	Acce Lin	ptable nits
		iù					value	Lower	Upper		Lower	Upper		Lower	Upper
Water Package - Routine Chemist	try Water A	Analysis -	Lab Filter	ed Cation	IS										
рН	4701758	4701758	7.71	7.75	0.5%	N/A	100%	90%	110%						
p - Alkalinity (as CaCO3)	4701758	4701758	<5	<5	NA	< 5	NA	80%	120%						
T - Alkalinity (as CaCO3)	4701758	4701758	642	640	0.3%	< 5	103%	80%	120%						
Bicarbonate	4701758	4701758	797	794	0.3%	7	NA								
Carbonate	4701758	4701758	<5	<5	NA	< 5	NA								
Hydroxide	4701758	4701758	<5	<5	NA	< 5	NA								
Electrical Conductivity	4701758	4701758	3370	3360	0.3%	< 5	102%	90%	110%						
Chloride	4701289		37.9	38.8	2.3%	< 1.0	95%	70%	130%	94%	80%	120%	98%	70%	130%
Fluoride	4701289		0.35	0.37	5.6%	< 0.01	87%	70%	130%	80%	80%	120%	83%	70%	130%
Nitrate	4701289		2.0	1.9	NA	< 0.5	99%	70%	130%	99%	80%	120%	98%	70%	130%
Nitrite	4701289		<0.20	<0.20	NA	< 0.05	92%	70%	130%	91%	80%	120%	91%	70%	130%
Sulfate	4701289		13.4	13.1	2.0%	< 1.0	99%	70%	130%	100%	80%	120%	97%	70%	130%
Dissolved Calcium	4701758	4701758	120	120	0.1%	< 0.3	95%	70%	130%	106%	80%	120%	NA	70%	130%
Dissolved Magnesium	4701758	4701758	290	290	0.1%	< 0.2	92%	70%	130%	88%	80%	120%	NA	70%	130%
Dissolved Sodium	4701758	4701758	135	135	0.0%	< 0.6	79%	70%	130%	88%	80%	120%	NA	70%	130%
Dissolved Potassium	4701758	4701758	5.4	5.4	0.2%	< 0.6	81%	70%	130%	93%	80%	120%	NA	70%	130%
Dissolved Iron	4701758	4701758	<0.1	<0.1	NA	< 0.1	104%	70%	130%	95%	80%	120%	95%	70%	130%
Dissolved Manganese	4701758	4701758	0.532	0.544	2.2%	< 0.005	104%	70%	130%	94%	80%	120%	NA	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated. Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

pH has been analyzed past the recommended holding time of 15 minutes from sampling (field measurement ideal if more accurate data required)

Nitrate and Nitrite: The regulatory hold time for the analysis of nitrate and/or nitrite in water is 72 hours.

Certified By:

#### **AGAT** QUALITY ASSURANCE REPORT (V1)

Page 8 of 12



# Method Summary

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989819 ATTENTION TO: Stephen D'Abadie SAMPLED BY:Oscar Wronski

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
1.2-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Toluene-d8	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Benzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Toluene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Ethylbenzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
m,p-Xylenes	TO-0542	EPA SW-846 5021/8260-W	GC/MS
o-Xylene	TO-0542	EPA SW-846 5021/8260-W	GC/MS
Xylenes	TO 0332	EPA SW-846 5021 & 8260	GC/MS
C6 - C10 (F1)	TO 0542	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0542	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO-0543	EPA SW-846 5021 & 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Sediment	TO-0511	CCME Tier 1 Method	GC/FID
Water Analysis			
рН	INST 0101, INST 0104	SM 4500 H+	PH METER
p - Alkalinity (as CaCO3)	INST-0100, INST-0101	SM 2320 B	TITRATION
T - Alkalinity (as CaCO3)	INST 0101	SM 2320 B	TITRATION
Bicarbonate	INST 0101	SM 2320 B	PC TITRATE
Carbonate	INST 0101	SM 2320 B	PC TITRATE
Hydroxide	INST 0101	SM 2320 B	PC TITRATE
Electrical Conductivity	INST 0101, INST 0120	SM 2510 B	CONDUCTIVITY METER
Chloride	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Fluoride	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrate	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrate-N	INST 0150	SM 4110 B	CALCULATION
Nitrite	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrite-N	INST 0150	SM 4110 B	CALCULATION
Nitrate+Nitrite - Nitrogen	INST 0150	SM 4110 B	CALCULATION
Sulfate	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Dissolved Calcium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Magnesium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Sodium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Potassium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Iron	INST 0140	SM 3120B – R	ICP/OES
Dissolved Manganese	INST 0140	SM 3120B – R	ICP/OES
Sodium Adsorption Ratio		CARTER & GREGORICH 2007	CALCULATION
Calculated TDS		SM 1030E	CALCULATION
Hardness		SM 2340 B	CALCULATION
Ion Balance		SM 1030E	CALCULATION
Lab Filtration on Routine for IC			N/A
Lab Filtration on Routine for Metals			N/A

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Date Revised: Apr 20, 2021

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Sampled By: Garia Clarke				ipact detection limits)	& not	t submitt	ted		2												
Outlet #:		Agricultural	 []] Ag	ricultural	-				/F1-F												
Invoice To Same Yes 🗆 / No 🗹	1 c	□ Industrial		dustrial	Act	ivity sseme	nt	50	Ъ	тÌ		de C	5				44				1
Company: Suncor Energy Products Partnership	c	Residential/Park	k ⊠ Re	esidential/Park	A1	□ A2		ā	B: B	HEP		5   [	] 0			e	2				Fee)
Contact: Stephen D'Abadie	1 0	Commercial	🗆 Co	ommercial	AR    Rem	LI AV	L	B	ME//	EPH	Hg -		i	NSL X	E.CO	extur					ional Idition
Address: P.O. Box 2844, 150 – 6 Avenue S.W.		□ FWAL	🗆 Na	atural Area	RE	RX		×	8	BC:L						6	11				(Addit
Calgary, AB T2P 3E3		Drinking Water	Albe	rta Surface Water	Cont	aineme	ent	ő	4		Sp.				ecal	(mulo	11			11	-YSIS
Phone: <u>587-223-4146</u> Fax:	ll no	Other:	LiCh	ronic	Man    M [	agemer ∃ MW	nt ⊠i	BE	/F1-F	EPH		ssolv	nistr	2	ā	ve (7	22				D ANAI TER A
PO/AFE#:	-			ute	MV [			ž	BTEX	/HH/	ETD/		Cher	Class	otal	Sie	1				NS NC
				COMMENTS	# 0F	CONTAI	NERS	Salln	AB:	EXs/	HV   / Isli	etals:	Vater	AB		ize: I	-				30 D/
USE (LAB ID #) SAMPLE IDENTIFICATION DE	ртн	SAMPLED	MATRIX	(FILTERED, PRESERVED, HAZARDOUS*) *ADDITIONAL FEE	VIALS / JARS	BAGS	BOTTLES	Detailed	CCME/	DBC: BT	Soil Meta	Nater Me	Routine V	andfill: [	Collforms	2 DCA	/oc		ł		HOLD FOR
1 344006		01/12/2309:00	GW				6		X			1			-	X	-			+	
2 BM/983A		08:15	1				6		X							X					
3 1341 4007		08:39					7		X				X			X					
5 2416/95		N/ 51954416	Y				7		X	_			X			X			1		
6		<u> 10.30</u>					6	_	X	-	_	_	3	_	_				_		_
7			4- 6					-	-		-	-	-	_	-	_		$\vdash$	-	$\vdash$	
8								-	+	+	-	-	$\left  \right $		-	-		$\vdash$	+		_
9								-	-	-		-			+	-		$\vdash$		-+	
10								-	-			-		-	-	-		$\vdash$		$\vdash$	
molida Ralinguiahed By (Print Name and Sugol)	me /	Samples Rece	lved By (Print )	Name and Sign):				Date/Tir	ne		1						4				
mples Relinquished By (Print Name and Sign): Date (T	K12	3 16/10 Semples Rece	ived By (Print N	Name and Sign				IAN	1	8 20	23	Pin	nk Cop	y - Cli	ent		Pag	e	of	1.	
ntples Relinquished By (Print Name and Sign): Date/Ti	me	Samples Rece	ived By (Print N	(ame and Sign):				Date/Tir	ne			Yell Wh	ow Co nite Co	ipy - Ai ipy- Ac	gat Gat	Nº: AI	В				ŝ

Date Revised: Apr 20, 2021

agat Lat	oratories SAMPLE INTEGRITY RECEIPT
RECEIVING BASICS - Shipping	Temperature (Bottles/Jars only) N/A if only Soil Bags Received
Company/Consultant: Parsons /Sunio-	FROZEN (Please Circle if samples received Frozen)
Courier: Prepaid Collect	$1 (Bott)e/Jar) \frac{3}{2} + \frac{5}{4} + \frac{4}{4} = \frac{4}{7} \circ C \qquad 2 (Bott)e/Jar) \frac{9}{4} + \frac{9}{4} + \frac{8}{2} = \frac{9}{7} \circ C$
Wayhill#	3(Bott)e/Jar) 4 + 4 + 4 = 4 °C 4 (Bott)e/Jar) 8 + 8 + 8 = 8 °C
waybling	5 (Bottle/Jar)++=°C 6 (Bottle/Jar)++=°C
Branch: EDM GP FN FM RD VAN LYD FSJ EST SASK Other:	7 (Bottle/Jar)++=°C 8 (Bottle/Jar)++=°C
If multiple sites were submitted at once: Yes	9 (Bottle/Jar)++=°C 10 (Bottle/Jar)++=°C
Custody Seal Intact: Yes No NA	(If more than 10 coolers are received use another sheet of paper and attach)
TAT: <24hr 24-48hr 48-72hr Reg Other	LOGISTICS USE ONLY
Cooler Quantity:	Workorder No:
TIME SENSITIVE ISSUES - Shipping	Samples Damaged: Yes No If YES why?
	No Bubble Wrap Frozen Courier
	Other:
Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* .	Account Project Manager:have they been notified of the above issues: Yes No
Chloroamines*	Whom spoken to: Date/Time:
Earliest Expiry: Jan 21,2023	CPM Initial
Hydrocarbons: Earliest Expiry	General Comments:
SAMPLE INTEGRITY - Shipping	
Hazardous Samples: YES NO Precaution Taken:	
Legal Samples: Yes No	
International Samples: Yes No	
Tape Sealed: Yes No	
Coolant Used: Icepack Bagged Ice Free Ice Free Water None	

\* Subcontracted Analysis (See CPM)

Date issued: March 11, 2020 Document ID: SR-9505.004

Page 1 of 1

### DATA QUALITY REVIEW CHECKLIST

Consultant: Parsons Inc.				Sampling Date: 2023/01/18					
Location: <u>1620 - 14th A</u>	venue NW, Ca	lgary, AB	Laboratory : AGAT Laboratories						
Consultant Project Number: <u>10</u>	)-12832			Sample Submission Number: 2.	3C989826				
Are All Laboratory QC Samples Wit	thin Acceptan	ce Criteria	(Yes, No	Not Applicable)?					
	Yes	No	NA	Comments					
Surrogate Recovery Method Blank Concentration Matrix Duplicate RPD Matrix Spike Recovery Other Quality Control Data	X X X X X X			All lab QC met acceptance criteria.					
Are All Field QC Samples Within A	lert Limits (Y	es, No, No	t Applica	ble)?					
Equipment Blank Concentration	Yes	No	NA	Comments					
Equipment Blank Concentration Trip Blank Concentration Field Duplicate RPD	X X X			All field QC samples have met the acceptable	RPD limits.				
Has CoA been signed off (Yes/No)? Were all samples analyzed within he All volatiles samples methanol extra Is Chain of Custody completed and s Were sample temperatures acceptabl	dd times (Yes cted, if requir signed (Yes/N when they r	/No)?: ed, within 4 o)?: eached lab	48 hours ( (Yes/No)	Yes           Yes, No or N/A)?:         N/A           Yes         Yes           ?:         Yes					
Is data considered to be reliable (Yes If answer is "No", describe and prov	s/No)?: ide rationale:			Yes					
The lab did not analyze the samples BH1946 not to resample due to the need to temporally	and BH1947. It w compare groundv	vas determinec vater sampling	l to be too la g events.	te to analyze due to being outside of the recomm	ended hold time. It was decided				
Performed by (Print): <u>D</u> Reviewed by (Print): <u>M</u> Reviewed date: <u>20</u>	anielle Smith ichelle Patter. 123/05/08	son		Reviewed by (Signature):	Mfatta				



### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP BOX 1720 STN M CALGARY, AB T2P 0A2 ATTENTION TO: Stephen D'Abadie PROJECT: 10-12832 AGAT WORK ORDER: 23C989826 TRACE ORGANICS REVIEWED BY: Elena Gorobets, Report Writer WATER ANALYSIS REVIEWED BY: Jennifer Liu, Analyst DATE REPORTED: Jan 27, 2023 PAGES (INCLUDING COVER): 26 VERSION\*: 2

Should you require any information regarding this analysis please contact your client services representative at (403) 735-2005

\*Notes

VERSION 2:Version 2: Version 2 supersedes Version 1, issued January 26th, 2023. Sample BH1533 renamed BH1933.

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may
  incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of
  merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines
  contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

**AGAT** Laboratories (V2)

Member of: Association of Professional Engineers and Geoscientists of Alberta	
(APEGA)	
Western Enviro-Agricultural Laboratory Association (WEALA)	
Environmental Services Association of Alberta (ESAA)	

Page 1 of 26



AGAT WORK ORDER: 23C989826

PROJECT: 10-12832

1 2-DCA in Water

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

## ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Gavin Clarke

				1,2 00/11	mator					
DATE RECEIVED: 2023-01-18								DATE REPORT	ED: 2023-01-27	
		SAMPLE DESCRIPTION:	BH1958	BH1957	BH1904	DUP-04	BH1933	BH1934	BH1935	BH3001A
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-18 09:30	2023-01-18 10:00	2023-01-18 10:15	2023-01-18 10:15	2023-01-18 10:30	2023-01-18 10:45	2023-01-18 11:00	2023-01-18 11:30
Parameter	Unit	G/S RDL	4701790	4701815	4701816	4701817	4701818	4701819	4701822	4701823
1,2-Dichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Surrogate	Unit	Acceptable Limits								
Toluene-d8	%	50-140	97	101	82	84	102	93	93	92
		SAMPLE DESCRIPTION:	BH2005	BH1977	BH2006	BH1955A	BH2001	BH912	BH1954	BH1981
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-18 11:45	2023-01-18 12:00	2023-01-18 12:10	2023-01-18 12:15	2023-01-18 13:00	2023-01-18 13:10	2023-01-18 13:40	2023-01-18 13:40
Parameter	Unit	G/S RDL	4701824	4701825	4701826	4701827	4701828	4701829	4701830	4701831
1,2-Dichloroethane	mg/L	0.001	0.003	0.004	0.005	<0.001	0.002	<0.001	0.002	0.027
Surrogate	Unit	Acceptable Limits								
Toluene-d8	%	50-140	101	87	90	103	94	105	100	97
		SAMPLE DESCRIPTION:	DUP-05	BH1929	DUP-06	BH1928	Hydra-01	Bailer-01	BH3003A	BH3003B
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-18 13:40	2023-01-18 14:00	2023-01-18 14:00	2023-01-18 14:10	2023-01-18 15:40	2023-01-18 15:50	2023-01-18 08:40	2023-01-18 08:45
Parameter	Unit	G/S RDL	4701832	4701833	4701834	4701835	4701836	4701837	4701840	4701841
1,2-Dichloroethane	mg/L	0.001	0.026	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Surrogate	Unit	Acceptable Limits								
Toluene-d8	%	50-140	100	98	100	96	97	105	97	97
		SAMPLE DESCRIPTION:	BH3002A	BH3002B	BH3001B	BH3001C	BH1978	BH1945	BH1951	BH5001
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-18 08:50	2023-01-18 08:55	2023-01-18 09:00	2023-01-18 09:20	2023-01-18 09:25	2023-01-18 09:35	2023-01-18 09:45	2023-01-18 10:15
Parameter	Unit	G/S RDL	4701842	4701843	4701844	4701845	4701846	4701847	4701848	4701851
1,2-Dichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Surrogate	Unit	Acceptable Limits								
Toluene-d8	%	50-140	97	100	101	94	104	99	88	98

Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C989826

PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Gavin Clarke

	1,2-DCA in Water											
DATE RECEIVED: 2023-01-18								[	DATE REPORTE	D: 2023-01-27		
		SAMPLE DES SAM	CRIPTION: PLE TYPE:	BH5002 Water	DUP-07 Water	BH2002 Water	BH2003 Water	Trip Blank-05 Water	Trip Blank-06 Water			
		DATE	SAMPLED:	2023-01-18 10:45	2023-01-18 10:45	2023-01-18 10:55	2023-01-18 11:00	2023-01-18 15:05	2023-01-18 15:20			
Parameter	Unit	G/S	RDL	4701853	4701854	4701855	4701856	4701857	4701858			
1,2-Dichloroethane	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Surrogate	Unit	Acceptab	ole Limits									
Toluene-d8	%	50-1	140	98	89	98	90	104	97			

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

4701790-4701858 1,1,2,2-Tetrachloroethane reported only for samples matrices which can be purged. Otherwise N/A.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C989826 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

DATE REPORTED: 2023-01-27

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### ATTENTION TO: Stephen D'Abadie SAMPLED BY:Gavin Clarke

## SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-18

DATE RECEIVED. 2023 OF 10							L			
		SAMPLE DESCRIPTION:	BH1958	BH1957	BH1904	DUP-04	BH1933	BH1934	BH1935	BH3001A
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-18 09:30	2023-01-18 10:00	2023-01-18 10:15	2023-01-18 10:15	2023-01-18 10:30	2023-01-18 10:45	2023-01-18 11:00	2023-01-18 11:30
Parameter	Unit	G/S RDL	4701790	4701815	4701816	4701817	4701818	4701819	4701822	4701823
Benzene	mg/L	0.0005	<0.0005	<0.0005	0.114	0.115	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.0003	<0.0003	<0.0003	< 0.0003	<0.0003	<0.0003	< 0.0003	< 0.0003	<0.0003
Ethylbenzene	mg/L	0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/L	0.0005	< 0.0005	<0.0005	0.0005	0.0006	<0.0005	< 0.0005	<0.0005	< 0.0005
o-Xylene	mg/L	0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L	0.0005	< 0.0005	<0.0005	0.0005	0.0006	<0.0005	< 0.0005	< 0.0005	< 0.0005
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	114	92	93	97	110	112	103	98
o-Terphenyl (F2-F4)	%	60-140	110	110	107	107	109	108	105	109

Certified By:

Elena Gorobets



ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Gavin Clarke

AGAT WORK ORDER: 23C989826 PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE DECENVED: 2022-01-18

DATE RECEIVED: 2023-01-18								[	DATE REPORTE	D: 2023-01-27	
		SAMPLE DES	CRIPTION:	BH2005	BH1977	BH2006	BH1955A	BH2001	BH912	BH1954	BH1981
		SAM	PLE TYPE:	Water							
		DATES	SAMPLED:	2023-01-18 11:45	2023-01-18 12:00	2023-01-18 12:10	2023-01-18 12:15	2023-01-18 13:00	2023-01-18 13:10	2023-01-18 13:40	2023-01-18 13:40
Parameter	Unit	G / S	RDL	4701824	4701825	4701826	4701827	4701828	4701829	4701830	4701831
Benzene	mg/L		0.0005	0.0010	0.0646	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L		0.0003	< 0.0003	<0.0003	< 0.0003	<0.0003	< 0.0003	< 0.0003	<0.0003	< 0.0003
Ethylbenzene	mg/L		0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
o-Xylene	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment				Not Present							
Surrogate	Unit	Acceptab	le Limits								
Toluene-d8 (BTEX)	%	60-1	140	106	99	112	107	110	124	114	112
o-Terphenyl (F2-F4)	%	60-1	140	109	110	108	109	108	111	109	109

Certified By:

Elena Gorobets



ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Gavin Clarke

AGAT WORK ORDER: 23C989826 PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-18

DATE RECEIVED: 2023-01-18								I	DATE REPORT	ED: 2023-01-27	
		SAMPLE DESCRI	PTION:	DUP-05	BH1929	DUP-06	BH1928	Hydra-01	Bailer-01	Trip Blank-03	Trip Blank-04
		SAMPLE	TYPE:	Water							
		DATE SAM	/PLED:	2023-01-18 13:40	2023-01-18 14:00	2023-01-18 14:00	2023-01-18 14:10	2023-01-18 15:40	2023-01-18 15:50	2023-01-18 16:03	2023-01-18 16:05
Parameter	Unit	G / S	RDL	4701832	4701833	4701834	4701835	4701836	4701837	4701838	4701839
Benzene	mg/L	0	.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0	.0003	<0.0003	< 0.0003	< 0.0003	<0.0003	< 0.0003	< 0.0003	<0.0003	< 0.0003
Ethylbenzene	mg/L	0	.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/L	0	.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	< 0.0005
o-Xylene	mg/L	0	.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L	0	.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment				Not Present							
Surrogate	Unit	Acceptable L	imits								
Toluene-d8 (BTEX)	%	60-140		102	111	119	101	114	121	111	110
o-Terphenyl (F2-F4)	%	60-140		108	110	110	109	111	110	111	111

Certified By:

Elena Gorobets



ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Gavin Clarke

AGAT WORK ORDER: 23C989826 PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-18

DATE RECEIVED: 2023-01-18								[	DATE REPORTE	ED: 2023-01-27	
		SAMPLE DESC	RIPTION:	BH3003A	BH3003B	BH3002A	BH3002B	BH3001B	BH3001C	BH1978	BH1945
		SAMPL	E TYPE:	Water							
		DATE SA	AMPLED:	2023-01-18 08:40	2023-01-18 08:45	2023-01-18 08:50	2023-01-18 08:55	2023-01-18 09:00	2023-01-18 09:20	2023-01-18 09:25	2023-01-18 09:35
Parameter	Unit	G / S	RDL	4701840	4701841	4701842	4701843	4701844	4701845	4701846	4701847
Benzene	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L		0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Ethylbenzene	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	< 0.0005	<0.0005
m,p-Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
o-Xylene	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment				Not Present							
Surrogate	Unit	Acceptable	Limits								
Toluene-d8 (BTEX)	%	60-14	0	109	110	100	114	113	105	125	114
o-Terphenyl (F2-F4)	%	60-14	0	110	110	111	111	109	109	110	110

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C989826 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### ATTENTION TO: Stephen D'Abadie SAMPLED BY:Gavin Clarke

### SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-18

		SAMPLE DESCRIPTION:	BH1951	BH5001	BH5002	DUP-07	BH2002	BH2003	Trip Blank-05	Trip Blank-06
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-18 09:45	2023-01-18 10:15	2023-01-18 10:45	2023-01-18 10:45	2023-01-18 10:55	2023-01-18 11:00	2023-01-18 15:05	2023-01-18 15:20
Parameter	Unit	G/S RDL	4701848	4701851	4701853	4701854	4701855	4701856	4701857	4701858
Benzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005
Toluene	mg/L	0.0003	<0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	<0.0003	< 0.0003
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	< 0.0005	<0.0005
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005
o-Xylene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	< 0.0005
Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	96	116	107	98	120	109	112	100
o-Terphenyl (F2-F4)	%	60-140	111	112	110	110	111	110	111	111

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

4701790-4701858 The F1 (C6 - C10) fraction is determined by integrating the FID chromatogram from the beginning of the nC6 peak to the apex of the last nC10 peak.

The C6 - C10 fraction is calculated from the FID toluene response factor.

The F2 (C10 - C16) fraction is determined by integrating the FID chromatogram from the apex of the nC10 peak to the apex of the nC16 peak.

The F2 (C10 - C16) fraction is calculated using the average response factor for nC10, nC16, and nC34.

Quality control for the calibration follows the guidelines set out in the CCME Contaminated Sites Method for Soils.

C6 – C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>10 - C16 (F2- Napthalene) is a calculated parameter. The calculated value is F2 - Napthalene (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

Extraction and holding times were met for this sample.

Analysis performed at AGAT Calgary (unless marked by \*)

Elena Gotobets

DATE REPORTED: 2023-01-27

Certified By:



AGAT WORK ORDER: 23C989826

PROJECT: 10-12832

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

### ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Gavin Clarke

Volatile Organic Compounds in Water									
DATE RECEIVED: 2023-01-18					DATE REPORTED: 2023-01-27				
		SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLED:	Trip Blank-03 Water 2023-01-18 16:03	Trip Blank-04 Water 2023-01-18 16:05					
Parameter	Unit	G / S RDL	4701838	4701839					
Chloromethane	mg/L	0.001	<0.001	<0.001					
Vinyl Chloride	mg/L	0.0008	<0.0008	<0.0008					
Bromomethane	mg/L	0.001	<0.001	<0.001					
Chloroethane	mg/L	0.001	<0.001	<0.001					
Trichlorofluoromethane	mg/L	0.001	<0.001	<0.001					
Acetone	mg/L	0.01	<0.01	<0.01					
1,1-Dichloroethylene	mg/L	0.001	<0.001	<0.001					
Methylene Chloride	mg/L	0.001	<0.001	<0.001					
Methyl tert-Butyl Ether	mg/L	0.001	<0.001	<0.001					
Methyl Ethyl Ketone	mg/L	0.01	<0.01	<0.01					
trans-1,2-Dichloroethylene	mg/L	0.001	<0.001	<0.001					
1,1-Dichloroethane	mg/L	0.001	<0.001	<0.001					
cis-1,2-Dichloroethylene	mg/L	0.001	<0.001	<0.001					
Chloroform	mg/L	0.001	<0.001	<0.001					
1,2-Dichloroethane	mg/L	0.001	<0.001	<0.001					
1,1,1-Trichloroethane	mg/L	0.001	<0.001	<0.001					
Carbon Tetrachloride	mg/L	0.0005	<0.0005	<0.0005					
Benzene	mg/L	0.0005	<0.0005	<0.0005					
1,2-Dichloropropane	mg/L	0.001	<0.001	<0.001					
Trichloroethylene	mg/L	0.00030	<0.0003	<0.0003					
Bromodichloromethane	mg/L	0.001	<0.001	<0.001					
trans-1,3-Dichloropropene	mg/L	0.001	<0.001	<0.001					
Methyl Isobutyl Ketone	mg/L	0.01	<0.01	<0.01					
cis-1,3-Dichloropropene	mg/L	0.001	<0.001	<0.001					
1,1,2-Trichloroethane	mg/L	0.001	<0.001	<0.001					
Toluene	mg/L	0.0003	<0.0003	<0.0003					
2-Hexanone	mg/L	0.02	<0.02	<0.02					
Dibromochloromethane	mg/L	0.001	<0.001	<0.001					
Ethylene Dibromide	mg/L	0.001	<0.001	<0.001					

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C989826

PROJECT: 10-12832

Volatile Organic Compounds in Water

CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Gavin Clarke

				<b>v</b> 1	
DATE RECEIVED: 2023-01-18					DATE REPORTED: 2023-01-27
		SAMPLE DESCRIPTION:	Trip Blank-03	Trip Blank-04	
		SAMPLE TYPE:	Water	Water	
		DATE SAMPLED:	2023-01-18 16:03	2023-01-18 16:05	
Parameter	Unit	G/S RDL	4701838	4701839	
Tetrachloroethene	mg/L	0.001	<0.001	<0.001	
1,1,1,2-Tetrachloroethane	mg/L	0.001	<0.001	<0.001	
Chlorobenzene	mg/L	0.0010	<0.001	<0.001	
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	
m,p-Xylenes	mg/L	0.0005	< 0.0005	<0.0005	
Bromoform	mg/L	0.001	<0.001	<0.001	
Styrene	mg/L	0.001	<0.001	<0.001	
1,1,2,2-Tetrachloroethane	mg/L	0.001	<0.001	<0.001	
o-Xylene	mg/L	0.0005	< 0.0005	<0.0005	
1,3-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	
1,4-Dichlorobenzene	mg/L	0.0005	< 0.0005	<0.0005	
1,2-Dichlorobenzene	mg/L	0.0005	< 0.0005	<0.0005	
1,2,4-Trichlorobenzene	mg/L	0.001	<0.001	<0.001	
Xylenes	mg/L	0.0005	<0.0005	<0.0005	
Surrogate	Unit	Acceptable Limits			
Toluene-d8	%	50-140	105	98	

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

4701838-4701839 1,1,2,2-Tetrachloroethane reported only for samples matrices which can be purged. Otherwise N/A.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C989826 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Stephen D'Abadie SAMPLED BY:Gavin Clarke

DATE REPORTED: 2023-01-27

Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-18

	S	AMPLE DESC	RIPTION:	BH1958	BH3001A		BH1928	
		SAMP	LE TYPE:	Water	Water		Water	
		DATE S	AMPLED:	2023-01-18	2023-01-18		2023-01-18	
Demonster	11.20	0 / 0	DDI	09:30	11:30		14:10	
Parameter	Unit	G/S	RDL	4701790	4701823	RDL	4701835	
рН	pH Units	7.0-10.5	N/A	7.67	7.91	N/A	7.54	
p - Alkalinity (as CaCO3)	mg/L		5	<5	<5	5	<5	
T - Alkalinity (as CaCO3)	mg/L		5	482	591	5	530	
Bicarbonate	mg/L		5	600	732	5	657	
Carbonate	mg/L		5	<5	<5	5	<5	
Hydroxide	mg/L		5	<5	<5	5	<5	
Electrical Conductivity	uS/cm		5	1600	1950	5	3380	
Chloride	mg/L	(250)	1.0	238	278	1.5	797	
Fluoride	mg/L	1.5	0.01	0.16	0.11	0.03	0.15	
Nitrate	mg/L	45	0.5	10.7	59.7	0.5	194	
Nitrate-N	mg/L	10	0.02	2.42	13.5	0.02	43.8	
Nitrite	mg/L	3	0.05	<0.05	<0.05	0.10	0.11	
Nitrite-N	mg/L	1	0.01	<0.01	<0.01	0.01	0.03	
Nitrate+Nitrite - Nitrogen	mg/L		0.02	2.42	13.5	0.02	43.9	
Sulfate	mg/L	(500)	1.0	38.3	53.3	1.0	40.9	
Dissolved Calcium	mg/L		0.3	140	161	0.3	268	
Dissolved Magnesium	mg/L		0.2	86.7	122	0.2	207	
Dissolved Sodium	mg/L	(200)	0.6	61.4	65.4	0.6	110	
Dissolved Potassium	mg/L		0.6	4.0	4.5	0.6	6.3	
Dissolved Iron	mg/L	(0.3)	0.1	<0.1	<0.1	0.1	<0.1	
Dissolved Manganese	mg/L	0.12 (0.02)	0.005	<0.005	<0.005	0.005	0.014	
Sodium Adsorption Ratio				1.01	0.95		1.23	
Calculated TDS	mg/L		0.6	874	1100	0.6	1950	
Hardness	mg CaCO3/L		0.5	707	904	0.5	1520	
Ion Balance	%		1	96	96	1	95	

Certified By:


AGAT WORK ORDER: 23C989826 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Stephen D'Abadie

**DATE REPORTED: 2023-01-27** 

SAMPLED BY:Gavin Clarke

Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-18

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 2020 Canadian Drinking Water Quality MAC (AO) 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.

4701790-4701835 < - Values refer to Report Detection Limits.

SAR is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. If sodium results in mg/L are less than detection, SAR is non-calculable and is reported as 0. Ion Balance is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. Hardness is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Calculated TDS is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:



# Quality Assurance

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

#### PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989826 ATTENTION TO: Stephen D'Abadie SAMPLED BY:Gavin Clarke

# Trace Organics Analysis

RPT Date: Jan 27, 2023			C	DUPLICATI	E		REFERE	NCE MA	TERIAL	METHOD	BLAN	( SPIKE	MAT	RIX SP	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lir	eptable nits	Recoverv	Acce	eptable nits	Recoverv	Acce	eptable nits
		Id					value	Lower	Upper	]	Lower	Upper	]	Lower	Upper
SUNCOR - Petroleum Hydrocarbo	ns (BTE)	<td>Water</td> <td></td>	Water												
Benzene	4559	4701815	<0.0005	<0.0005	NA	< 0.0005	82%	60%	140%	85%	60%	140%	91%	60%	140%
Toluene	4559	4701815	<0.0003	<0.0003	NA	< 0.0003	86%	60%	140%	87%	60%	140%	86%	60%	140%
Ethylbenzene	4559	4701815	<0.0005	<0.0005	NA	< 0.0005	85%	60%	140%	82%	60%	140%	83%	60%	140%
m,p-Xylenes	4559	4701815	<0.0005	<0.0005	NA	< 0.0005	88%	60%	140%	94%	60%	140%	97%	60%	140%
o-Xylene	4559	4701815	<0.0005	<0.0005	NA	< 0.0005	110%	60%	140%	94%	60%	140%	97%	60%	140%
Xylenes	4559	4701815	<0.0005	<0.0005	NA	< 0.0005	88%	60%	140%	94%	60%	140%	97%	60%	140%
C6 - C10 (F1)	4559	4701815	<0.1	<0.1	NA	< 0.1	101%	60%	140%	103%	60%	140%	107%	60%	140%
C>10 - C16	8030	4701819	<0.1	<0.1	NA	< 0.1	93%	60%	140%	83%	60%	140%	79%	60%	140%
Comments: Duplicate NA: results are The sample spikes and dups are not	less than from the s	5X the RDI ame sample	and RDP e ID.	will not be	calculate	d.									
1,2-DCA in Water															
1,2-Dichloroethane	4559	4701815	<0.001	<0.001	NA	< 0.001	86%	50%	140%	92%	60%	130%	89%	50%	140%
Comments: Duplicate NA: results are The sample spikes and dups are not	less than from the s	5X the RDI ame sample	- and RDP e ID.	will not be	calculate	d.									
SUNCOR - Petroleum Hydrocarbo	ons (BTE)	K/F1-F2) in	Water												
Benzene	4560	4701837	<0.0005	<0.0005	NA	< 0.0005	85%	60%	140%	94%	60%	140%	98%	60%	140%
Toluene	4560	4701837	<0.0003	<0.0003	NA	< 0.0003	96%	60%	140%	90%	60%	140%	95%	60%	140%
Ethylbenzene	4560	4701837	<0.0005	<0.0005	NA	< 0.0005	87%	60%	140%	86%	60%	140%	83%	60%	140%
m,p-Xylenes	4560	4701837	<0.0005	<0.0005	NA	< 0.0005	96%	60%	140%	102%	60%	140%	106%	60%	140%
o-Xylene	4560	4701837	<0.0005	<0.0005	NA	< 0.0005	110%	60%	140%	102%	60%	140%	106%	60%	140%
Xylenes	4560	4701837	<0.0005	<0.0005	NA	< 0.0005	96%	60%	140%	102%	60%	140%	106%	60%	140%
C6 - C10 (F1)	4560	4701837	<0.1	<0.1	NA	< 0.1	101%	60%	140%	111%	60%	140%	97%	60%	140%
C>10 - C16	8030	4701837	<0.1	<0.1	NA	< 0.1	93%	60%	140%	82%	60%	140%	75%	60%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

1,2-DCA in Water															
1,2-Dichloroethane	4560	4701837	<0.001	<0.001	NA	< 0.001	94%	50%	140%	87%	60%	130%	90%	50%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

Certified By:

Elena Corobets

Page 13 of 26

#### **AGAT** QUALITY ASSURANCE REPORT (V2)

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 and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.



# Quality Assurance

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989826

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:Gavin Clarke

### Water Analysis

RPT Date: Jan 27, 2023			C	UPLICAT	E		REFEREN	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lir	ptable nits	Recovery	Acce Lin	ptable nits	Recovery	Acce Lin	ptable nits
		Id					value	Lower	Upper		Lower	Upper		Lower	Upper
Water Package - Routine Chemis	stry Water A	nalysis -	Lab Filter	ed Catior	IS										
рН	4701758		7.71	7.75	0.5%	N/A	100%	90%	110%						
p - Alkalinity (as CaCO3)	4701758		<5	<5	NA	< 5	NA	80%	120%						
T - Alkalinity (as CaCO3)	4701758		642	640	0.3%	< 5	103%	80%	120%						
Bicarbonate	4701758		797	794	0.3%	7	NA								
Carbonate	4701758		<5	<5	NA	< 5	NA								
Hydroxide	4701758		<5	<5	NA	< 5	NA								
Electrical Conductivity	4701758		3370	3360	0.3%	< 5	102%	90%	110%						
Chloride	4701289		37.9	38.8	2.3%	< 1.0	95%	70%	130%	94%	80%	120%	98%	70%	130%
Fluoride	4701289		0.35	0.37	5.6%	< 0.01	87%	70%	130%	80%	80%	120%	83%	70%	130%
Nitrate	4701289		2.0	1.9	NA	< 0.5	99%	70%	130%	99%	80%	120%	98%	70%	130%
Nitrite	4701289		<0.20	<0.20	NA	< 0.05	92%	70%	130%	91%	80%	120%	91%	70%	130%
Sulfate	4701289		13.4	13.1	2.0%	< 1.0	99%	70%	130%	100%	80%	120%	97%	70%	130%
Dissolved Calcium	4701758		120	120	0.1%	< 0.3	95%	70%	130%	106%	80%	120%	NA	70%	130%
Dissolved Magnesium	4701758		290	290	0.1%	< 0.2	92%	70%	130%	88%	80%	120%	NA	70%	130%
Dissolved Sodium	4701758		135	135	0.0%	< 0.6	79%	70%	130%	88%	80%	120%	NA	70%	130%
Dissolved Potassium	4701758		5.4	5.4	0.2%	< 0.6	81%	70%	130%	93%	80%	120%	NA	70%	130%
Dissolved Iron	4701758		<0.1	<0.1	NA	< 0.1	104%	70%	130%	95%	80%	120%	95%	70%	130%
Dissolved Manganese	4701758		0.532	0.544	2.2%	< 0.005	104%	70%	130%	94%	80%	120%	NA	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated. Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

pH has been analyzed past the recommended holding time of 15 minutes from sampling (field measurement ideal if more accurate data required)

Nitrate and Nitrite: The regulatory hold time for the analysis of nitrate and/or nitrite in water is 72 hours.

Certified By:

#### AGAT QUALITY ASSURANCE REPORT (V2)

Page 14 of 26

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 and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.



# Method Summary

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C989826 ATTENTION TO: Stephen D'Abadie

SAMELING SITE.		SAMFLED B1.0a	
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			1
1,2-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Toluene-d8	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Benzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Toluene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Ethylbenzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
m,p-Xylenes	TO-0542	EPA SW-846 5021/8260-W	GC/MS
o-Xylene	TO-0542	EPA SW-846 5021/8260-W	GC/MS
Xylenes	TO 0332	EPA SW-846 5021 & 8260	GC/MS
C6 - C10 (F1)	TO 0542	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0542	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO-0543	EPA SW-846 5021 & 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Sediment	TO-0511	CCME Tier 1 Method	GC/FID
Chloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Vinyl Chloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Bromomethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Trichlorofluoromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Acetone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methylene Chloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl tert-Butyl Ether	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl Ethyl Ketone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
trans-1,2-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
cis-1,2-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chloroform	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,1-Trichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Carbon Tetrachloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Benzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2-Dichloropropane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Trichloroethylene	TO-0330	EPA SW-846 8260	GC/MS
Bromodichloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
trans-1,3-Dichloropropene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl Isobutyl Ketone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
cis-1,3-Dichloropropene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,2-Trichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Toluene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
2-Hexanone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Dibromochloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Ethylene Dibromide	TO-0330	EPA SW-846 8260	GC/MS
Tetrachloroethene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,1,2-Tetrachloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Ethylbenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
m,p-Xylenes	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Bromoform	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Styrene	TO-0330	EPA SW-846 5030 & 8260	GC/MS



# Method Summary

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

#### SAMPLING SITE:

AGAT WORK ORDER: 23C989826 ATTENTION TO: Stephen D'Abadie SAMPLED BY:Gavin Clarke

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,1,2,2-Tetrachloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
o-Xylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,3-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,4-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2,4-Trichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Xylenes	TO 0330	EPA SW-846 8260	GC/MS
Water Analysis			
рН	INST 0101, INST 0104	SM 4500 H+	PH METER
p - Alkalinity (as CaCO3)	INST-0100, INST-0101	SM 2320 B	TITRATION
T - Alkalinity (as CaCO3)	INST 0101	SM 2320 B	TITRATION
Bicarbonate	INST 0101	SM 2320 B	PC TITRATE
Carbonate	INST 0101	SM 2320 B	PC TITRATE
Hydroxide	INST 0101	SM 2320 B	PC TITRATE
Electrical Conductivity	INST 0101, INST 0120	SM 2510 B	CONDUCTIVITY METER
Chloride	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Fluoride	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrate	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrate-N	INST 0150	SM 4110 B	CALCULATION
Nitrite	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Nitrite-N	INST 0150	SM 4110 B	CALCULATION
Nitrate+Nitrite - Nitrogen	INST 0150	SM 4110 B	CALCULATION
Sulfate	INST 0150	SM 4110 B	ION CHROMATOGRAPH
Dissolved Calcium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Magnesium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Sodium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Potassium	INST 0140	SM 3120B – R	ICP/OES
Dissolved Iron	INST 0140	SM 3120B – R	ICP/OES
Dissolved Manganese	INST 0140	SM 3120B – R	ICP/OES
Sodium Adsorption Ratio		CARTER & GREGORICH 2007	CALCULATION
Calculated TDS		SM 1030E	CALCULATION
Hardness		SM 2340 B	CALCULATION
Ion Balance		SM 1030E	CALCULATION

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Chain of Custody Record Emerge	ency Support Services H	lotline 1-855-AGAT 245 (	1-855-242-8	245)											
Report Information         Company:       PARSONS         Contact:       Michelle Patterson         Address:       #100, 318 - 11 Ave SE, Calgary AB T2G 0Y2         Phone:       (403)294-4215       Fax: (403)294-4240         LSD:       1624 14th Street NW, Calgary, AB	Report Information         1. Name:       Michelle Pa         Email:       michelle.pa         2. Name:       Calgary Lab         Email:       Calgary.lab         3. Name:       Email:         Email:       Mane:	ntterson htterson@parsons.com > Report report@parsons.com		Turnar Regula Rush Tr Date Re	r TAT [2]	<b>Fime I</b>   5 to 7   <24 H   Two E   Three   Four I	Requ 7 Bus 1ours Day / Day (1 Day (1	iness (200 Next (50% 25%)	(TAT Days )%) Day ( )	") 5 100%	6)	-	SEE SUI BRE CONTA FOR A INFI	BACK F RCHARG AKDOV CT YOUI ADDITIC DRMATI	For Ge VN. R CPM )NAL ION
Client Project #: 10-12832         Sampled By:       Graving Clarke         Outlet #:       9445         Involce To       Same Yes □ / No ☑         Company:       Suncor Energy Products Partnership         Contact:       Stephen D'Abadie         Address:       P.O. Box 2844, 150 - 6 Avenue S.W.         Calgary, AB T2P 3E3         Phone:       587-223-4146         PO/AFE#:       '	Requirements (Selection)         CCME       B         Agricultural         Industrial         Residential/Park         Commercial         FWAL         Drinking Water         Other:	<ul> <li>a may impact detection limits)</li> <li>AB Tier 1</li> <li>Agricultural</li> <li>Industrial</li> <li>Residential/Park</li> <li>Commercial</li> <li>Natural Area</li> <li>Alberta Surface Water</li> <li>Chronic</li> <li>Acute</li> </ul>	Number of Jars       & not submitte       Activity       Assessemen       A1     A2       AR     AV       Remediation       RE     RX       Ri     RA       Containemen       Managemen       M     MWE       MV	t d t t t t t t t t	ty: [] AB _] SK _] BC _] D50 BTEX/F1-F4 _] CCME/AB : BTEX/F1-F2	/РН/ЕРН 🗆 ВС: LЕРН/НЕРН	HWS-B DSP-B DHg DCr <sup>6+</sup>	□ Dissolved □Total □ Hg □ Cr <sup>e+</sup>	Chemistry Class 2	otal D Fecal D E.coli	Sleve (75µm) ⊡Texture	C UICHIBYBETHADINE			VS NO ANALYSIS (Additional Fee) VS AFTED ANALYSIS (Additional Fee)
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Sampled By: Outlet #: Invoice To Company: Sur Contact: Step Address: P.O Calu Phone: 587 PO/AFE#:	Graun Claske 9445 Same Yes □, ncor Energy Products Partnership phen D'Abadie 2. Box 2844, 150 – 6 Avenue S.W. gary, AB T2P 3E3 -223-4146 Fax:	/ No 🗹	Requ CC CC C C C C C C C C C C C C C C C C	Irements (Sele SME Agricultural Industrial Residential/Par Commercial SWAL hking Water her:	k Q Ri C AB AR AR AR C A C A C C C A C C C A C C C C C C C C	mpact detection limits) Tier 1 gricultural idustrial esidential/Park commercial atural Area erta Surface Water pronic ute	Ac Ass A1 AR RE RI Con Mar MV	tivity eesseme A2 A2 AV mediatio RA agemen agemen MW	ent n n n n n n n n n n n n n n n n n n	inity: DAB DSK DBC DD50	: BTEX/F1-F4 Z CCME/AB : BTEX /F1-F2	/ирн/ерн 🗆 вс: Lерн/нерн	DHWS-B DSP-B DHE DCrev	si 🗆 Dissolved 🗆 Total 🗖 Hg 🗇 Cr <sup>a</sup> •	rr Chemistry	3 Class 2 DBC DSK	Total 🛛 Fecal 🗆 E.coli	🗆 Sieve (75µm) 🗆 Texture	2 Dichlare Usan	-		AYS NO ANALYSIS (Additional Fee)	AYS AFTER ANALYSIS (Additional Fee)
LABORATORY USE (LAB ID #)	SAMPLE IDENTIFICATION	DEPTH	+	DATE/TIME SAMPLED	SAMPLE MATRIX	COMMENTS (FILTERED, PRESERVED, HAZARDOUS*) *ADDITIONAL FEE	# OF		NERS	Detailed Sali	LI CCME/AB	LUBC: BTEXS	Soll Metals:	Water Metals	Routine Wate	Landfill: 🗆 AB	Coliforms: 🗆	Particle Size:	ZDCA			OLD FOR 30 D/	OLD FOR 30 D/
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Decument ID: DIV-50-1507-007

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Contact: Michelle Patterson		Email:	michelle.pattersc	on@parsons.com		-11 ~		Г	1<24	L Hou	rs (2	00%	١			13	SUR	CHAR	GE
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		Email: _	Calgary.labrepor	t@parsons.com		_    Rusi	LIAI		] Thre	e Da	y (50	<b>)%</b> )	,	,		CC	ONTACT	YOU	R CPI
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Contact: Stephen D'Abadie		Commerc	ial 🗆 C	ommercial	Remediat	ion	12	<b>Å</b>	EPH	꾓	Ē		XSL .	extur	10				nal
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AGAT Lai	SAMPLE INTEGRITY RECEIPT FORM
RECEIVING BASICS - Shipping	Temperature (Bottles/Jars only) N/A if only Soil Bags Received
Company/Consultant: Parsons Isunus-	FROZEN (Please Circle if samples received Frozen)
Courier: Prepaid Collect	1 (Bottle/Jar) $3 + 5 + 4 = 4 \circ C$ 2 (Bottle/Jar) $9 + 9 + 8 = 9 \circ C$
Waybill#	$3(Bottle/Jar) \frac{4}{4} + \frac{4}{4} = \frac{4}{9} \circ C = 4(Bottle/Jar) \frac{8}{8} + \frac{8}{7} + \frac{8}{7} = \frac{8}{9} \circ C$
	5 (Bottle/Jar)++=°C 6 (Bottle/Jar)++=°C
Branch. EDWI GP FN FWI RD VAN LYD FSJ ESI SASK Other:	7 (Bottle/Jar)++=°C 8 (Bottle/Jar)++=°C
If multiple sites were submitted at once: Yes	9 (Bottle/Jar)++=°C 10 (Bottle/Jar)++=°C
Custody Seal Intact: Yes No NA	(If more than 10 coolers are received use another sheet of paper and attach)
TAT: <24hr 24-48hr 48-72hr Reg Other	LOGISTICS USE ONLY
Cooler Quantity:	Workorder No:
TIME SENSITIVE ISSUES - Shipping	Samples Damaged: Yes No If YES why?
ALREADY EXCEEDED HOLD TIME? Yes No	No Bubble Wrap Frozen Courier
	Other:
Inorganic Tests (Please Circle): Mibi POD Nitrate (Nitrite Turkidity	
Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* ,	Account Project Manager:have they been notified of the above issues: Yes No
Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* , Chloroamines*	Account Project Manager:have they been notified of the above issues: Yes NoDate/Time:
Inorganic Tests (Please Circle): Mibi, BOD, Nitrate/Nitrite, Turbidity, Color, Microtox, Ortho PO4, Tedlar Bag, Residual Chlorine, Chlorophyll*, Chloroamines* Earliest Expiry: <u>)an 21</u> , 2023	Account Project Manager:have they been notified of the above issues: Yes No Whom spoken to: Date/Time: CPM Initial
Inorganic Tests (Please Circle): Mibi, BOD, Nitrate/Nitrite, Turbidity, Color, Microtox, Ortho PO4, Tedlar Bag, Residual Chlorine, Chlorophyll*, Chloroamines* Earliest Expiry: <u>)an 21</u> , 2023 Hydrocarbons: Earliest Expiry	Account Project Manager:have they been notified of the above issues: Yes No Whom spoken to: Date/Time: CPM Initial General Comments: <u>Client came ilia 23</u> 7:55 dpd
Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* , Chloroamines* Earliest Expiry: <u>)an 21</u> , 2023 Hydrocarbons: Earliest Expiry	Account Project Manager:have they been notified of the above issues: Yes No Whom spoken to: Date/Time: CPM Initial General Comments: <u>Client came 1/19/23</u> 7:55 drad
Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* , Chloroamines* Earliest Expiry: <u>)an 21</u> , 2023 Hydrocarbons: Earliest Expiry SAMPLE INTEGRITY - Shipping Hazardous Samples: YES NO Precaution Taken:	Account Project Manager:have they been notified of the above issues: Yes No Whom spoken to: Date/Time: CPM Initial General Comments: <u>Client came ilia/23</u> 7:55 drad <u>prode changes to the COC</u>
Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* , Chloroamines* Earliest Expiry: <u>)an 21</u> , 2023 Hydrocarbons: Earliest Expiry SAMPLE INTEGRITY - Shipping Hazardous Samples: YES NO Precaution Taken: Legal Samples: Yes No	Account Project Manager:have they been notified of the above issues: Yes No Whom spoken to: Date/Time: CPM Initial General Comments: <u>Client came ilial23</u> 7:55 dod <u>pade changes to the COC</u>
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\* Subcontracted Analysis (See CPM)

Date issued: March 11, 2020 Document ID: SR-9505.004

Page 1 of 1



# agat Laboratories

# Sample Integrity Report

Client Name: SUNCOR ENERGY PRODUCTS PARTNERSHIP

Project Number: 10-12832

Contact: Stephen D'Abadie

AGAT Work Order Number: 23C989826

Consultant: NA

Client Sample ID	Bottle Type	SIR	Comment
BH1929	100ml	Labeling Issues (Label	Bottles have 1926 written - labelled as
	Amber	Missing / Incorrect)	1929
BH1929	40ml Vial	Labeling Issues (Label	Bottles have 1926 written - labelled as
	(Amber)	Missing / Incorrect)	1929
BH1929	40ml Vial	Labeling Issues (Label	Bottles have 1926 written - labelled as
	(Amber)	Missing / Incorrect)	1929
BH1929	40ml Vial	Labeling Issues (Label	Bottles have 1926 written - labelled as
	(Amber)	Missing / Incorrect)	1929
BH1929	40ml Vial	Labeling Issues (Label	Bottles have 1926 written - labelled as
	(Amber)	Missing / Incorrect)	1929
BH1947	100ml Amber	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.



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AGAT Laboratories

# Sample Integrity Report

BH1947	100ml Amber	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	40ml Vial (Amber)	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	40ml Vial (Amber)	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	40ml Vial (Amber)	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	40ml Vial (Amber)	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	100mi Amber	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	100ml Amber	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	40ml Vial (Amber)	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	40ml Vial (Amber)	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.



AGAT Laboratories

# Sample Integrity Report

BH1947	40ml Vial (Amber)	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
BH1947	40ml Vial (Amber)	Labeling Issues (Label Missing / Incorrect)	Date of sampling not on samples - not able to discern which 1947 is accurate. Please see samples rec'd as extra.
1947	100ml Amber	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1947	100ml Amber	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1947	40ml Vial (Amber)	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1947	40ml Vial (Amber)	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1947	40ml Vial (Amber)	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1947	40ml Vial (Amber)	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1946	100ml Amber	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947

AGAT Laboratories

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# Sample Integrity Report

1946	100ml Amber	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1946	40ml Vial (Amber)	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1946	40ml Vial (Amber)	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1946	40ml Vial (Amber)	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947
1946	40ml Vial (Amber)	Bottles in Shipment, But not Listed in COC	Unable to discern the correct 1947

Page 26 of 26

### DATA QUALITY REVIEW CHECKLIST

Consultant: Parsons Inc.			Sampling Date: 2023/01/19						
Location: <u>1620 - 14th</u>	Avenue NW, Ca	lgary, AB	Laboratory : AGAT Laboratories						
Consultant Project Number:	10-12832			Sample Submission Number: 23C990183					
Are All Laboratory QC Samples V	Vithin Acceptance	ce Criteria	(Yes, No,	, Not Applicable)?					
Surrogate Recovery Method Blank Concentration Matrix Duplicate RPD Matrix Spike Recovery Other Quality Control Data	Yes X X X X X X	No	NA	Comments All lab QC met acceptance criteria.					
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?									
Equipment Blank Concentration Trip Blank Concentration Field Duplicate RPD	Yes X X X	No	NA	Comments All field QC samples have met alert limits. All field QC samples have met the acceptable RPD limits.					
Has CoA been signed off (Yes/No Were all samples analyzed within All volatiles samples methanol ext Is Chain of Custody completed an Were sample temperatures accepta	)?: hold times (Yes/ racted, if require d signed (Yes/N ble when they re	'No)?: ed, within 4 o)?: eached lab	48 hours ( (Yes/No)	Yes           Yes           Yes           Yes           Yes           Yes           Yes           Yes           Yes					
Is data considered to be reliable (Yes/No)?: Yes If answer is "No", describe and provide rationale:									
Performed by (Print): Reviewed by (Print): Reviewed date:	Danielle Smith Michelle Patters 2023/05/08	on		Reviewed by (Signature):					



CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP **BOX 1720 STN M** CALGARY, AB T2P 0A2 ATTENTION TO: Stephen D'Abadie PROJECT: 10-12832 AGAT WORK ORDER: 23C990183 TRACE ORGANICS REVIEWED BY: Elena Gorobets, Report Writer WATER ANALYSIS REVIEWED BY: Max Dou, Report Writer DATE REPORTED: Jan 27, 2023 PAGES (INCLUDING COVER): 22 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (403) 735-2005

\*Notes Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

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(APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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AGAT WORK ORDER: 23C990183 PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

# SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

DATE RECEIVED: 2023-01-19								DATE REPORTED: 2023-01-24			
		SAMPLE DES	SCRIPTION:	EX-5	EX-4	BH1704	EX-3	EX-2	BH510A	DUP-08	BH1950A
		SAM	IPLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2023-01-19 09:00	2023-01-19 09:30	2023-01-19 09:45	2023-01-19 10:00	2023-01-19 10:15	2023-01-19 10:30	2023-01-19 10:30	2023-01-19 10:45
Parameter	Unit	G / S	RDL	4705028	4705061	4705062	4705063	4705064	4705065	4705066	4705067
Benzene	mg/L		0.0005	5.46	0.188	0.121	<0.0005	0.0035	0.169	0.172	<0.0005
Toluene	mg/L		0.0003	10.1	0.0141	0.655	<0.0003	0.0005	0.0115	0.0114	< 0.0003
Ethylbenzene	mg/L		0.0005	1.46	0.304	0.0538	<0.0005	0.0016	0.348	0.358	< 0.0005
m,p-Xylenes	mg/L		0.0005	5.94	0.664	1.63	<0.0005	<0.0005	0.0164	0.0154	<0.0005
o-Xylene	mg/L		0.0005	0.777	0.0195	0.999	<0.0005	<0.0005	0.0044	0.0039	<0.0005
Xylenes	mg/L		0.0005	6.71	0.683	2.63	<0.0005	<0.0005	0.0208	0.0193	<0.0005
C6 - C10 (F1)	mg/L		0.1	33.9	3.1	6.5	<0.1	<0.1	1.6	1.6	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	10.2	1.9	3.0	<0.1	<0.1	1.1	1.0	<0.1
C>10 - C16	mg/L		0.1	1.2	1.0	6.0	<0.1	<0.1	0.2	0.1	<0.1
Sediment				Not Present	Not Present	Not Present	Not Present				
Surrogate	Unit	Acceptal	ole Limits								
Toluene-d8 (BTEX)	%	60-	140	107	100	99	97	100	114	110	97
o-Terphenyl (F2-F4)	%	60-	140	107	108	109	109	107	108	107	107

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

# SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-24

SAMPLED BY:

DATE RECEIVED. 2023 OF 13									LD. 2025 01 24	
		SAMPLE DESCRIPTION	: BH1925	BH6006	BH1979	BH1944	BH2004	DUP-09	BH1922	BH6001
		SAMPLE TYPE	: Water	Water	Water	Water	Water	Water	Water	Water
		DATE SAMPLED	2023-01-19 11:00	2023-01-19 11:30	2023-01-19 12:00	2023-01-19 12:30	2023-01-19 13:00	2023-01-19 13:00	2023-01-19 13:30	2023-01-19 13:45
Parameter	Unit	G/S RDL	4705068	4705071	4705072	4705073	4705074	4705075	4705076	4705077
Benzene	mg/L	0.0005	<0.0005	<0.0005	1.11	0.0155	<0.0005	<0.0005	<0.0005	0.0037
Toluene	mg/L	0.0003	< 0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0005
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0161
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	< 0.0005	< 0.0005	< 0.0005	0.0013
o-Xylene	mg/L	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	0.0007
Xylenes	mg/L	0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0020
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	1.1	<0.1	<0.1	<0.1	<0.1	0.2
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	97	102	106	103	97	98	102	103
o-Terphenyl (F2-F4)	%	60-140	108	108	108	107	106	106	108	108

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

# CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

# ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-24

SAMPLED BY:

# SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

		SAMPLE DESCRIPTION:	EX-7	BH6002	EX-6	Hydra-02	Bailer-02	Trip Blank-07	Trip Blank-08	BH1953
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-19 14:00	2023-01-19 14:05	2023-01-19 14:10	2023-01-19 14:15	2023-01-19 14:30	2023-01-19 14:45	2023-01-19 15:00	2023-01-19 08:10
Parameter	Unit	G/S RDL	4705078	4705079	4705080	4705081	4705082	4705083	4705084	4705225
Benzene	mg/L	0.0005	0.322	0.0699	0.352	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.0003	0.454	0.423	0.349	<0.0003	< 0.0003	<0.0003	<0.0003	< 0.0003
Ethylbenzene	mg/L	0.0005	0.878	0.532	1.08	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/L	0.0005	1.80	3.04	2.34	< 0.0005	< 0.0005	<0.0005	<0.0005	< 0.0005
o-Xylene	mg/L	0.0005	0.563	1.26	0.712	<0.0005	< 0.0005	<0.0005	<0.0005	< 0.0005
Xylenes	mg/L	0.0005	2.37	4.30	3.05	<0.0005	< 0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L	0.1	8.5	8.7	7.2	<0.1	<0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L	0.1	4.4	3.4	2.4	<0.1	<0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L	0.1	1.2	0.7	0.7	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	108	100	120	101	93	95	97	96
o-Terphenyl (F2-F4)	%	60-140	109	108	107	108	107	108	106	105

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### SAMPLED BY:

ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-24

# SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

DATE RECEIVED. 2023 OF 13							L			
		SAMPLE DESCRIPTION:	BH1918	BH1980	BH1942	DUP-10	BH1919	BH732	BH1982	DUP-11
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-19 08:30	2023-01-19 08:30	2023-01-19 08:40	2023-01-19 08:50	2023-01-19 09:00	2023-01-19 09:10	2023-01-19 09:20	2023-01-19 09:20
Parameter	Unit	G/S RDL	4705226	4705227	4705229	4705230	4705231	4705232	4705233	4705234
Benzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0477	0.0463
Toluene	mg/L	0.0003	< 0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0055	0.006
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0301	0.0331
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	< 0.0005	< 0.0005	< 0.0005	<0.0005	0.0020	0.0023
o-Xylene	mg/L	0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	0.0008
Xylenes	mg/L	0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0029	0.0031
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.4
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.4
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	95	107	96	100	99	96	102	96
o-Terphenyl (F2-F4)	%	60-140	104	105	105	105	106	106	104	106

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

# ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

# SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

DATE RECEIVED: 2023-01-19								DATE REPORTED: 2023-01-24			
		SAMPLE DES	CRIPTION:	BH1937	BH1939	BH1972	BH1930	BH1952	BH2011	BH2010	BH6003
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE S	SAMPLED:	2023-01-19 09:30	2023-01-19 09:40	2023-01-19 10:00	2023-01-19 10:20	2023-01-19 10:30	2023-01-19 10:50	2023-01-19 11:20	2023-01-19 11:40
Parameter	Unit	G / S	RDL	4705235	4705236	4705237	4705238	4705239	4705240	4705241	4705242
Benzene	mg/L		0.0005	<0.0005	<0.0005	<0.0005	0.0029	<0.0005	<0.0005	<0.0005	0.0191
Toluene	mg/L		0.0003	< 0.0003	<0.0003	< 0.0003	<0.0003	< 0.0003	<0.0003	<0.0003	0.744
Ethylbenzene	mg/L		0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.291
m,p-Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	3.99
o-Xylene	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.702
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	4.69
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	9.9
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	4.2
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.9
Sediment				Not Present	Not Present	Not Present	Not Present				
Surrogate	Unit	Acceptab	le Limits								
Toluene-d8 (BTEX)	%	60-1	40	86	97	124	103	97	97	99	98
o-Terphenyl (F2-F4)	%	60-1	40	107	106	106	106	106	105	105	106

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-24

SAMPLED BY:

### SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-19

	Trip Blank - 00
SAWFLE DESCRIPTION.	Mater
SAMPLE TYPE:	vvater
DATE SAMPLED:	2023-01-19
	12:30
G/S RDL	4705243
0.0005	<0.0005
0.0003	<0.0003
0.0005	<0.0005
0.0005	<0.0005
0.0005	<0.0005
0.0005	<0.0005
0.1	<0.1
0.1	<0.1
0.1	<0.1
	Not Present
Acceptable Limits	
60-140	103
60-140	94
	SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLED:           G / S         RDL           0.0005         0.0003           0.0005         0.0005           0.0005         0.0005           0.0005         0.0005           0.0005         0.0005           0.0005         0.0005           0.0005         0.0005           0.0005         0.0005           0.0005         0.11           0.1         0.1           Acceptable Limits         60-140           60-140         60-140

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

4705028-4705243 The F1 (C6 - C10) fraction is determined by integrating the FID chromatogram from the beginning of the nC6 peak to the apex of the last nC10 peak.

The C6 - C10 fraction is calculated from the FID toluene response factor.

The F2 (C10 - C16) fraction is determined by integrating the FID chromatogram from the apex of the nC10 peak to the apex of the nC16 peak.

The F2 (C10 - C16) fraction is calculated using the average response factor for nC10, nC16, and nC34.

Quality control for the calibration follows the guidelines set out in the CCME Contaminated Sites Method for Soils.

C6 - C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>10 - C16 (F2- Napthalene) is a calculated parameter. The calculated value is F2 - Napthalene (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

Extraction and holding times were met for this sample.

Analysis performed at AGAT Calgary (unless marked by \*)

Elena Gotobets



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832

Volatile Organic Compounds in Water

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

# CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

DATE RECEIVED: 2023-01-19						DATE REPORTED: 2023-01-23
		SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLED:	Trip Blank-07 Water 2023-01-19 14:45	Trip Blank-08 Water 2023-01-19 15:00	Trip Blank - 09 Water 2023-01-19 12:30	
Parameter	Unit	G/S RDL	4705083	4705084	4705243	
Chloromethane	mg/L	0.001	<0.001	<0.001	<0.001	
Vinyl Chloride	mg/L	0.0008	<0.0008	<0.0008	<0.0008	
Bromomethane	mg/L	0.001	<0.001	<0.001	<0.001	
Chloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
Trichlorofluoromethane	mg/L	0.001	<0.001	<0.001	<0.001	
Acetone	mg/L	0.01	<0.01	<0.01	<0.01	
1,1-Dichloroethylene	mg/L	0.001	<0.001	<0.001	<0.001	
Methylene Chloride	mg/L	0.001	<0.001	<0.001	<0.001	
Methyl tert-Butyl Ether	mg/L	0.001	<0.001	<0.001	<0.001	
Methyl Ethyl Ketone	mg/L	0.01	<0.01	<0.01	<0.01	
trans-1,2-Dichloroethylene	mg/L	0.001	<0.001	<0.001	<0.001	
1,1-Dichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
cis-1,2-Dichloroethylene	mg/L	0.001	<0.001	<0.001	<0.001	
Chloroform	mg/L	0.001	<0.001	<0.001	<0.001	
1,2-Dichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
1,1,1-Trichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
Carbon Tetrachloride	mg/L	0.0005	<0.0005	<0.0005	< 0.0005	
Benzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,2-Dichloropropane	mg/L	0.001	<0.001	<0.001	<0.001	
Trichloroethylene	mg/L	0.00030	<0.0003	<0.0003	<0.0003	
Bromodichloromethane	mg/L	0.001	<0.001	<0.001	<0.001	
trans-1,3-Dichloropropene	mg/L	0.001	<0.001	<0.001	<0.001	
Methyl Isobutyl Ketone	mg/L	0.01	<0.01	<0.01	<0.01	
cis-1,3-Dichloropropene	mg/L	0.001	<0.001	<0.001	<0.001	
1,1,2-Trichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
Toluene	mg/L	0.0003	<0.0003	<0.0003	<0.0003	
2-Hexanone	mg/L	0.02	<0.02	<0.02	<0.02	
Dibromochloromethane	mg/L	0.001	<0.001	<0.001	<0.001	
Ethylene Dibromide	mg/L	0.001	<0.001	<0.001	<0.001	

# Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C990183

PROJECT: 10-12832

Volatile Organic Compounds in Water

CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

DATE RECEIVED: 2023-01-19						DATE REPORTED: 2023-01-23
		SAMPLE DESCRIPTION:	Trip Blank-07	Trip Blank-08	Trip Blank - 09	
		SAMPLE TYPE:	Water	Water	Water	
		DATE SAMPLED:	2023-01-19 14:45	2023-01-19 15:00	2023-01-19 12:30	
Parameter	Unit	G/S RDL	4705083	4705084	4705243	
Tetrachloroethene	mg/L	0.001	<0.001	<0.001	<0.001	
1,1,1,2-Tetrachloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
Chlorobenzene	mg/L	0.0010	<0.001	<0.001	<0.001	
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
Bromoform	mg/L	0.001	<0.001	<0.001	<0.001	
Styrene	mg/L	0.001	<0.001	<0.001	<0.001	
1,1,2,2-Tetrachloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
o-Xylene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,3-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,4-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,2-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,2,4-Trichlorobenzene	mg/L	0.001	<0.001	<0.001	<0.001	
Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
Surrogate	Unit	Acceptable Limits				
Toluene-d8	%	50-140	99	89	96	

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

4705083-4705243 1,1,2,2-Tetrachloroethane reported only for samples matrices which can be purged. Otherwise N/A.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C990183

PROJECT: 10-12832

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

# CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

		Vo	olatile Orgar	nic Compou	nds in Wate	er - 1,2-DCA				
DATE RECEIVED: 2023-01-19								DATE REPORT	ED: 2023-01-23	
		SAMPLE DESCRIPTIO	N: EX-5	EX-4	BH1704	EX-3	EX-2	BH510A	DUP-08	BH1950A
		SAMPLE TYP	E: Water	Water	Water	Water	Water	Water	Water	Water
		DATE SAMPLE	D: 2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19
			09:00	09:30	09:45	10:00	10:15	10:30	10:30	10:45
Parameter	Unit	G/S RDL	4705028	4705061	4705062	4705063	4705064	4705065	4705066	4705067
1,2-Dichloroethane	mg/L	0.001	0.131	0.008	0.020	<0.001	0.002	0.019	0.020	<0.001
Surrogate	Unit	Acceptable Limits								
Toluene-d8	%	50-140	104	121	129	97	99	120	101	106
		SAMPLE DESCRIPTIO	N: BH1925	BH6006	BH1979	BH1944	BH2004	DUP-09	BH1922	BH6001
		SAMPLE TYP	E: Water	Water	Water	Water	Water	Water	Water	Water
		DATE SAMPLE	D: 2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19
			11:00	11:30	12:00	12:30	13:00	13:00	13:30	13:45
Parameter	Unit	G/S RDL	4705068	4705071	4705072	4705073	4705074	4705075	4705076	4705077
1,2-Dichloroethane	mg/L	0.001	<0.001	<0.001	0.009	<0.001	<0.001	<0.001	<0.001	0.021
Surrogate	Unit	Acceptable Limits								
Toluene-d8	%	50-140	99	96	86	100	116	143	110	99
		SAMPLE DESCRIPTIO	N: EX-7	BH6002	EX-6	Hydra-02	Bailer-02	BH1953	BH1918	BH1980
		SAMPLE TYP	E: Water	Water	Water	Water	Water	Water	Water	Water
		DATE SAMPLE	D: 2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19
			14:00	14:05	14:10	14:15	14:30	08:10	08:30	08:30
Parameter	Unit	G/S RDL	4705078	4705079	4705080	4705081	4705082	4705225	4705226	4705227
1,2-Dichloroethane	mg/L	0.001	0.051	0.030	0.035	<0.001	<0.001	<0.001	<0.001	<0.001
Surrogate	Unit	Acceptable Limits								
Toluene-d8	%	50-140	105	106	127	97	95	92	117	101
		SAMPLE DESCRIPTIO	N: BH1942	DUP-10	BH1919	BH732	BH1982	DUP-11	BH1937	BH1939
		SAMPLE TYP	E: Water	Water	Water	Water	Water	Water	Water	Water
		DATE SAMPLE	D: 2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19	2023-01-19
			08:40	08:50	09:00	09:10	09:20	09:20	09:30	09:40
Parameter	Unit	G/S RDL	4705229	4705230	4705231	4705232	4705233	4705234	4705235	4705236
1,2-Dichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.097	0.111	<0.001	0.051
Surrogate	Unit	Acceptable Limits								
Toluene-d8	%	50-140	100	96	101	108	87	86	104	94

Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

	Volatile Organic Compounds in Water - 1,2-DCA											
DATE RECEIVED: 2023-01-19								ļ	DATE REPORTE	D: 2023-01-23		
		SAMPLE DES	CRIPTION:	BH1972	BH1930	BH1952	BH2011	BH2010	BH6003			
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water			
		DATE	SAMPLED:	2023-01-19 10:00	2023-01-19 10:20	2023-01-19 10:30	2023-01-19 10:50	2023-01-19 11:20	2023-01-19 11:40			
Parameter	Unit	G/S	RDL	4705237	4705238	4705239	4705240	4705241	4705242			
1,2-Dichloroethane	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.012			
Surrogate	Unit	Acceptab	ole Limits									
Toluene-d8	%	50-	140	118	104	109	96	105	104			

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

# CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

# ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-25

SAMPLED BY:

# Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-19

									LD. 2020 01 20	
S	SAMPLE DESC	RIPTION:	BH1925	BH1944	EX-7	BH1953	BH1918	BH2003	BH2010	
	SAMP	LE TYPE:	Water	Water	Water	Water	Water	Water	Water	
	DATE S	AMPLED:	2023-01-19 11:00	2023-01-19 12:30	2023-01-19 14:00	2023-01-19 08:10	2023-01-19 08:30	2023-01-19 08:40	2023-01-19 11:20	
Unit	G/S	RDL	4705068	4705073	4705078	4705225	4705226	4705228	4705241	
pH Units	7.0-10.5	N/A	7.86	7.75	7.41	7.58	7.69	7.81	7.83	
mg/L		5	<5	<5	<5	<5	<5	<5	<5	
mg/L		5	486	469	497	651	585	486	359	
mg/L		5	605	582	619	807	724	604	447	
mg/L		5	<5	<5	<5	<5	<5	<5	<5	
mg/L		5	<5	<5	<5	<5	<5	<5	<5	
uS/cm		5	1480	959	1980	2120	2230	1320	778	
mg/L	(250)	1.0	106	25.6	402	324	389	141	34.7	
mg/L	1.5	0.01	0.15	0.12	0.13	0.12	0.05	0.12	0.12	
mg/L	45	0.5	12.2	11.0	0.8	43.7	43.7	0.8	12.4	
mg/L	10	0.02	2.76	2.48	0.18	9.87	9.87	0.18	2.80	
mg/L	3	0.05	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	0.46	
mg/L	1	0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	0.14	
mg/L		0.02	2.76	2.53	0.18	9.87	9.87	0.18	2.94	
mg/L	(500)	1.0	158	46.3	2.5	41.6	50.1	60.3	35.4	
mg/L		0.3	70.0	107	144	186	150	100	91.5	
mg/L		0.2	120	62.3	131	131	141	71.7	42.4	
mg/L	(200)	0.6	48.5	12.2	46.7	78.0	85.1	74.7	6.8	
mg/L		0.6	2.2	2.9	2.2	5.7	4.9	3.1	2.9	
mg/L	(0.3)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
mg/L	0.12 (0.02)	0.005	<0.005	0.260	0.576	0.182	<0.005	0.044	0.080	
			0.82	0.23	0.68	1.07	1.20	1.39	0.15	
mg/L		0.6	814	554	1030	1210	1220	749	446	
mg CaCO3/L		0.5	669	524	899	1000	955	545	403	
%		1	95	97	93	99	93	94	91	
			Complete	Complete	Complete	Complete	Complete	Complete	Complete	
			Complete	Complete	Complete	Complete	Complete	Complete	Complete	
	Unit pH Units mg/L mg	SAMPLE DESC SAMP DATE S           Unit         G / S           pH Units         7.0-10.5           mg/L         1.5           mg/L         1.5           mg/L         1.5           mg/L         1.0           mg/L         1.0           mg/L         1.0           mg/L         1.0           mg/L         (200)           mg/L         (0.3)           mg/L         0.12 (0.02)           mg/L         %	SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLED:           Unit         G / S         RDL           pH Units         7.0-10.5         N/A           mg/L         5           mg/L         0.01           mg/L         1.0           mg/L         1.5           mg/L         0.5           mg/L         1.0           mg/L         1.0           mg/L         0.10           mg/L         1.0           mg/L         1.0           mg/L         0.10           mg/L         0.10           mg/L         0.2           mg/L         0.2           mg/L         0.2           mg/L         0.2           mg/L         0.6           mg/L         0.6           mg/L         0.5	SAMPLE DESCRIPTION:         BH1925           SAMPLE TYPE:         Water           DATE SAMPLED:         2023-01-19           DATE SAMPLED:         2023-01-19           Unit         G / S         RDL         4705068           pH Units         7.0-10.5         N/A         7.86           mg/L         5         <5	SAMPLE DESCRIPTION:         BH1925         BH1944           SAMPLE TYPE:         Water         Water           DATE SAMPLED:         2023-01-19         2023-01-19           11:00         12:30           Unit         G / S         RDL         4705068         4705073           pH Units         7.0-10.5         N/A         7.86         7.75           mg/L         5         <5	SAMPLE DESCRIPTION:         BH1925         BH1944         EX-7           SAMPLE TYPE:         Water         Water         Water         Water           DATE SAMPLED:         2023-01-19         2023-01-19         2023-01-19           Unit         G / S         RDL         4705068         4705073         4705078           pH Units         7.0-10.5         N/A         7.86         7.75         7.41           mg/L         5         486         469         497           mg/L         5         605         582         619           mg/L         5         <5	SAMPLE DESCRIPTION:         BH1925         BH1944         EX-7         BH1953           SAMPLE TYPE:         Water         Water         Water         Water         Water           DATE SAMPLED:         2023-01-19         2023-01-19         2023-01-19         2023-01-19         2023-01-19           Unit         G / S         RDL         4705068         4705073         4705078         4705255           pH Units         7.0-10.5         NA         7.86         ~5         ~5         <5	SAMPLE DESCRIPTION:         BH1925         BH1944         EX-7         BH1953         BH1918           SAMPLE TYPE:         Water         Wa	SAMPLE DESCRIPTION:         BH1925         BH1944         EX-7         BH1953         BH1918         BH2003           SAMPLE TYPE:         Water         K	SAMPLE DESCRIPTION:         BH1925         BH1944         EX-7         BH1953         BH1913         BH2010         BH2010           SAMPLE TYPE:         Water         Water <td< td=""></td<>

Certified By:



AGAT WORK ORDER: 23C990183 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Stephen D'Abadie

DATE REPORTED: 2023-01-25

SAMPLED BY:

### Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-19

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 2020 Canadian Drinking Water Quality MAC (AO) 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.

4705068-4705241 < - Values refer to Report Detection Limits.

SAR is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. If sodium results in mg/L are less than detection, SAR is non-calculable and is reported as 0. Ion Balance is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. Hardness is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Calculated TDS is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Marken



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# **Quality Assurance**

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

#### PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C990183 ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

# Trace Organics Analysis

RPT Date:				OUPLICATI	E		REFERE	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lir	eptable nits	Recovery	Acce Lir	eptable nits	Recovery	Acce	ptable nits
		Ia					value	Lower	Upper		Lower	Upper		Lower	Upper
SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water															
Benzene	4809	4705072	1.11	1.10	0.9%	< 0.0005	85%	60%	140%	89%	60%	140%	89%	60%	140%
Toluene	4809	4705072	<0.0003	<0.0003	NA	< 0.0003	92%	60%	140%	100%	60%	140%	100%	60%	140%
Ethylbenzene	4809	4705072	<0.0005	<0.0005	NA	< 0.0005	94%	60%	140%	101%	60%	140%	102%	60%	140%
m,p-Xylenes	4809	4705072	<0.0005	<0.0005	NA	< 0.0005	92%	60%	140%	103%	60%	140%	107%	60%	140%
o-Xylene	4809	4705072	<0.0005	<0.0005	NA	< 0.0005	92%	60%	140%	103%	60%	140%	107%	60%	140%
Xylenes	4809	4705072	<0.0005	<0.0005	NA	< 0.0005	92%	60%	140%	103%	60%	140%	107%	60%	140%
C6 - C10 (F1)	4809	4705072	1.1	1.1	0.0%	< 0.1	103%	60%	140%	115%	60%	140%	103%	60%	140%
C>10 - C16	8029	4705061	1.0	1.1	9.5%	< 0.1	105%	60%	140%	90%	60%	140%	86%	60%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

SUNCOR - Petroleum Hydrocart	oons (BTE	X/F1-F2) in	Water												
Benzene	4810	4705083	<0.0005	<0.0005	NA	< 0.0005	104%	60%	140%	92%	60%	140%	80%	60%	140%
Toluene	4810	4705083	< 0.0003	<0.0003	NA	< 0.0003	115%	60%	140%	100%	60%	140%	85%	60%	140%
Ethylbenzene	4810	4705083	<0.0005	<0.0005	NA	< 0.0005	114%	60%	140%	101%	60%	140%	82%	60%	140%
m,p-Xylenes	4810	4705083	<0.0005	<0.0005	NA	< 0.0005	115%	60%	140%	104%	60%	140%	84%	60%	140%
o-Xylene	4810	4705083	<0.0005	<0.0005	NA	< 0.0005	112%	60%	140%	104%	60%	140%	84%	60%	140%
Xylenes	4810	4705083	<0.0005	<0.0005	NA	< 0.0005	115%	60%	140%	104%	60%	140%	84%	60%	140%
C6 - C10 (F1)	4810	4705083	<0.1	<0.1	NA	< 0.1	84%	60%	140%	121%	60%	140%	105%	60%	140%
C>10 - C16	2	4705083	< 0.1	< 0.1	NA	< 0.1	88%	60%	140%	83%	60%	140%	80%	60%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

SUNCOR - Petroleum Hydrocarl	bons (BTE	X/F1-F2) in	Water												
Benzene	4811	4699473	0.0015	0.0012	NA	< 0.0005	112%	60%	140%	93%	60%	140%	88%	60%	140%
Toluene	4811	4699473	0.0228	0.0198	14.1%	< 0.0003	120%	60%	140%	99%	60%	140%	96%	60%	140%
Ethylbenzene	4811	4699473	0.0162	0.0138	16.0%	< 0.0005	116%	60%	140%	96%	60%	140%	93%	60%	140%
m,p-Xylenes	4811	4699473	0.0691	0.0576	18.2%	< 0.0005	118%	60%	140%	101%	60%	140%	100%	60%	140%
o-Xylene	4811	4699473	0.0526	0.045	15.6%	< 0.0005	117%	60%	140%	101%	60%	140%	100%	60%	140%
Xylenes	4811	4699473	0.122	0.0983	21.5%	< 0.0005	118%	60%	140%	101%	60%	140%	100%	60%	140%
C6 - C10 (F1)	4811	4699473	0.3	0.3	NA	< 0.1	84%	60%	140%	108%	60%	140%	105%	60%	140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

The sample spikes and dups are not from the same sample ID.

SUNCOR - Petroleum Hydr	ocarbons (BTE	X/F1-F2) in	Water												
C>10 - C16	8030	4701819	<0.1	<0.1	NA	< 0.1	93%	60%	140%	83%	60%	140%	79%	60%	140%
Comments: Duplicate NA: res The sample spikes and dups a	ults are less than are not from the s	5X the RDL same sample	and RDP ID.	will not be	calculated										
Volatile Organic Compound	ds in Water - 1,2	2-DCA													

1,2-Dichloroethane	4561	4705072	0.009	0.010	10.5%	< 0.001	90%	50%	140%	105%	60%	130%	101%	50%	140%

#### AGAT QUALITY ASSURANCE REPORT (V1)

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# Quality Assurance

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

AGAT WORK ORDER: 23C990183

ATTENTION TO: Stephen D'Abadie

SAMPLING SITE:

SAMPLED BY:

# Trace Organics Analysis (Continued)

RPT Date:			C	UPLICAT	E		REFEREN	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lin	ptable nits	Recoverv	Acce Lin	ptable nits	Recoverv	Acce Lin	ptable nits
		Id					value	Lower	Upper		Lower	Upper		Lower	Upper

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

Volatile Organic Compounds in Water - 1,2-DCA

 1,2-Dichloroethane
 4562
 4705083
 <0.001</th>
 NA
 < 0.001</th>
 98%
 50%
 140%
 106%
 60%
 130%
 101%
 50%
 140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

 Volatile Organic Compounds in Water - 1,2-DCA

 1,2-Dichloroethane
 4563
 4705243
 <0.001</td>
 NA
 < 0.001</td>
 103%
 50%
 140%
 98%
 60%
 130%
 104%
 50%
 140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

Certified By:

Elena GotoBets

Page 15 of 22

**AGAT** QUALITY ASSURANCE REPORT (V1)

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# Quality Assurance

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C990183

ATTENTION TO: Stephen D'Abadie

SAMPLED BY:

### Water Analysis

RPT Date:			D	UPLICAT	E		REFEREN	ICE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lin	ptable nits	Recovery	Acce Lin	ptable nits	Recovery	Acce Lin	ptable nits
		iù					value	Lower	Upper		Lower	Upper		Lower	Upper
Water Package - Routine Chemist	try Water	Analysis -	Lab Filter	ed Cation	IS										
рН	4701758	4701758	7.71	7.75	0.5%	N/A	100%	90%	110%						
p - Alkalinity (as CaCO3)	4701758	4701758	<5	<5	NA	< 5	NA	80%	120%						
T - Alkalinity (as CaCO3)	4701758	4701758	642	640	0.3%	< 5	103%	80%	120%						
Bicarbonate	4701758	4701758	797	794	0.3%	< 5									
Carbonate	4701758	4701758	<5	<5	NA	< 5									
Hydroxide	4701758	4701758	<5	<5	NA	< 5									
Electrical Conductivity	4701758	4701758	3370	3360	0.3%	< 5	102%	90%	110%						
Chloride	4705228	4705228	141	142	0.7%	< 1.0	97%	70%	130%	96%	80%	120%	NA	70%	130%
Fluoride	4705228	4705228	<0.06	<0.06	NA	< 0.01	90%	70%	130%	85%	80%	120%	86%	70%	130%
Nitrate	4705228	4705228	0.9	1.1	NA	< 0.5	101%	70%	130%	98%	80%	120%	97%	70%	130%
Nitrite	4705228	4705228	<0.20	<0.20	NA	< 0.05	94%	70%	130%	93%	80%	120%	94%	70%	130%
Sulfate	4705228	4705228	61.1	62.0	1.4%	< 1.0	101%	70%	130%	101%	80%	120%	NA	70%	130%
Dissolved Calcium	4701758	4701758	120	120	0.1%	< 0.3	95%	70%	130%	106%	80%	120%	NA	70%	130%
Dissolved Magnesium	4701758	4701758	290	290	0.1%	< 0.2	92%	70%	130%	88%	80%	120%	NA	70%	130%
Dissolved Sodium	4701758	4701758	135	135	0.0%	< 0.6	79%	70%	130%	88%	80%	120%	NA	70%	130%
Dissolved Potassium	4701758	4701758	5.4	5.4	0.2%	< 0.6	81%	70%	130%	93%	80%	120%	NA	70%	130%
Dissolved Iron	4701758	4701758	<0.1	<0.1	NA	< 0.1	104%	70%	130%	95%	80%	120%	95%	70%	130%
Dissolved Manganese	4701758	4701758	0.532	0.544	2.2%	< 0.005	104%	70%	130%	94%	80%	120%	NA	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated. Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

pH has been analyzed past the recommended holding time of 15 minutes from sampling (field measurement ideal if more accurate data required)

Nitrate and Nitrite: The regulatory hold time for the analysis of nitrate and/or nitrite in water is 72 hours.

Certified By:

Marken

#### AGAT QUALITY ASSURANCE REPORT (V1)

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# Method Summary

#### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C990183 ATTENTION TO: Stephen D'Abadie SAMPLED BY:

	AGAT S.O.P		ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Toluene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
Ethylbenzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS
m,p-Xylenes	TO-0542	EPA SW-846 5021/8260-W	GC/MS
o-Xylene	TO-0542	EPA SW-846 5021/8260-W	GC/MS
Xylenes	TO 0332	EPA SW-846 5021 & 8260	GC/MS
C6 - C10 (F1)	TO 0542	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0542	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO-0543	EPA SW-846 5021 & 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Sediment	TO-0511	CCME Tier 1 Method	GC/FID
Chloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Vinyl Chloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Bromomethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Trichlorofluoromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Acetone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methylene Chloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl tert-Butyl Ether	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl Ethyl Ketone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
trans-1,2-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
cis-1,2-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chloroform	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,1-Trichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Carbon Tetrachloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Benzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,2-Dichloropropane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Trichloroethylene	TO-0330	EPA SW-846 8260	GC/MS
Bromodichloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
trans-1,3-Dichloropropene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Methyl Isobutyl Ketone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
cis-1,3-Dichloropropene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,2-Trichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Toluene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
2-Hexanone	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Dibromochloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Ethylene Dibromide	TO-0330	EPA SW-846 8260	GC/MS
Tetrachloroethene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1.1.1.2-Tetrachloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Chlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Ethylbenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
m.p-Xvlenes	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Bromoform	TO-0330	EPA SW-846 5030 & 8260	GC/MS
Styrene	TO-0330	EPA SW-846 5030 & 8260	GC/MS
1,1,2,2-Tetrachloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS



# Method Summary

CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C990183 ATTENTION TO: Stephen D'Abadie SAMPLED BY:

		or this EED B1.									
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE								
o-Xylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
1,3-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
1,4-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
1,2-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
1,2,4-Trichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
Xylenes	TO 0330	EPA SW-846 8260	GC/MS								
Toluene-d8	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
Water Analysis											
рН	INST 0101, INST 0104	SM 4500 H+	PH METER								
p - Alkalinity (as CaCO3)	INST-0100, INST-0101	SM 2320 B	TITRATION								
T - Alkalinity (as CaCO3)	INST 0101	SM 2320 B	TITRATION								
Bicarbonate	INST 0101	SM 2320 B	PC TITRATE								
Carbonate	INST 0101	SM 2320 B	PC TITRATE								
Hydroxide	INST 0101	SM 2320 B	PC TITRATE								
Electrical Conductivity	INST 0101, INST 0120	SM 2510 B	CONDUCTIVITY METER								
Chloride	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Fluoride	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Nitrate	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Nitrate-N	INST 0150	SM 4110 B	CALCULATION								
Nitrite	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Nitrite-N	INST 0150	SM 4110 B	CALCULATION								
Nitrate+Nitrite - Nitrogen	INST 0150	SM 4110 B	CALCULATION								
Sulfate	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Dissolved Calcium	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Magnesium	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Sodium	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Potassium	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Iron	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Manganese	INST 0140	SM 3120B – R	ICP/OES								
Sodium Adsorption Ratio		CARTER & GREGORICH 2007	CALCULATION								
Calculated TDS		SM 1030E	CALCULATION								
Hardness		SM 2340 B	CALCULATION								
Ion Balance		SM 1030E	CALCULATION								
Lab Filtration on Routine for IC			N/A								
Lab Filtration on Routine for Metals			N/A								

Chain of Custod		Lat	2910 12 Street NE Calgary, Alberta T2E 7P7 P: 403-735-2005 • F: 403-735-2771 webearth.agatlabs.com ncy Support Services Hotline 1-855-AGAT 245 (1-855-242-8245)							NE L 277 / 71 / m l	Arrival Temperature: AGAT Job Number: Date and Time: 23:090183 PM 3:44												
Report Information         Company:       PARSONS         Contact:       Michelle Patterson         Address:       #100, 318 - 11 Av         Phone:       (403)294-4215         LSD:       1624 14th Street NW, O	2. 3.	Report Information         1. Name:       Michelle Patterson         Email:       michelle.patterson@parsons.com         2. Name:       Calgary Lab Report         Email:       Calgary.labreport@parsons.com         3. Name:       Email:         Email:					Turnaround Time Required (TAT)         Regular TAT       ☑ 5 to 7 Business Days         □ <24 Hours (200%)         Rush TAT       □ Two Day / Next Day (100%)         □ Three Day (50%)       □ Three Day (25%)         Date Required:							S E CON FO II	SEE BACK FOR SURCHARGE BREAKDOWN. ONTACT YOUR CPM FOR ADDITIONAL INFORMATION								
Client Project #:       10-12832         Sampled By:       Gave Clock         Outlet #:       9445         Invoice To       Same Yes □ / No ☑         Company:       Suncor Energy Products Partnership         Contact:       Stephen D'Abadie         Address:       P.O. Box 2844, 150 – 6 Avenue S.W.         Calgary, AB T2P 3E3       587-223-4146         PO/AFE#:       Fax:			quirements (Select CCME Agricultural Industrial Residential/Park Commercial FWAL Drinking Water Other:	ion may imp AB Ti Ag Inc Re Co Na Alber Ch Act SAMPLE	act detection limits) ier 1 ricultural lustrial sidential/Park mmercial tural Area rta Surface Water ronic ute	Acti Asse A1 AR Rem RE RI Cont Man MV WV	ivity ssemen A2 A2 AV ediation RA caineme agemen MW CONTAI	s used ed nt n n n n t U NERS	ed Salinity: DAB DSK DBC DD50	TE/AB: BIEX/FI-F4 ELOCIME/AB: BIEX/FI-FZ	BIEAS/VPH/EPH ЦВС; LEPH/HEPH EX/TVH/C11-C22, C23-C60	etals: □HWS-B □SP-B □Hg □Cre+	Metals:  Dissolved  Total  Hg  Cr <sup>6+</sup>	le Water Chemistry	III LIAB Class 2 LIBC LISK	rms: □ Total □ Fecal □ E.coli		V				FOR 30 DAYS NO ANALYSIS (Additional Fee)	FOR 30 DAYS AFTER ANALYSIS (Additional ree)
$\begin{array}{c c} \text{USE}(\text{LAB ID }\#) \\ \hline 1 \\ \hline 2 \\ \hline \end{array}$		DEPTH	SAMPLED	MATRIX	HAZARDOUS*) *ADDITIONAL FEE	VIALS / JARS	BAGS	л Л вопиея	Detail		SK: B1	Soll M	Water	Routin	Landh	Colifor		VOC VOC				HOLD	HULDI
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0		09',45 09',45 10',02 10',02 10',20					000000								2							
7     0.07       8     0.10       9     0.10       10     0.10       Samples Relinquished By (Print Name and Sign)	50A 125 106	Date/lime /	10,30 10,45 11,60 11,30	ceived By (Print	: Name and Sign):		C.	676	Data	×   ×	0.2	022		X			×	Pa	lige		3		
Samples Relinquished By (Print Name and Sign) Samples Relinquished By (Print Name and Sign) Decument ID: DIV-50-1507,607.	MM	Date/Time	2.3 15:40 Samples Re Samples Re	ceived By (Print ceived By (Print	Name and Sign):	27 (	KY		JAN Date/Tir Date/Tir	ne	<u></u> σ	ULJ	Yell Wh	ik Copy ow Cop iite Cop	y - Cl by - A by- A	ient AGAT AGAT	N°:	AB	(	)ate Rav	isəd: Apr	20, 20	121

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2910 12 Street N Calgary, Alberta T2E 7P P: 403.735.2005 • F: 403.735.277 webearth.agatlabs.com									C [] D50	3:BTEX/F1-F2	Н/НЕРН	Cret	∃Hg □ cre+		X	coli	D	2			ional Fee)	dditional Fee)
Chain of	Custody Record	Emerger	ncy Support Serv	vices Hotlin	ne 1-855-AGAT 24	5 (1-85	5-242-82	245)		CME/AE		BH D	Total		۳ļ		A a A				S (Additi	/SIS (Ac
Report to:									ъ П	ы щ		□SP-B	Jed D	>		Fecal	1 or				VALYSIS	S ANAL)
Company:	PARSONS IN	C	Sa	me as COC	#:	83	3		r: 🗆 AB	VF1-F4	H/EPH	MS-B	Dissol	hemistr	ass 2	al 🛛	LIA				S NO A	S AFTE
			1. A.	1.25	COMMENTS (FILTERED, PRESERVED, 'HAZARDOUS*) *ADDITIONAL FEE	# OF CONTAINERS			allnity	BTEX	dv/sx		als:	ater C	I AB CI	u lot	1.0				30 DA)	30 DA)
LABORATORY USE (LAB ID #)	SAMPLE IDENTIFICATION	DEPTH	DATE/TIME SAMPLED	SAMPLE		VIALS / JARS	BAGS	BOTTLES	etailed S	] CCME/AE	J BC: BTE	oil Metal	Vater Met	outine W	andfill: [	ollforms: article SI	12	1 OCI			OLD FOR	OLD FOR
1	BU1979		01/19/23/2:0	G.WI				6		X		o o	>	~			X		+	++	Ŧ	I
2	BH1944	- c	1 12:3					7		X				X			X					
3	BH 2004		13:0					6		X							X	$\square$				
4	DVP-09		13:0	1 2				6		X							X					
5	55P1 MA		13:30					6		X							X					
6	BH 6001		13:4	5				6		X							X					
7	1=X-7		14:00					7		X				X			X					
8	BM6002		14:05					6		X							X					
9	EX-6		1410	U				6		X							X					
10	Hydra-02		14:15	other				6		X							X					
11	Baller - 02		14:30					6		X							X					
12	Trip Block - 07		14:45					6	1	X								X				
13	Tobo Black -08		V 15:00					6	ſ	$\boldsymbol{\lambda}$								X				
14	181			1		P.																
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amples Relinquished By (Prin	t Name and Sign):	Date/Time	Sampl	es Received By (Prin	it Name and Sign):	- y	SAUE		Date/Tir	ne			Yello	w Copy	y - AC		No. 11	 B				Α
amples Relinquished By (Prin	t Name and Sign)	Date/Time	Sampl	es Received By (Prin	it Name and Sign):			i I	Date/Tir	ne			Whit	te Cop	iy- AG	iat	N . AL					
cument ID: DIV-50-1507	007.														-				Date	Revised: /	Apr 20, 1	2021

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	agat	2910 12 Street NE Calgary, Alberta T2E 7P7 P: 403.735.2005 • F: 403.735.277: webearth.agatlabs.com													ßK	coli	ture	1				ional Fee) dditional Fee)
Chain of	Custody Record	Emergend	cy Support Serv	Services Hotline 1-855-AGAT 245 (1-855-242-8245)									Total									IS (Addit
Report to: Company:	AROONS INC		Sa	me as COC	#:	.83	2			VF1-F4	H/EPH	WS-B SP-E	Dissolved	hemistry	ass 2 🗆 B(	al DFecal	(muc) avais					YS NO ANALYSI YS AFTER ANAL
inde Sarakar		0.3=0.00		1	COMMENTS	# OF	CONTAIL	NERS	Salinity	3: BTE)	AV/SX		tals:	later C	] AB CI			U				30 DA
LABORATORY USE (LAB ID #)	SAMPLE IDENTIFICATION	DEPTH	DATE/TIME SAMPLED	SAMPLE	(FILTERED, PRESERVED, HAZARDOUS*) *ADDITIONAL FEE	VIALS / JARS	BAGS	BOTTLES	Detailed S	] CCME/AE	DBC: BTE	Soll Metal	Vater Me	Routine W	andfill: [	Coliforms	L S	5				HOLD FUK
1	BH1953	01	19/23/ 8:10	Gial				F		X			-	×	-		>					
2	BHIAIB		920	I				7		X				X			$\succ$					
3	BH 1980		5:30					6		$\times$							X					
4	BH 2003		8:40					6				_		X			_					
5	BH1947		8:50					6		$\checkmark$					_		X					
6	Dup-10		0:50					6		X		_			_		V			_	$\vdash$	_
7	RHIDIG		06.9				_	Op		2	-	-	$\vdash$	-	+	_	X			_	$\vdash$	
8	BH 732		9:10					6		X	_	_			-	_	X			+-'	$\vdash$	+
9	RH 1982		4:20					0		×	-	-	$\vdash$		-	-	X			+-'	┢─┼╴	
10	Ung-11-27		9.20					2		4		+-	$\vdash$		+	-	×			+-'	$\vdash$	+-
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12	DIAST		440					6				+-	$\square$	+	+	+	1			+		
14	21135		10:20				2.5	0	$\vdash$	$\overline{\mathbf{v}}$	-	-	$\vdash$	-	+	-	1					
15	RU INTER		10:20					12		7	+	+				-	1			+		
16	51377		10:50					6		T		1		F			1					
17	202010		11.20					4		A					X		1/					
18	212003		11-46	V ,				6		1				ľ			X					
19	Trip Blonk-09	V	12:30	and				6		F								X				
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Samples Relinquished By (Prin Samples Relinquished By (Prin	nt Name and Sign):	Date/Time Date/Time	1963 (5'.()( Samp	les Received By (Pri ) les Received By (Pri	nt Name and Sign):	ant	Cur	the	Date/Ti	19	20	23	Pin Yelle	k Cop ow Co	y - Cli py - A	ient \GAT	F	Page	2	_ of	3	
Samples Relinquished By (Prir	nt Name and Sign):	Date/Time	Samp	les Received By (Pri	nt Name and Sign):				Date/Tr	me			Wh	ite Co	ру- А	GAI			D/	to Opula	od Apr	20.202

Document ID: DIV-50-1507-007

agat Lat	SAMPLE INTEGRITY RECEIPT FORM
RECEIVING BASICS - Shipping	Temperature (Bottles/Jars only) N/A if only Soil Bags Received
Company/Consultant: Varsons	FROZEN (Please Circle if samples received Frozen)
Courier: V(O Prepaid Collect	1 (Bottle/Jar) $5 + 6 + 5 = 5 \circ C$ 2(Bottle/Jar) $4 + 5 + 4 = 4 \circ C$
M(sybill#	3 (Bottle/Jar) $4 + 4 + 5 = 4 \circ C + 4$ (Bottle/Jar) $+ + = 0 \circ C$
Waybin#	5 (Bottle/Jar)++=°C 6 (Bottle/Jar)++=°C
Branch: EDM GP FN FM RD VAN LYD FSJ EST SASK Other:	7 (Bottle/Jar)++=°C 8 (Bottle/Jar)++=°C
If multiple sites were submitted at once: Yes 🛛 🔞	9 (Bottle/Jar)++=°C 10 (Bottle/Jar)++=°C
Custody Seal Intact: 🔞 No NA	(If more than 10 coolers are received use another sheet of paper and attach)
TAT: <24hr 24-48hr 48-72hr Reg Other	LOGISTICS USE ONLY
Cooler Quantity:	Workorder No:
TIME SENSITIVE ISSUES - Shipping         ALREADY EXCEEDED HOLD TIME? Yes       No         Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity ,       Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* ,         Chloroamines*       Earliest Expiry:         Hydrocarbons: Earliest Expiry	Samples Damaged: Yes No If YES why?         No Bubble Wrap       Frozen       Courier         Other:
Coolant Used: Icepack Baggeolce Free Ice Free Water None	

\* Subcontracted Analysis (See CPM)

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Page 1 of 1

### DATA QUALITY REVIEW CHECKLIST

Consultant: Parsons Inc.			Sampling Date: 2023/01/20								
Location: 1620 - 14th	Avenue NW, Ca	lgary, AB		Laboratory : <u>AGAT Laboratories</u>	r						
Consultant Project Number:	10-12832		Sample Submission Number: 23C990277								
Are All Laboratory QC Samples V	Vithin Acceptance	ce Criteria	(Yes, No,	Not Applicable)?							
Surrogate Recovery Method Blank Concentration Matrix Duplicate RPD Matrix Spike Recovery Other Quality Control Data	Yes X X X X X X	No	NA	Comments All lab QC met acceptance criteria.							
Are All Field QC Samples Within	Alert Limits (Ye	es, No, No	t Applicat	ole)?							
Equipment Blank Concentration Trip Blank Concentration Field Duplicate RPD	Yes X X X	No	NA	Comments All field QC samples have met alert limits. All field QC samples have met the acceptable h	RPD limits.						
Has CoA been signed off (Yes/No Were all samples analyzed within All volatiles samples methanol ext Is Chain of Custody completed an Were sample temperatures accepta	)?: hold times (Yes/ racted, if require d signed (Yes/N ble when they re	'No)?: ed, within 4 o)?: eached lab	48 hours ( (Yes/No)	Yes           Yes, No or N/A)?:         N/A           Yes         Yes           ?:         Yes							
Is data considered to be reliable (Y If answer is "No", describe and pr	/es/No)?: ovide rationale:			Yes							
Performed by (Print): Reviewed by (Print): Reviewed date:	Danielle Smith Michelle Patters 2023/05/08	on		Reviewed by (Signature):	Mfalt						



CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP **BOX 1720 STN M** CALGARY, AB T2P 0A2 **ATTENTION TO: Michelle Patterson** PROJECT: 10-12832 AGAT WORK ORDER: 23C990277 TRACE ORGANICS REVIEWED BY: Elena Gorobets, Report Writer WATER ANALYSIS REVIEWED BY: Max Dou, Report Writer DATE REPORTED: Jan 27, 2023 PAGES (INCLUDING COVER): 14 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (403) 735-2005

\*Notes Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

**AGAT** Laboratories (V1)

Member of: Association of Professional Engineers and Geoscientists of Alberta
(APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

Page 1 of 14

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 and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. Measurement Uncertainty is not taken into consideration when stating conformity with a specified requirement.



**ATTENTION TO: Michelle Patterson** 

DATE REPORTED: 2023-01-24

SAMPLED BY:OW

AGAT WORK ORDER: 23C990277 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

## SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

### DATE RECEIVED: 2023-01-20

DATE RECEIVED. 2020 01 20							L		D. 2025 01 24	
		SAMPLE DESCRIPTION:	BH2012	BH1936	Dup-12	BH1964	BH1961	BH1962	BH1963	Trip-10
		SAMPLE TYPE:	Water							
		DATE SAMPLED:	2023-01-20 08:30	2023-01-20 09:00	2023-01-20 09:00	2023-01-20 09:30	2023-01-20 09:50	2023-01-20 10:30	2023-01-20 11:00	2023-01-20 12:30
Parameter	Unit	G/S RDL	4705532	4705533	4705534	4705535	4705536	4705537	4705538	4705539
Benzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005
Toluene	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
o-Xylene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005
Xylenes	mg/L	0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	< 0.0005
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sediment			Not Present							
Surrogate	Unit	Acceptable Limits								
Toluene-d8 (BTEX)	%	60-140	106	65	68	110	104	106	106	99
o-Terphenyl (F2-F4)	%	60-140	106	108	108	106	106	109	106	108

Certified By:

Elena GotoBets



AGAT WORK ORDER: 23C990277 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### ATTENTION TO: Michelle Patterson

DATE REPORTED: 2023-01-24

SAMPLED BY:OW

## SUNCOR - Petroleum Hydrocarbons (BTEX/F1-F2) in Water

#### DATE RECEIVED: 2023-01-20

	S	SAMPLE DESCRIPTION:	Hydro-03	Boiler-03		
		SAMPLE TYPE:	Water	Water		
		DATE SAMPLED:	2023-01-20 13:30	2023-01-20 13:00		
Parameter	Unit	G/S RDL	4705540	4705541		
Benzene	mg/L	0.0005	<0.0005	<0.0005		
Toluene	mg/L	0.0003	<0.0003	< 0.0003		
Ethylbenzene	mg/L	0.0005	<0.0005	< 0.0005		
m,p-Xylenes	mg/L	0.0005	<0.0005	< 0.0005		
o-Xylene	mg/L	0.0005	<0.0005	<0.0005		
Xylenes	mg/L	0.0005	<0.0005	<0.0005		
C6 - C10 (F1)	mg/L	0.1	<0.1	<0.1		
C6 - C10 (F1 minus BTEX)	mg/L	0.1	<0.1	<0.1		
C>10 - C16	mg/L	0.1	<0.1	<0.1		
Sediment			Not Present	Not Present		
Surrogate	Unit	Acceptable Limits				
Toluene-d8 (BTEX)	%	60-140	108	107		
o-Terphenyl (F2-F4)	%	60-140	107	107		
1						

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

4705532-4705541 The F1 (C6 - C10) fraction is determined by integrating the FID chromatogram from the beginning of the nC6 peak to the apex of the last nC10 peak.

The C6 - C10 fraction is calculated from the FID toluene response factor.

The F2 (C10 - C16) fraction is determined by integrating the FID chromatogram from the apex of the nC10 peak to the apex of the nC16 peak.

The F2 (C10 - C16) fraction is calculated using the average response factor for nC10, nC16, and nC34.

Quality control for the calibration follows the guidelines set out in the CCME Contaminated Sites Method for Soils.

C6 – C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>10 - C16 (F2- Napthalene) is a calculated parameter. The calculated value is F2 - Napthalene (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (if requested). The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

Extraction and holding times were met for this sample.

Analysis performed at AGAT Calgary (unless marked by \*)

Elena Gotobets

Certified By:



AGAT WORK ORDER: 23C990277 PROJECT: 10-12832

Volatile Organic Compounds in Water

2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### ATTENTION TO: Michelle Patterson

SAMPLED BY:OW

				5	•	
DATE RECEIVED: 2023-01-20						DATE REPORTED: 2023-01-22
		SAMPLE DESCRIPTION:	Trip-10	Hydro-03	Boiler-03	
		SAMPLE TYPE:	Water	Water	Water	
		DATE SAMPLED:	2023-01-20 12:30	2023-01-20 13:30	2023-01-20 13:00	
Parameter	Unit	G/S RDL	4705539	4705540	4705541	
Chloromethane	mg/L	0.001	<0.001	<0.001	<0.001	
Vinyl Chloride	mg/L	0.0008	<0.0008	<0.0008	<0.0008	
Bromomethane	mg/L	0.001	<0.001	<0.001	<0.001	
Chloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
Trichlorofluoromethane	mg/L	0.001	<0.001	<0.001	<0.001	
Acetone	mg/L	0.01	<0.01	<0.01	<0.01	
1,1-Dichloroethylene	mg/L	0.001	<0.001	<0.001	<0.001	
Methylene Chloride	mg/L	0.001	<0.001	<0.001	<0.001	
Methyl tert-Butyl Ether	mg/L	0.001	<0.001	<0.001	<0.001	
Methyl Ethyl Ketone	mg/L	0.01	<0.01	<0.01	<0.01	
trans-1,2-Dichloroethylene	mg/L	0.001	<0.001	<0.001	<0.001	
1,1-Dichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
cis-1,2-Dichloroethylene	mg/L	0.001	<0.001	<0.001	<0.001	
Chloroform	mg/L	0.001	<0.001	<0.001	<0.001	
1,2-Dichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
1,1,1-Trichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
Carbon Tetrachloride	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
Benzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,2-Dichloropropane	mg/L	0.001	<0.001	<0.001	<0.001	
Trichloroethylene	mg/L	0.00030	<0.0003	<0.0003	< 0.0003	
Bromodichloromethane	mg/L	0.001	<0.001	<0.001	<0.001	
trans-1,3-Dichloropropene	mg/L	0.001	<0.001	<0.001	<0.001	
Methyl Isobutyl Ketone	mg/L	0.01	<0.01	<0.01	<0.01	
cis-1,3-Dichloropropene	mg/L	0.001	<0.001	<0.001	<0.001	
1,1,2-Trichloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
Toluene	mg/L	0.0003	<0.0003	<0.0003	< 0.0003	
2-Hexanone	mg/L	0.02	<0.02	<0.02	<0.02	
Dibromochloromethane	mg/L	0.001	<0.001	<0.001	<0.001	
Ethylene Dibromide	mg/L	0.001	<0.001	<0.001	<0.001	

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990277 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E TPT TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### ATTENTION TO: Michelle Patterson

SAMPLED BY:OW

				-	-	
DATE RECEIVED: 2023-01-20						DATE REPORTED: 2023-01-22
		SAMPLE DESCRIPTION:	Trip-10	Hydro-03	Boiler-03	
		SAMPLE TYPE:	Water	Water	Water	
		DATE SAMPLED:	2023-01-20 12:30	2023-01-20 13:30	2023-01-20 13:00	
Parameter	Unit	G/S RDL	4705539	4705540	4705541	
Tetrachloroethene	mg/L	0.001	<0.001	<0.001	<0.001	
1,1,1,2-Tetrachloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
Chlorobenzene	mg/L	0.0010	<0.001	<0.001	<0.001	
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
m,p-Xylenes	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
Bromoform	mg/L	0.001	<0.001	<0.001	<0.001	
Styrene	mg/L	0.001	<0.001	<0.001	<0.001	
1,1,2,2-Tetrachloroethane	mg/L	0.001	<0.001	<0.001	<0.001	
o-Xylene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,3-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,4-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,2-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	
1,2,4-Trichlorobenzene	mg/L	0.001	<0.001	<0.001	<0.001	
Xylenes	mg/L	0.0005	<0.0005	<0.0005	< 0.0005	
Surrogate	Unit	Acceptable Limits				
Toluene-d8	%	50-140	91	97	97	

Volatile Organic Compounds in Water

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

4705539-4705541 1,1,2,2-Tetrachloroethane reported only for samples matrices which can be purged. Otherwise N/A.

Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylenes + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990277 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

#### ATTENTION TO: Michelle Patterson

SAMPLED BY:OW

	Volatile Organic Compounds in Water - 1,2-DCA														
DATE RECEIVED: 2023-01-20								ļ	DATE REPORTI	ED: 2023-01-22					
		SAMPLE DES	CRIPTION:	BH2012	BH1936	Dup-12	BH1964	BH1961	BH1962	BH1963					
		SAM	PLE TYPE:	Water											
		DATE	SAMPLED:	2023-01-20 08:30	2023-01-20 09:00	2023-01-20 09:00	2023-01-20 09:30	2023-01-20 09:50	2023-01-20 10:30	2023-01-20 11:00					
Parameter	Unit	G/S	RDL	4705532	4705533	4705534	4705535	4705536	4705537	4705538					
1,2-Dichloroethane	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
Surrogate	Unit	Acceptab	ole Limits												
Toluene-d8	%	50-	140	98	78	62	101	94	97	97					

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard Analysis performed at AGAT Calgary (unless marked by \*)

Certified By:

Elena Gorobets



AGAT WORK ORDER: 23C990277 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatilabs.com

## CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

### ATTENTION TO: Michelle Patterson

DATE REPORTED: 2023-01-25

SAMPLED BY:OW

## Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-20

B/(12 1(2021)2D) 2020 01 20						
	S	AMPLE DESC	RIPTION:	BH2012	BH1962	
		SAMP	LE TYPE:	Water	Water	
		DATE S	AMPLED:	2023-01-20	2023-01-20	
Descenter	1.1			08:30	10:30	
Parameter	Unit	G/S	RDL	4705532	4705537	
	pH Units	7.0-10.5	N/A	7.66	7.97	
	mg/L		5	<5	<5	
T - Alkalinity (as CaCO3)	mg/L		5	473	319	
Bicarbonate	mg/L		5	587	398	
	mg/L		5	<5	<5	
Hydroxide	mg/L		5	<5	<5	
Electrical Conductivity	uS/cm		5	1860	580	
Chloride	mg/L	(250)	1.0	305	5.0	
Fluoride	mg/L	1.5	0.01	0.21	0.28	
Nitrate	mg/L	45	0.5	81.5	0.7	
Nitrate-N	mg/L	10	0.02	18.4	0.16	
Nitrite	mg/L	3	0.05	0.08	0.07	
Nitrite-N	mg/L	1	0.01	0.02	0.02	
Nitrate+Nitrite - Nitrogen	mg/L		0.02	18.4	0.18	
Sulfate	mg/L	(500)	1.0	62.0	20.6	
Dissolved Calcium	mg/L		0.3	141	69.1	
Dissolved Magnesium	mg/L		0.2	127	29.3	
Dissolved Sodium	mg/L	(200)	0.6	45.3	16.0	
Dissolved Potassium	mg/L		0.6	4.6	1.9	
Dissolved Iron	mg/L	(0.3)	0.1	<0.1	<0.1	
Dissolved Manganese	mg/L	0.12 (0.02)	0.005	0.152	0.169	
Sodium Adsorption Ratio				0.67	0.41	
Calculated TDS	mg/L		0.6	1060	338	
Hardness	mg CaCO3/L		0.5	875	293	
Ion Balance	%		1	94	93	
Lab Filtration on Routine for IC				Complete	Complete	
Lab Filtration on Routine for Metals				Complete	Complete	

Certified By:

Mashin



AGAT WORK ORDER: 23C990277 PROJECT: 10-12832 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

SAMPLING SITE:

ATTENTION TO: Michelle Patterson

DATE REPORTED: 2023-01-25

SAMPLED BY:OW

### Water Package - Routine Chemistry Water Analysis - Lab Filtered Cations

#### DATE RECEIVED: 2023-01-20

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 2020 Canadian Drinking Water Quality MAC (AO) 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.

4705532-4705537 < - Values refer to Report Detection Limits.

SAR is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. If sodium results in mg/L are less than detection, SAR is non-calculable and is reported as 0. Ion Balance is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited. Hardness is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Calculated TDS is a calculated parameter. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by \*)

Marken



## Quality Assurance

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

#### PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C990277 ATTENTION TO: Michelle Patterson

SAMPLED BY:OW

## Trace Organics Analysis

			-		-											
RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD	METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample	Dup #1 Dup #2	2 RPD	Method Blank	Measured	Acceptable Limits		Recovery	Acce Lin	ptable nits	table its Recovery		eptable nits		
		Ia					value	Lower	Upper		Lower	Upper		Lower	Upper	
SUNCOR - Petroleum Hydrocarbor	ns (BTE)	(/F1-F2) in	Water													
Benzene	3272	4705534	<0.0005	<0.0005	NA	< 0.0005	101%	60%	140%	89%	60%	140%	89%	60%	140%	
Toluene	3272	4705534	<0.0003	<0.0003	NA	< 0.0003	102%	60%	140%	91%	60%	140%	84%	60%	140%	
Ethylbenzene	3272	4705534	<0.0005	<0.0005	NA	< 0.0005	105%	60%	140%	90%	60%	140%	78%	60%	140%	
m,p-Xylenes	3272	4705534	<0.0005	<0.0005	NA	< 0.0005	103%	60%	140%	95%	60%	140%	75%	60%	140%	
o-Xylene	3272	4705534	<0.0005	<0.0005	NA	< 0.0005	103%	60%	140%	95%	60%	140%	75%	60%	140%	
Xylenes	3272	4705534	<0.0005	<0.0005	NA	< 0.0005	103%	60%	140%	95%	60%	140%	75%	60%	140%	
C6 - C10 (F1)	3272	4705534	<0.1	<0.1	NA	< 0.1	96%	60%	140%	120%	60%	140%	87%	60%	140%	
C>10 - C16	8029	4705539	<0.1	<0.1	NA	< 0.1	105%	60%	140%	90%	60%	140%	89%	60%	140%	

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

Volatile Organic Compounds in Water - 1,2-DCA

1,2-Dichloroethane 3272 4705534 <0.001 <0.001 NA < 0.001 92% 50% 140% 97% 60% 130% 88% 50% 140%

Comments: Duplicate NA: results are less than 5X the RDL and RDP will not be calculated. The sample spikes and dups are not from the same sample ID.

Certified By:

Elena Corobets

Page 9 of 14

**AGAT** QUALITY ASSURANCE REPORT (V1)

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 and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.



# Quality Assurance

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C990277

**ATTENTION TO: Michelle Patterson** 

SAMPLED BY:OW

## Water Analysis

RPT Date:			C	UPLICAT	E		REFEREN	NCE MA	TERIAL	METHOD BLANK SPIKE			MATRIX SPI		KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acce Lin	ptable nits	Recovery	Acce Lin	ptable nits	Recovery	Acce Lin	ptable nits
		Id					value	Lower	Upper	,	Lower	Upper		Lower	Upper
Water Package - Routine Chemis	try Water	Analysis -	Lab Filter	ed Cation	IS										
рН	4701758	4701758	7.71	7.75	0.5%	N/A	100%	90%	110%						
p - Alkalinity (as CaCO3)	4701758	4701758	<5	<5	NA	< 5	NA	80%	120%						
T - Alkalinity (as CaCO3)	4701758	4701758	642	640	0.3%	< 5	103%	80%	120%						
Bicarbonate	4701758	4701758	797	794	0.3%	< 5									
Carbonate	4701758	4701758	<5	<5	NA	< 5									
Hydroxide	4701758	4701758	<5	<5	NA	< 5									
Electrical Conductivity	4701758	4701758	3370	3360	0.3%	< 5	102%	90%	110%						
Chloride	4705537	4705537	4.9	5.0	NA	< 1.0	101%	70%	130%	99%	80%	120%	98%	70%	130%
Fluoride	4705537	4705537	<0.06	<0.06	NA	< 0.01	100%	70%	130%	94%	80%	120%	95%	70%	130%
Nitrate	4705537	4705537	0.9	0.7	NA	< 0.5	103%	70%	130%	101%	80%	120%	100%	70%	130%
Nitrite	4705537	4705537	<0.20	<0.20	NA	< 0.05	99%	70%	130%	98%	80%	120%	99%	70%	130%
Sulfate	4705537	4705537	20.3	23.5	14.9%	< 1.0	102%	70%	130%	104%	80%	120%	105%	70%	130%
Dissolved Calcium	4701758	4701758	120	120	0.1%	< 0.3	95%	70%	130%	106%	80%	120%	NA	70%	130%
Dissolved Magnesium	4701758	4701758	290	290	0.1%	< 0.2	92%	70%	130%	88%	80%	120%	NA	70%	130%
Dissolved Sodium	4701758	4701758	135	135	0.0%	< 0.6	79%	70%	130%	88%	80%	120%	NA	70%	130%
Dissolved Potassium	4701758	4701758	5.4	5.4	0.2%	< 0.6	81%	70%	130%	93%	80%	120%	NA	70%	130%
Dissolved Iron	4701758	4701758	<0.1	<0.1	NA	< 0.1	104%	70%	130%	95%	80%	120%	95%	70%	130%
Dissolved Manganese	4701758	4701758	0.532	0.544	2.2%	< 0.005	104%	70%	130%	94%	80%	120%	NA	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated. Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

pH has been analyzed past the recommended holding time of 15 minutes from sampling (field measurement ideal if more accurate data required)

Nitrate and Nitrite: The regulatory hold time for the analysis of nitrate and/or nitrite in water is 72 hours.

Certified By:

Maskin

### AGAT QUALITY ASSURANCE REPORT (V1)

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 and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.

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# Method Summary

### CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C990277 ATTENTION TO: Michelle Patterson SAMPLED BY:OW

DADAMETER												
	AGAT 5.0.P	LITERATORE REFERENCE	ANALYTICAL TECHNIQUE									
Trace Organics Analysis	GC/MS											
Benzene	10 0332	EPA SW-846 5021 & 8260	GC/MS									
loluene	10 0332	EPA SW-846 5021 & 8260	GC/MS									
Ethylbenzene	TO 0332	EPA SW-846 5021 & 8260	GC/MS									
m,p-Xylenes	TO-0542	EPA SW-846 5021/8260-W	GC/MS									
o-Xylene	TO-0542	EPA SW-846 5021/8260-W	GC/MS									
Xylenes	TO 0332	EPA SW-846 5021 & 8260	GC/MS									
C6 - C10 (F1)	TO 0542	CCME Tier 1 Method	GC/FID									
C6 - C10 (F1 minus BTEX)	TO 0542	CCME Tier 1 Method	GC/FID									
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID									
Toluene-d8 (BTEX)	TO-0543	EPA SW-846 5021 & 8260	GC/FID									
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID									
Sediment	TO-0511	CCME Tier 1 Method	GC/FID									
Chloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Vinyl Chloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Bromomethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Chloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Trichlorofluoromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Acetone	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
1,1-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Methylene Chloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Methyl tert-Butyl Ether	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Methyl Ethyl Ketone	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
trans-1,2-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
1,1-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
cis-1,2-Dichloroethylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Chloroform	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
1,2-Dichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
1,1,1-Trichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Carbon Tetrachloride	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Benzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
1,2-Dichloropropane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Trichloroethylene	TO-0330	EPA SW-846 8260	GC/MS									
Bromodichloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
trans-1,3-Dichloropropene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Methyl Isobutyl Ketone	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
cis-1,3-Dichloropropene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
1,1,2-Trichloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Toluene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
2-Hexanone	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Dibromochloromethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Ethylene Dibromide	TO-0330	EPA SW-846 8260	GC/MS									
Tetrachloroethene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
1.1.1.2-Tetrachloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Chlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Ethylbenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
m,p-Xylenes	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Bromoform	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
Styrene	TO-0330	EPA SW-846 5030 & 8260	GC/MS									
1,1,2,2-Tetrachloroethane	TO-0330	EPA SW-846 5030 & 8260	GC/MS									



# Method Summary

CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP

PROJECT: 10-12832

SAMPLING SITE:

AGAT WORK ORDER: 23C990277 ATTENTION TO: Michelle Patterson SAMPLED BY:OW

		SAINI LED DT.O									
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE									
o-Xylene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
1,3-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS GC/MS								
1,4-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
1,2-Dichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
1,2,4-Trichlorobenzene	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
Xylenes	TO 0330	EPA SW-846 8260	GC/MS								
Toluene-d8	TO-0330	EPA SW-846 5030 & 8260	GC/MS								
Water Analysis											
рН	INST 0101, INST 0104	SM 4500 H+	PH METER TITRATION								
p - Alkalinity (as CaCO3)	INST-0100, INST-0101	SM 2320 B	TITRATION								
T - Alkalinity (as CaCO3)	INST 0101	SM 2320 B	TITRATION								
Bicarbonate	INST 0101	SM 2320 B	PC TITRATE								
Carbonate	INST 0101	SM 2320 B	PC TITRATE								
Hydroxide	INST 0101	SM 2320 B	PC TITRATE								
Electrical Conductivity	INST 0101, INST 0120	SM 2510 B	CONDUCTIVITY METER								
Chloride	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Fluoride	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Nitrate	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Nitrate-N	INST 0150	SM 4110 B	CALCULATION								
Nitrite	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Nitrite-N	INST 0150	SM 4110 B	CALCULATION								
Nitrate+Nitrite - Nitrogen	INST 0150	SM 4110 B	CALCULATION								
Sulfate	INST 0150	SM 4110 B	ION CHROMATOGRAPH								
Dissolved Calcium	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Magnesium	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Sodium	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Potassium	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Iron	INST 0140	SM 3120B – R	ICP/OES								
Dissolved Manganese	INST 0140	SM 3120B – R	ICP/OES								
Sodium Adsorption Ratio		CARTER & GREGORICH 2007	CALCULATION								
Calculated TDS		SM 1030E	CALCULATION								
Hardness		SM 2340 B	CALCULATION								
Ion Balance		SM 1030E CALCULATION									
Lab Filtration on Routine for IC			N/A								
Lab Filtration on Routine for Metals			N/A								

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Report Inform	mation	Re	port Informati	on				Turne		T ha		Dee		3/	AT)	4	20	1 11	1	12			
Company: PA	RSONS	1.	Name: Michell	e Patterson				Dogul					uire		AI)				c				
Contact: Mid	chelle Patterson		Email: michell	e.patterson	@parsons.com			Regui			204	- Bu	sine:		ays				5	SURCH	IARG	E	3
Address: #10	00, 318 – 11 Ave SE, Calgary AB T2G 0Y2	2.	Name: Calgary	Lab Report	t						~24   Two [	)av /	Ne>	t Da	) v (1(	00%	)		В	REAK	DOW	N.	
			Email: Calgary	labreport@	parsons.com			Rush	IAI		Three	Day	<sup>,</sup> (50	)%)		,	,		CON	FACT Y	OUR	CPN	Λ
Phone: (40	3)294-4215 Fax: (403)294-424	0 3.	Name:								Four	Day	25%	6)					FUI IN	FORM	IATIC	AL	
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Address: P.O	9. Box 2844, 150 – 6 Avenue S.W.		RI RA					ISK						ы	_						S (Ad	YSIS	
Calg	gary, AB T2P 3E3		vrinking water		rta Surface Water	Cont	aineme	nt		F4			ved	2		Feca	75µr					ALYSI	ANAL
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USE (LAB ID #)	SAMPLE IDENTIFICATION	DEPTH	DATE/TIME SAMPLED	SAMPLE	(FILTERED, PRESERVED, HAZARDOUS*)	>		1	alled	CME/	C: BIL	Meta	er Me	tine V	Hill: [	orms	cle 2	P C				FOR	LCR.
Strain A				tiè bin	*ADDITIONAL FEE	VIALS	BAGS	BOTT	Deta	ö		Soil	Wat	Rout	Lan	Colit	Part	AQ IT				HOLE	L L
-	BH 2012	0	12023 8:30	GW				7		X				X			1>						
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3	EM Dep-12		9:00					6		/							1						
1	BH 1964		9:30		7.			6	K								15						
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5	BH 1962		10.30					7		X				X			D	X					1
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	and only and only.	Date/ lime	Samples Ro	ceived By (Print)	Name and Sign):		10		Date/Ti	me			Yello	ow Co	py - A	JAT							
ples Relinquished By (Pr	int Name and Sign):	Date/Time	Samples Re	ceived By (Print i	Name and Sign);				Date/Ti	me			Whi	ite Co	py- AG	iAT	Nº: /	AB					
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Decument ID: DIV-50 1507 007

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Date Revised: Apr 20, 2021

agat Lat	SAMPLE INTEGRITY RECEIPT FORM											
RECEIVING BASICS - Shipping	Temperature (Bottles/Jars only) N/A if only Soil Bags Received											
Company/Consultant: Parsons	FROZEN (Please Circle if samples received Frozen)											
Courier: <u>7/0</u> Waybill# Branch: EDM GP FN FM RD VAN LYD FSJ EST SASK Other: If multiple sites were submitted at once: Yes	$1 (Bottle/Jar) + + + = ^{\circ}C = 2(Bottle/Jar) + + = ^{\circ}C$ $3 (Bottle/Jar) + + + = ^{\circ}C = 4 (Bottle/Jar) + + + = ^{\circ}C$ $5 (Bottle/Jar) + + + = ^{\circ}C = 6 (Bottle/Jar) + + + = ^{\circ}C$ $7 (Bottle/Jar) + + = ^{\circ}C = 8 (Bottle/Jar) + + = ^{\circ}C$ $9 (Bottle/Jar) + + = ^{\circ}C = 10 (Bottle/Jar) + + = ^{\circ}C$											
Custody Seal Intact Yes No NA	(If more than 10 coolers are received use another sheet of paper and attach)											
TAT: <24hr	LOGISTICS USE ONLY Workorder No: <u>23C</u> <u>29027</u> 7											
TIME SENSITIVE ISSUES - Shipping         ALREADY EXCEEDED HOLD TIME? Yes       No         Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity ,       Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* ,         Color , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* ,       Chloroamines*         Earliest Expiry:	Samples Damaged: Yes No If YES why?         No Bubble Wrap       Frozen         Counter:											
Legal Samples: Yes No International Samples: Yes No Tape Sealed: Yes No Coolant Used: Icepack Bagged Ice Free Ice Free Water None												

\* Subcontracted Analysis (See CPM)

Date issued: March 11, 2020 Document ID: SR-9505.004

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