

Lake Manitoba Outlet Channel Domestic Well Monitoring Report

FINAL REPORT

June 16, 2021

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Executive Summary

The Lake Manitoba Lake St. Martin Outlet Channels Project is proposed to be developed by Manitoba Infrastructure as a permanent flood control management system for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region. This will be accomplished through construction of a new outlet channel from Lake Manitoba to Lake St. Martin and a new outlet channel from Lake St. Martin to Lake Winnipeg in the Manitoba Interlake region. These new channels will facilitate better management and control of floodwater on these lakes by providing additional capacity to move floodwater from Lake Manitoba through Lake St. Martin into Lake Winnipeg. The Project will reduce or completely avoid overland inundation flooding during high water events in Manitoba such as the 2011 flood.

The Lake Manitoba Outlet Channel (LMOC) will join Watchorn Bay on Lake Manitoba to Lake St. Martin near the outlet of Birch Creek. Associated components of the LMOC include a water control structure, three road bridges, and the realignment and/or new construction of PR 239 and affected municipal roads. The LMOC will work in parallel with the existing Fairford River Water Control Structure and will carry water directly into Lake St. Martin during periods when the water level on Lake Manitoba is above the top of its target operating range (812.5 ftasl).

Stantec Consulting Ltd. (Stantec), as part of the Hatch Team, was retained by Manitoba Infrastructure to complete a domestic well monitoring program in the summer of 2020 that would complement other LMOC monitoring programs.

Domestic wells in the LMOC area were identified by MI through landowner communications and select wells were sampled for laboratory analysis to provide a summary of existing pre-LMOC domestic well water quality. The laboratory results provided baseline water quality conditions and the Guidelines for Canadian Drinking Water Quality were referenced to identify guideline exceedances.



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Abbreviations

CDWQ Canadian Drinking Water Quality

DWMP Domestic Well Monitoring Program

DQO Data Quality Objective

ftasl Feet above sea level

LMOC Lake Manitoba Outlet Channel

masl Meters above sea level

MI Manitoba Infrastructure

QA/QC Quality Assurance/Quality Control



Introduction June 16, 2021

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

The Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project) is proposed to be developed by Manitoba Infrastructure (MI) as a permanent flood control management system for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region. This will be accomplished through construction of a new outlet channel from Lake Manitoba to Lake St. Martin and a new outlet channel from Lake St. Martin to Lake Winnipeg in the Interlake region of Manitoba. These new channels will facilitate management and control of floodwater on these lakes by providing additional capacity to move floodwater from Lake Manitoba through Lake St. Martin into Lake Winnipeg. The Project will reduce or completely avoid overland inundation flooding during high water events in Manitoba such as the 2011 flood.

The Lake Manitoba Outlet Channel (LMOC) is approximately 24.1 km long and will join Watchorn Bay on Lake Manitoba to Lake St. Martin near the outlet of Birch Creek. The LMOC is situated on privately held and leased Crown lands adjacent to numerous marshes and small lakes (Appendix A, Map 1-1). Associated components of the LMOC include a water control structure, three road bridges, and the realignment and/or new construction of PR 239 and affected municipal roads. The LMOC channel will work in parallel with the existing Fairford River Water Control Structure to regulate water levels on Lake Manitoba within the desired range (812.5 to 810.5 ftasl) as established by MI's Operating Guidelines (Manitoba Infrastructure, 2019). The LMOC will carry water directly into Lake St. Martin during periods when the water level on Lake Manitoba is above the top of its target operating range (812.5 ftasl).

MI selected the design team lead by Hatch Ltd. (Hatch) to undertake the Preliminary design of the LMOC. The team is supported by Stantec Consulting Ltd. (Stantec), Trek Geotechnical Inc. (Trek), Dillon Consulting Ltd. (Dillon) and J.D. Mollard and Associates (2010) Ltd. (Mollard), and is collectivity referred to as the Hatch Team.

Hatch provided landowners in the LMOC area with a questionnaire during the winter of 2019/2020 to help identify active groundwater wells in the area and to collect information on concerns related to groundwater and/or surface water drainage. The questionnaire responses received were utilized by Stantec in the summer of 2020 to develop a domestic well monitoring program (DWMP) that would complement other LMOC monitoring programs. This report provides an overview of previous work in the LMOC area regarding domestic wells and drinking water quality monitoring, describes the methods used to plan and implement the 2020 DWMP, provides results from the DWMP, and outlines recommendations for future DWMP work.



Existing Data June 16, 2021

2.0 EXISTING DATA

In 2016, an assessment of existing well use and drinking water suitability was conducted in the LMOC area (KGS 2017). The study included a review of provincial well records, regional water use, piezometric levels, well capacities, and a residential sampling program. A residential sampling program was conducted in the fall of 2016 using groundwater samples collected from 19 residences in the LMOC area (KGS 2017). Sites were selected based on criteria that included proximity to the LMOC, well access, and landowner interest (KGS 2017). Water quality results from this program were compared with the applicable Federal Guidelines for Canadian Drinking Water Quality.

The Provincial well digital data base (GWDrill) contains geological, hydrogeological, geochemical and well construction information for test holes and water wells from well driller's reports in Manitoba (GWDrill 2018). GWDrill is administered by the Groundwater Management Section of Water Stewardship and Biodiversity, Manitoba Conservation and Climate and data is available upon request.



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3.0 METHODS

Stantec, as part of the Hatch Team, developed a DWMP in the summer of 2020 for the LMOC area. Wells were identified via questionnaire responses from LMOC-area landowners and were cross referenced and matched to those in previous work (KGS 2017) and the GWDrill database. One semi-public water system (SPWS #4243.00) at Watchorn Provincial Park was also identified by MI for inclusion in the DWMP. Details on methods employed during each phase of the DWMP are outlined in the sections below. Appendix B, Table B-1 lists the DWMP sites along with correlating information collected through the LMOC landowner questionnaire, sites that were previously sampled during the 2016 residential well inventory (KGS 2017), and wells matched from the GWDrill database (GWDrill 2018).

3.1 LMOC LANDOWNER QUESTIONNAIRE

In the winter of 2019/2020, Hatch provided landowners in the LMOC area with a questionnaire (the questionnaire) to identify all of their active local groundwater wells and to collect information on any project-related concerns regarding groundwater and/or surface water drainage. The questionnaire was distributed to landowners through the RM of Grahamdale office and website or directly from Hatch.

Ten landowners in the LMOC area returned responses to the questionnaire, providing contact information and feedback on their groundwater and drainage concerns with, and without, construction of the LMOC. Respondents also identified residential and livestock wells on their properties and provided details of well type, location, and age. Hand drawn well locations were also provided by some landowners indicating the approximate locations of wells described in the questionnaire. Questionnaire responses were considered in the development of the DWMP.

3.2 RESIDENTIAL WELL INVENTORY REVIEW

A review and comparison of the 2016 residential well inventory (KGS 2017) with the 2019 questionnaire-identified wells was completed in order to compile previous work done on domestic wells in the LMOC area and assist in the selection of wells for the 2020 DWMP. Wells listed in the questionnaire were matched to the information from the 2016 well inventory using detailed well descriptions and UTM coordinates (Appendix B, Table B-1). Previous sampling events were confirmed with landowners during over-the-phone discussions, described in Section 3.4.

3.3 GWDRILL DATABASE REVIEW

Wells from GWDrill in the LMOC area were incorporated into geological and groundwater model databases developed for the LMOC project (GWDrill 2018; Stantec, 2020a; Stantec 2020b). To confirm information provided by landowners, data provided by landowners were compared to wells in the LMOC groundwater model database. Wells from the model domain (GWDrill records) were plotted spatially and landowner wells and questionnaire information were compared and matched to database well records to fill in gaps in respondent well information (Appendix B, Table B-1).



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3.4 LANDOWNER DISCUSSIONS

Following review of the questionnaire responses, the 2016 well inventory data, and the LMOC groundwater model database, Stantec conducted over-the-phone discussions with each responding landowner to confirm information on wells they identified in their questionnaires. Feedback and additional information (such as access protocols, identification of sampling fixtures and notification methods) was obtained during these calls to aid in the prioritization and selection of a subset of wells for the DWMP. In some cases, landowners did not have any further information on their wells (information not known, missing records, information lost in land transfers, wells no longer used, etc.). Landowner discussions were held during the week of June 22, 2020, responses are summarized in Appendix B, Table B-1.

3.5 SAMPLE SITE SELECTION

Sample sites for the 2020 DWMP were selected based on proximity to the LMOC ROW, areal representation of the identified wells, and use as identified/confirmed in the landowner discussions. When possible, domestic wells sampled in 2016 (KGS 2017) were prioritized for 2020 sampling to maintain drinking water quality data continuity prior to LMOC construction. Following the desktop selection of candidate wells, ground-truthing was conducted on July 8 and 9, 2020. Ground-truthing included landowner discussions (if required), recording well locations (GPS waypoints), and establishing access protocols applicable to each sample site ahead of the sample collection work. The selected sites included 19 wells comprising residential, livestock, and semi-public water system wells (Table 3-1, Appendix A, Map 3-1).

Table 3-1 2020 Domestic Well Sample Site List

Site ID	UTM Easting	UTM Northing	Land Location	Well Type	Sample Date
RW-04	533362	5683511	NE33-26-8W	Residential	20-Jul-20
RW-05	532539	5683548	NW33-26-8W	Livestock	20-Jul-20
RW-08	533123	5683148	NW33-26-8W	Residential	21-Jul-20
RW-11	528659	5706401	SE25-29-9W	Residential	21-Jul-20
RW-12	528179	5705920	NW24-29-9W	Residential	21-Jul-20
RW-13	528841	5706189	NW19-29-8W	Livestock & Residential	21-Jul-20
RW-20	533772	5702367	NW10-29-8W	Residential	21-Jul-20
RW-21	533830	5702267	SW10-29-8W	Residential	21-Jul-20
RW-24	529958	5693491	SE18-28-8W	Residential	20-Jul-20
RW-26	533019	5703278	SE16-29-8W	Residential	21-Jul-20
RW-27	529502	5684053	SW18-27-8W	Residential	20-Jul-20
RW-32	529146	5683938	SW18-27-8W.	Residential & Livestock	20-Jul-20
RW-33	530377	5684383	SE18-27-8W	Residential	20-Jul-20
RW-41	527276	5682399	SE35-26-9W	Residential	20-Jul-20
RW-42	532835	5702377	NW 9-29-8W	Residential	21-Jul-20
RW-44	530138	5688484	NE30-27-8W	Residential	20-Jul-20



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Table 3-1 2020 Domestic Well Sample Site List

Site ID	UTM Easting	UTM Northing	Land Location	Well Type	Sample Date
RW-45	530036	5688454	NE30-27-8W	Residential	20-Jul-20
RW-51	530316	5683498	NE31-26-8W	Residential	20-Jul-20
RW-57	530560	5681036	SE30-26-8W	Semi-Public Water System	21-Jul-20

3.6 FIELD SAMPLING AND LABORATORY ANALYSES

Well sites in the LMOC area were sampled between July 20-21, 2020, by two Stantec field technicians. All sites were accessible by truck.

Prior to sample collection, untreated taps were run for 5 minutes and field measurements of water quality parameters (temperature, dissolved oxygen, conductivity, pH, oxidation reduction potential, and turbidity) were recorded from the water flowing into a graduated pail at each site using a calibrated YSI multiparameter meter and La Motte turbidimeter.

Drinking water quality grab samples were collected with gloved hands from untreated fixtures (identified by landowners prior to sampling) into laboratory-provided containers at each location (Table 3-1). Samples for dissolved metals were filtered at the time of collection. Samples for non-filtered parameters were field preserved in accordance with laboratory sampling protocols. Samples were kept cool and in the dark for transport to the laboratory (in a cooler on ice). Water samples were delivered from the field to ALS Labs in Winnipeg within 30 hours of collection in accordance with analytical hold time requirements.

Samples were delivered to ALS Environmental Laboratory, Winnipeg, Manitoba (ALS), for analysis of routine drinking water quality analytes, fecal and total coliforms, E. coli, BTEX and F1-F4.

Water quality data were compared with the Federal Guidelines for Canadian Drinking Water Quality (Health Canada 2019). Full analytical results are provided in Table B-2 in Appendix B.

3.7 QUALITY ASSURANCE/QUALITY CONTROL

ALS is certified under the Canadian Association for Laboratory Accreditation. A quality assurance/ quality control (QA/QC) program was incorporated into the field and laboratory program. Laboratory results were screened immediately upon their receipt to identify outliers, erroneous data, or violations of lab QA/QC procedures. The QA/QC data (Appendix B, Table B-3 and Table B-4) include data from duplicate field samples, to verify the reproducibility of the samples, and field blank samples, to assess the potential for contaminants to be introduced during sampling. Duplicates, field blanks, and trip blanks comprised 17% of the surface water quality dataset. ALS also followed internal QA/QC procedures for laboratory duplicates, method blanks, and reference materials.

Field duplicates were collected at randomly selected sampling sites along with the parent sample and submitted to the laboratory for analysis. Duplicates were submitted blind, without the location, name, or



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time indicated on the label, to test heterogeneity of the water being sampled and precision of the laboratory analysis. Duplicate samples comprised 10% of the surface water quality dataset. Duplicate results were compared using relative percent difference (RPD), with a data quality objective (DQO) of 20% for values more than five times the DL (BC MOE 2013). The RPD was calculated as shown in Equation 3-1:

Equation 3-1 Relative Percent Difference

$$RPD = \frac{|result 1 - result 2|}{(result 1 + result 2) \div 2}$$



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4.0 RESULTS

Residential well drinking water quality in the LMOC area was monitored in 2020 by measuring field parameters and analyzing water samples collected from 19 wells. Both physical and chemical parameters were analyzed, and results were compared to CDWQ guidelines. Appendix B contains all field and analytical results, presented in Table B-2.

4.1 FIELD PARAMETERS

A summary of field chemistry and particulate results are listed in Table 4-1. Dissolved oxygen (DO) concentrations ranged from 0.15 to 7.04 mg/L, but most wells exhibited DO concentrations below 1 mg/L. Electrical conductivity ranged from 698.7 to 1269.0 µS/cm, but most wells were below 900 µS/cm. Temperature and pH measured in the field ranged from 6.4 to 13.9 °C and 6.8 to 7.5 respectively. Oxidation reduction potential (ORP) ranged from -139.4 to 95.4 mV. Field turbidity ranged from 0.16 to 12.35 NTU, exceeding the CDWQ guidelines at all of the monitored wells (Table 4-1). Full field parameter results are listed in Appendix B, Table B-2.

Table 4-1 2020 Domestic Well Summary of Field Parameters

Parameter	Units	CDWQ	Minimum	Maximum
Dissolved oxygen, Field	mg/L	n/v	0.15	7.04
Electrical Conductivity, Field	μS/cm	n/v	698.7	1269.0
pH, Field	S.U.	6.5-8.5 ^A	6.8	7.5
Oxidation Reduction Potential, Field	mV	n/v	-139.4	95.4
Temperature, Field	deg C	≤15 ^A	6.4	13.9
Turbidity, Field	NTU	≤0.3/1.0/0.1 ^C	0.16	12.35

CDWQ - Health Canada (2014). Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario

4.2 LABORATORY PARAMETERS

Water samples collected from residential wells in the study area in 2020 yielded results that exceeded referenced CDWQ guidelines for five parameters: total dissolved solids, turbidity (lab), *E. coli*, total coliforms, and dissolved iron. Guideline exceedances are summarized in Table 4-2.



A: Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives/ Operational Guidelines

C: Guidelines for Canadian Drinking Water Quality - Microbial Parameters (treatment limits for individual filters or units (conventional and direct filtration: ≤ 0.3 NTU, slow sand and diatomaceous earth filtration: ≤ 1.0 NTU, membrane filtration: ≤ 0.1 NTU)

n/v: No standard/guideline value

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Table 4-2 2020 Domestic Well Water Quality Data Guideline Exceedances

Parameter	CDWQ Guideline	Sites Where Exceedances are Present	No. of Exceedances	Percent Exceedances	Max. Value	Site of Max. Value	Date of Max. Value
Total Dissolved Solids	≤500 ^A	RW-04, RW-05, RW-08, RW-12, RW- 26, RW-57	6	32%	697	RW-12	21-July-2020
Turbidity, Lab (NTU)	≤0.3/1.0/0.1 ^c	RW-04, RW-05, RW-08, RW-11, RW-13, RW-20, RW-21, RW-24, RW-26, RW-27, RW-32, RW-33, RW-41, RW-42, RW-44, RW-45, RW-51, RW-57	18	95%	28.6	RW-08	21-July-2020
E. coli (mpn/100mL)	0 _c	RW-27, RW-42	2	11%	2	RW-27	20-July-2020
Total Coliforms (mpn/100mL)	0c	RW-05, RW-08, RW-12, RW-26, RW- 27, RW-42	6	32%	12	RW-05	20-July-2020
Dissolved iron	≤0.3 ^A	RW-20, RW-21, RW-27	3	16%	0.752	RW-20	21-July-2020

Notes:

Results are in mg/L unless otherwise specified in the parameter column.

Percent Exceedances: percent of total collected samples with guideline exceedances.



^A CDWQ Aesthetic Objectives/ Operational Guidelines

^B CDWQ Maximum Acceptable Concentration

^C CDWQ Microbial Parameters

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Parameters with the largest number of exceedances at the most sites included lab-measured turbidity (exceedances at 18 wells), total dissolved solids (exceedances at 6 wells), total coliforms (exceedances at 6 wells), dissolved iron (exceedances at 3 wells), and E. coli (exceedances at 2 wells).

Full analytical results are listed in Appendix B, Table B-2.

4.2.1 Post-sampling Landowner Follow-up

Since the wells tested were predominantly sources of drinking water, CDWQ guideline exceedances of microbiological parameters (E. coli, total coliforms, or fecal coliforms) were communicated to Stantec from ALS immediately as preliminary results. Stantec communicated these preliminary results to applicable landowners within 24 hours of receiving results from ALS.

Full analytical results applicable to each landowner were communicated to the respective landowners through individual letter packages that were sent by registered mail during the first week of October 2020. Letter packages included a list of wells sampled, a map of sampled well locations, and the certificate of analysis (COA) provided by ALS Laboratory specific to each landowner. The COAs included the analytical results and comparison to the Canadian Drinking Water Quality (CDWQ) Guidelines (Health Canada (2019)).

4.3 QUALITY ASSURANCE / QUALITY CONTROL

Detection limits (DL) were less than 10% of the water quality guidelines and were suitable for comparison with the guidelines. DLs for turbidity, fluoride and toluene were greater than 10% of the guidelines for all samples analyzed but were below the guidelines.

There were two field duplicates collected and analyzed for the full suite of laboratory parameters (Table B-3). Of these two field duplicates, one duplicate pair exceeded the DQO for two parameters (turbidity and total coliforms) and one duplicate pair exceeded the DQO for three parameters (hardness, total coliforms, dissolved calcium). These samples were collected on July 21, 2020.

There was one field blank collected and analyzed to assess the potential for cross-contamination in the field (Appendix B, Table B-4). The field blanks consisted of reverse osmosis de-ionized water provided by ALS, which was exposed to the same field conditions as the water samples collected (opening the bottle in the field and filtering and preserving as required). The DQO (values below or within five times the method DL) was met for all parameters in the field blank except conductivity, hardness, pH, alkalinity, bicarbonate, carbonate, chloride, nitrate, nitrite, sulphate, dissolved calcium, dissolved manganese, dissolved potassium, and dissolved sodium. Because there were a high number of parameters that exceeded the DQO, a sample result recheck from the laboratory was requested. Results were rechecked and confirmed by the laboratory.

There was one trip blank collected and analyzed to assess the potential for cross-contamination in the field (Table B-4). Trip blanks were used to assess the potential for sample contamination during transit. Sealed trip blanks were provided by ALS and accompanied water samples to and from the field and were



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opened only when they arrived at the laboratory for analysis. The DQO (values below or within five times the method DL) was met for all parameters in the trip blank except pH.

Field duplicate, and QA/QC results are provided in Table B-3 and Table B-4 in Appendix B.



Future Monitoring Considerations June 16, 2021

5.0 FUTURE MONITORING CONSIDERATIONS

If required, domestic well monitoring in the LMOC area could continue annually prior to LMOC construction, during the construction of the LMOC, and one year following LMOC construction completion. Additions to the DWMP in future years may include those from landowners who come forward as a result of the Project engagement work or those that express concerns regarding water quality. Priority should be given to sites that exhibited guideline exceedances for microbiological parameters (RW-05, RW-08, RW-11, RW-12, RW-26, RW-27, and RW-42), as well as wells used explicitly for residential drinking water consumption.



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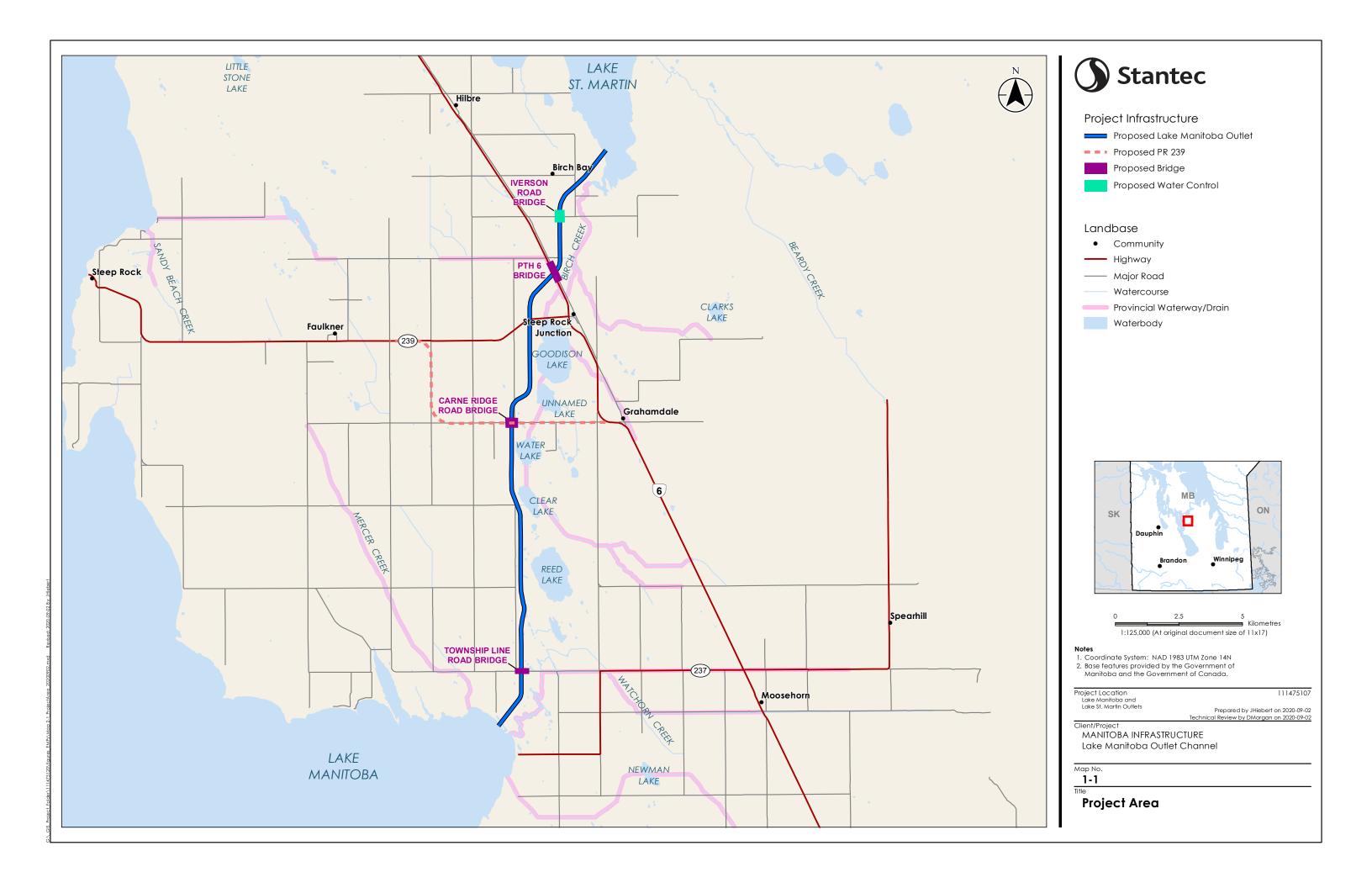


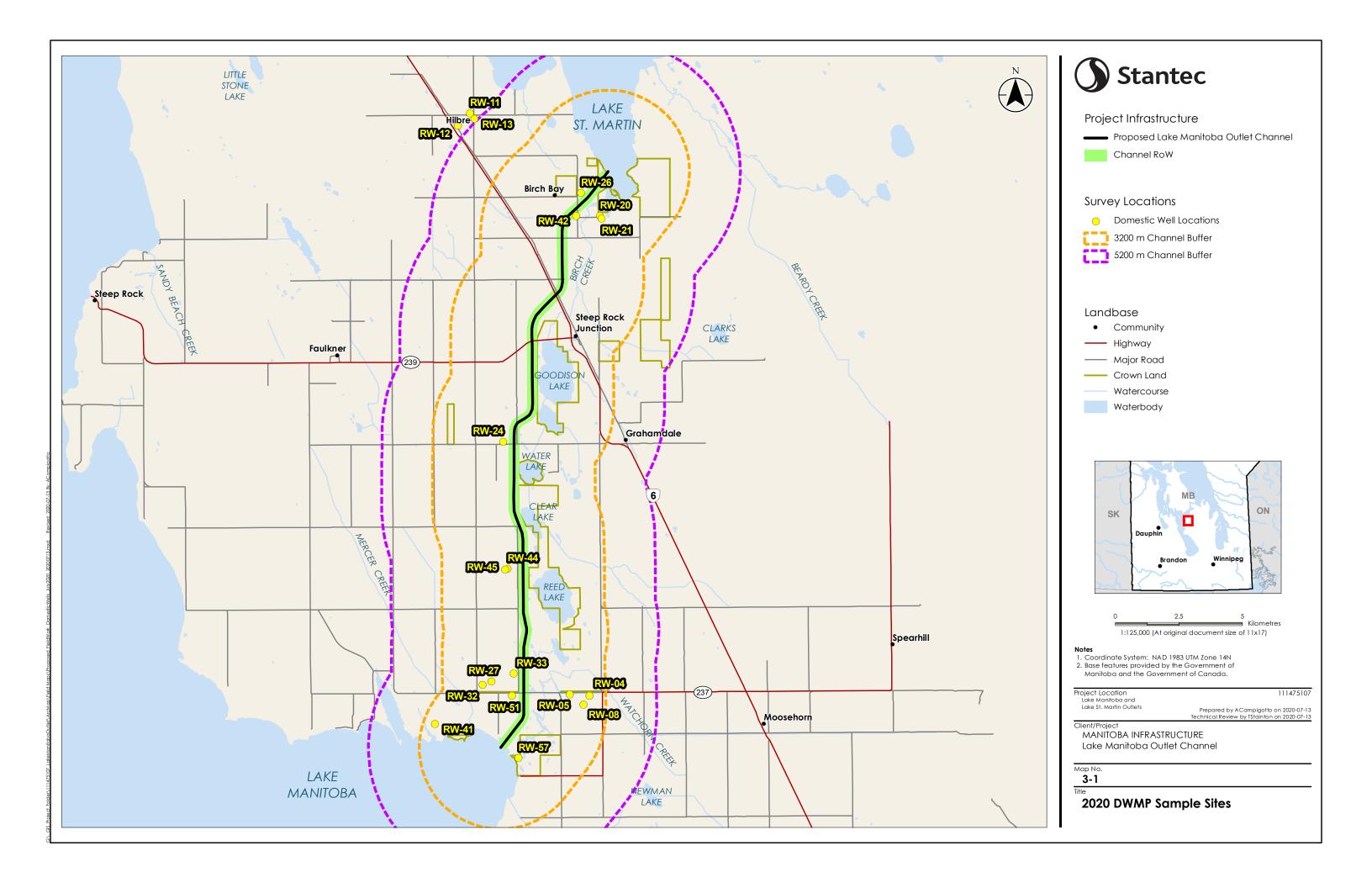
APPENDICES

Appendix A Maps June 16, 2021

Appendix A MAPS







Appendix B Tables June 16, 2021

Appendix B TABLES



Appendix B Tables June 16, 2021

Table B-1 Summary of Stantec Domestic Well Database

0000	0040	UTM Z	one 14 U	0040		GWDrill Database S	ummary				Questionnair	e Response S	ummary		
2020 Site ID	2019 Well ID	Easting	Northing	2016 Well ID	GWDrill ID	GWDrill Well Depth (m)	GWDrill Elevation (masl)	Water Use	Well Install Year	Well Depth (m)	Pump Type	Depth to Pump (m)	Flowing Artesian Well	Water Treatment	Well Concerns [†]
-	1	530797*	5683975*	8D	-	-	-	Drinking water	1980	-	-	-	-	Reverse osmosis	-
-	2	530827*	5683886*	-	-	-	-	Livestock	1990	-	-	-	-	Water softener	-
-	3	530877*	5683720*	-	-	-	-	Livestock	2000	-	-	-	-	Iron filter	-
RW-04	4	533362	5683511	-	-	-	-	Drinking water	1990	76.2	Pressure pump	-	yes	None	No
RW-05	5	532539	5683548	-	-	-	-	Livestock	2013	30.48	Submersible pump	9.1	yes	None	No
-	6	534251*	5683761*	-	158528	30.48	253	Livestock	2010	30.48	Pressure pump	-	yes	None	-
-	7	5701734	532655	72D	-	-	-	Livestock	1980	18	-	-	-	None	-
RW-08	8	533123	5683148	-	-	-	-	Drinking water	2020	36.57	Submersible pump	9.1	yes	Water softener	No
-	9	-	-	-	-	-	-	Livestock	2020	-	-	-	-	-	-
-	10	-	-	-	-	-	-	Livestock	2020	-	-	-	-	-	-
RW-11	11	528659	5706401	-	-	-	-	Drinking water	1975	33.5	Pressure pump	-	no	Water softener	No
RW-12	12	528179	5705920	-	-	-	-	Drinking water	1990	30.5	Submersible pump	-	no	Water softener	No
RW-13	13	528841	5706189	-	-	-	-	Livestock; drinking water	1975	45	Pressure pump	-	no	None	No
-	14	528894*	5705698*	-	-	-	-	Livestock	1975	30.48	Submersible pump	-	no	None	No
-	15	529176*	5705556*	-	194551	36.58	252	Livestock	2017	36.58	Submersible pump	-	no	None	No
-	16	530572*	5704392*	-	-	-	-	Livestock	-	13.7	Submersible pump	-	no	None	No
-	17	535572*	5706556*	-	122811	48.77	-	Livestock	1990	48.77	Submersible pump	-	no	None	No
-	18	530031*	5705067*	-	107587	30.48	-	Livestock	1985	30.48	Submersible pump	-	no	None	No
-	19	529660*	5690801*	-	127275	27.43	-	Drinking water	2003	-	-	-	-	-	-
RW-20	20	533772	5702367	-	31883	19.81	-	Drinking water	1980	20	Pressure pump	-	yes	Reverse osmosis; Water softener	Swampy taste and smell, supply is adequate but no abundant
RW-21	21	533830	5702267	77D	-	-	-	Drinking water	1965	40	Pressure pump	-	yes	Water softener	No
-	22	-	-	-	-	-	-	Livestock	-	-	-	-	-	-	No
-	23	-	-	-	-	-	-	Livestock	-	-	-	-	-	-	No
RW-24	24	529958	5693491	-	38544	30.45	253	Drinking water	1980	30.45	Submersible pump	9	yes	Sand filter	Seasonal changes to flow lime taste
-	25	-	-	-	-	-	-	Livestock	-	-	-	-	-	-	-
RW-26	26	533019	5703278	-	-	-	-	Drinking water	1980	-	Submersible pump	-	no	Reverse osmosis; Water softener	Minor clarity concerns, small issue with pressure
RW-27	27	529502	5684053	-	-	-	-	Drinking water	1964	36	Pressure pump	-	no	None	Seasonal changes in winter
-	28	529479*	5684185*	-	-	-	-	Livestock	1971	36.5	Submersible pump	-	no	None	No
-	29	529488*	5684095*	-	-	-	-	Livestock	1971	30.48	Submersible pump	-	no	None	No
-	30	529423*	5684175*	-	-	-	-	Livestock	2019	45.72	No pump	-	-	None	No
-	31	528986*	5684311*	-	-	-	-	Livestock	1981	90.83	Submersible pump	-	no	None	No
RW-32	32	529146	5683938	-	187874	54.25	253	Drinking water; livestock	2015	54.25	Pressure pump	-	no	Water softener	No



Appendix B Tables June 16, 2021

Table B-1 Summary of Stantec Domestic Well Database

2222	2012	UTM Z	one 14 U	2242		GWDrill Database S	ummary				Questionnair	e Response Si	ummary		
2020 Site ID	2019 Well ID	Easting	Northing	2016 Well ID	GWDrill ID	GWDrill Well Depth (m)	GWDrill Elevation (masl)	Water Use	Well Install Year	Well Depth (m)	Pump Type	Depth to Pump (m)	Flowing Artesian Well	Water Treatment	Well Concerns†
RW-33	33	530377	5684383	-	-	-	-	Drinking water	1977	-	Pressure pump	-	no	None	No
-	34	530006*	5683748*	-	-	-	-	Livestock	-	-	-	-	-	None	No
-	35	528955*	5684731*	-	-	-	-	Livestock	1962	-	-	-	-	None	No
-	36	528936*	5684643*	-	-	-	-	Livestock	-	-	-	-	-	None	No
-	37	528629*	5684862*	-	-	-	-	Livestock	1995	<30.48	Submersible pump	-	no	None	No
-	38	529837*	5691661*	-	-	-	-	Livestock	-	-	-	-	-	None	No
-	39	533047*	5684534*	-	-	-	-	Livestock	2019	24.38	No pump	-	yes	None	No
-	40	533980*	5682041*	-	-	-	-	Drinking water; livestock	2019	36	Submersible pump	-	no	None	No
RW-41	41	527276	5682399	-	-	-	-	Drinking water; livestock	1980	38	Submersible pump	0	yes	Water softener	No
RW-42	42	532835	5702377	-	-	-	-	Drinking water	1978	35.5	Pressure pump	0	yes	Water softener; iron filter	Swampy taste and odor
-	43	-	-	-	-	-	-	Livestock	1990	-	-	-	-	-	-
RW-44	44	530138	5688484	-	107586	73.152	-	Drinking water; livestock	1998	-	Submersible pump	12	yes	None	No
RW-45	45	530036	5688454	13D	130999	28.6512	-	Drinking water; livestock	2001	-	Submersible pump	12	yes	None	No
-	46	530312*	5688822*	-	-	-	-	Livestock	1949	-	No pump	-	yes	None	No
-	47	530392*	5687388*	-	127274	28.956	-	Livestock	2003	-	No pump	-	yes	None	No
-	48	529426*	5687048*	-	-	-	-	Livestock	2006	-	No pump	-	yes	None	No
-	49	529403*	5687897*	-	-	-	-	Livestock	1950	-	No pump	-	yes	None	No
RW-51	51	530316	5683498	7D	38542	22.86	-	Drinking water; livestock	1980	18	Pressure pump	-	yes	None	Seasonal changes in spring, swampy smell, and swampy taste in spring
-	52	530614*	5686194*	-	-	-	-	Livestock	-	-	-	-	-	-	-
-	53	529941*	5692120*	-	-	-	-	Livestock	-	-	-	-	-	-	-
-	54	529962*	5692079*	-	-	-	-	Livestock	-	-	-	-	-	-	-
-	55	526853*	5685010*	-	-	-	-	Livestock	-	-	-	-	-	-	-
-	56	526903*	5684866*	-	-	-	-	Livestock	-	-	-	-	-	_	-
RW-57	57	530560	5681036	-	158363	79.3	166.7	Drinking water	2009	79.25	-	-	-	Treatment plant	-

RW-xx : sample site

*: approximate UTM Coordinate 2020 Site ID: Stantec; DWMP 2019 Well ID: Hatch Questionnaire

2016 Well ID: KGS 2017

- : no value or information not known by landowner

†: concerns discussed with landowner include: water supply adequacy, seasonal changes, taste or odor concerns, clarity concerns, bacteriological concerns, and chemical concerns.



Appendix B Tables June 16, 2021

Table B-2 Summary of Domestic Well Analytical Results

Sample Location			RW-04	RW-05	RW-08	RW-11	RW-12	RW-13	RW-20	RW-21	RW-24	RW-26	RW-27	RW-32	RW-33	RW-41	RW-42	RW-44	RW-45	RW-51	RW-57
Sample Date			20-Jul-2020	20-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	20-Jul-2020	21-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	21-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	21-Jul-2020
Sample ID			RW-04	RW-05	RW-08	RW-11	RW-12	RW-13	RW-20	RW-21	RW-24	RW-26	RW-27	RW-32	RW-33	RW-41	RW-42	RW-44	RW-45	RW-51	RW-57
Lab			ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Lab Work Order			L2477642	L2477642	L2477642	L2477629	L2477629	L2477629	L2477639	L2477639	L2477634	L2477628	L2477636	L2477636	L2477636	L2477637	L2477626	L2477632	L2477632	L2477635	L2477630
Lab Sample ID		ļ I	L2477642-1	L2477642-2	L2477642-3	L2477629-1	L2477629-2	L2477629-3	L2477639-1	L2477639-2	L2477634-1	L2477628-1	L2477636-3	L2477636-1	L2477636-2	L2477637-1	L2477626-1	L2477632-1	L2477632-2	L2477635-1	L2477630-5
Sample Type	Units	CDWQ																			
Field Parameters							I.			I.							I.				
Dissolved oxygen, Field	mg/L	n/v	0.56	4.23	-	0.18	2.2	0.2	0.3	0.16	0.21	0.35	0.34	0.29	3.8	2.54	0.77	0.15	0.28	0.19	7.04
Electrical Conductivity, Field	μS/cm	n/v	836.0	871.0	-	767.8	1269.0	712.7	793.7	782.2	764.7	855.1	736.1	724.3	738.0	737.9	812.7	698.7	820.6	783.1	933.0
pH, Field	S.U.	6.5-8.5 ^A	6.91	6.92	-	6.98	6.82	6.96	7.00	6.97	7.11	7.00	7.37	7.33	7.25	7.40	6.96	7.11	7.24	7.10	7.50
Oxidation Reduction Potential, Field	mV	n/v	82.0	77.1	-	64.3	95.4	85.8	-70.9	-42.7	-20.9	51.0	-92.1	-7.1	-139.4	30.1	14.7	-60.4	7.9	-21.4	45.6
Temperature, Field	deg C	≤15 ^A	10.4	6.4	-	9.8	10.1	7.1	7.9	7.6	6.7	8.3	8.0	9.6	11.6	12.1	7.3	9.7	7.1	7.2	13.9
Turbidity, Field	NTU	≤0.3/1.0/0.1 ^C	0.59 ^c	2.02 ^c	-	1.66 ^c	0.16 ^c	1.11 ^c	1.36 ^c	0.95 ^c	12.35 ^c	1.65 ^c	0.45 ^c	0.71 ^c	1.05 ^c	0.99 ^c	1.45 ^c	0.59 ^c	0.38 ^c	0.64 ^c	2.59 ^c
Physical Tests	II.	I.										•									
Conductivity	umhos/cm	n/v	790	814	800	723	1230	660	732	712	696	799	686	674	696	683	755	633	656	733	876
Hardness (as CaCO3)	mg/L	n/v	325	356	307	0.43	532	365	322	350	281	353	237	227	249	217	347	222	230	295	186
pH	pH units	6.5-8.5 ^A	8.31	8.25	8.23	8.23	7.88	7.94	8.34	8.28	8.37	7.97	8.39	8.35	8.35	8.34	7.88	8.29	8.33	8.31	8.29
TDS (Calculated)	mg/L	≤500 ^A	506 ^A	520 ^A	513 ^A	441	697 ^A	363	451	440	451	509 ^A	428	419	434	428	469	392	406	463	531 ^A
Turbidity	NTU	≤0.3/1.0/0.1 ^C	2.13 ^c	1.50 ^c	28.6 ^c	0.66 ^c	<0.10	0.31 ^c	9.75 ^c	7.51 ^c	10.5 ^c	3.98 ^c	2.79 ^c	0.22 ^c	2.31 ^c	0.14 ^c	2.35 ^c	0.39 ^c	0.18 ^c	1.35 ^c	0.46 ^c
Anions and Nutrients				•			•			•		•					•				
Alkalinity, Total (as CaCO3)	mg/L	n/v	263	285	244	401	443	390	324	329	237	321	210	199	229	184	338	206	212	247	176
Bicarbonate (HCO3)	mg/L	n/v	314	347	298	489	540	475	383	402	277	391	243	234	269	215	412	251	249	294	214
Carbonate (CO3)	mg/L	n/v	3.36	<0.60	<0.60	<0.60	<0.60	<0.60	6	<0.60	6.12	<0.60	6.36	4.68	5.4	4.8	<0.60	<0.60	4.68	3.6	<0.60
Chloride (CI)	mg/L	≤250 ^A	14.8	13.7	24.5	7.82	171	5.60	5.49	4.62	13.7	11.5	24.4	26.9	22.6	33.3	7.85	22.9	23.6	17.4	113
Fluoride (F)	mg/L	1.5 ^B	0.689	0.817	0.803	0.413	0.092	0.312	0.969	1.17	0.877	0.282	0.445	0.411	0.509	0.362	1.16	0.869	0.793	0.535	0.965
Hydroxide (OH)	mg/L	n/v	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N	mg/L	n/v	<0.0051	<0.0051	<0.0051	<0.0051	2.84	0.289	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.010
Nitrate (as N)	mg/L	10 ^B	<0.0050	<0.0050	<0.0050	<0.0050	2.84	0.285	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Nitrite (as N)	mg/L	1 ^B	<0.0010	0.0012	<0.0010	<0.0010	<0.0020	0.0040	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020
Sulfate (SO4)	mg/L	≤500 _j ^A	175	173	179	6.67	19.0	3.07	108	93.8	153	146	142	142	139	146	107	119	126	153	135
Bacteriological Tests																					
Escherichia Coli	MPN/100mL	0c	0 ZH	0 ZH	0	0	0	0	0	0	0 ZH	0	2 ZH ^c	0 ZH	0 ZH	0 ZH	1 ^c	0 ZH	0 ZH	0 ZH	0
Fecal Coliforms	CFU/100mL	0c	<1 ZH	<1 ZH	<1	<1	<1	<1	<1	<1	<1 ZH	<1	<1 ZH	<1 ZH	<1 ZH	<1 ZH	<1	<1 ZH	<1 ZH	<1 ZH	<1
Total Coliforms	MPN/100mL	0c	0 ZH	12 ZH ^c	4 ^c	0	3 c	0	0	0	0 ZH	6 c	4 ZH ^c	0 ZH	0 ZH	0 ZH	2 ^C	0 ZH	0 ZH	0 ZH	0
Dissolved Metals																					
Dissolved Metals Filtration Location	-	-	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	LAB	FIELD	FIELD	FIELD	FIELD	FIELD
Calcium (Ca)-Dissolved	mg/L	n/v	67.9	72.2	63.6	0.132	84.6	60.7	65.2	56.8	64.1	41.0	37.9	44.5	37.9	65.7	44.4	43.3	55.2	37.7	60.7
Iron (Fe)-Dissolved	mg/L	≤0.3 ^A	0.137	0.076	0.092	<0.010	<0.010	<0.010	0.752 ^A	0.686 ^A	0.165	0.188	0.349 ^A	0.014	0.060	<0.010	0.109	0.068	0.030	0.105	0.085
Magnesium (Mg)- Dissolved	mg/L	n/v	37.7	42.7	36.1	0.0241	78.0	41.5	45.6	33.9	46.8	32.8	32.3	33.4	29.7	44.4	27.0	29.5	38.2	22.3	41.5



Appendix B Tables June 16, 2021

Table B-2 Summary of Domestic Well Analytical Results

Sample Location			RW-04	RW-05	RW-08	RW-11	RW-12	RW-13	RW-20	RW-21	RW-24	RW-26	RW-27	RW-32	RW-33	RW-41	RW-42	RW-44	RW-45	RW-51	RW-57
Sample Date		Ì	20-Jul-2020	20-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	20-Jul-2020	21-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	21-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	21-Jul-2020
Sample ID			RW-04	RW-05	RW-08	RW-11	RW-12	RW-13	RW-20	RW-21	RW-24	RW-26	RW-27	RW-32	RW-33	RW-41	RW-42	RW-44	RW-45	RW-51	RW-57
Lab			ALS																		
Lab Work Order			L2477642	L2477642	L2477642	L2477629	L2477629	L2477629	L2477639	L2477639	L2477634	L2477628	L2477636	L2477636	L2477636	L2477637	L2477626	L2477632	L2477632	L2477635	L2477630
Lab Sample ID		Ì	L2477642-1	L2477642-2	L2477642-3	L2477629-1	L2477629-2	L2477629-3	L2477639-1	L2477639-2	L2477634-1	L2477628-1	L2477636-3	L2477636-1	L2477636-2	L2477637-1	L2477626-1	L2477632-1	L2477632-2	L2477635-1	L2477630-5
Sample Type	Units	CDWQ																			
Manganese (Mn)- Dissolved	mg/L	≤0.05 ^A	0.00246	0.00995	0.00229	<0.00010	0.00018	0.0158	0.0202	0.0155	0.0105	0.0108	0.00549	0.00552	0.00287	0.0103	0.00345	0.00641	0.00813	0.00088	0.0158
Potassium (K)- Dissolved	mg/L	n/v	12.7	12.0	13.1	0.465	1.84	8.75	8.59	8.48	6.13	6.08	5.31	6.84	5.16	9.26	8.70	7.19	9.77	9.96	8.75
Sodium (Na)-Dissolved	mg/L	≤200 ^A	39.9	36.5	50.4	185	64.7	31.5	24.8	43.1	42.2	56.0	55.1	50.1	64.7	32.2	47.0	50.0	40.9	108	31.5
Volatile Organic Compou	nds										•	•		•							
Benzene	mg/L	0.005 ^B	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethyl benzene	mg/L	0.0016 ^A 0.14 ^B	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L	0.024 ^A 0.06 ^B	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
o-Xylene	mg/L	n/v	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
m+p-Xylenes	mg/L	n/v	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylenes (Total)	mg/L	0.02 ^A 0.09 ^B	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064
F1 (C6-C10)	mg/L	n/v	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F1-BTEX	mg/L	n/v	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Hydrocarbons (C6-C50)	mg/L	n/v	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
4-Bromofluorobenzene (SS)	%	n/v	87.3	84.6	91	86.3	86.3	85.9	86.9	86.5	84.5	85.1	88	89.4	86.6	88.2	92	88.4	87.1	90.4	83.6
Hydrocarbons		•						•	•								•	•			•
F2 (C10-C16)	mg/L	n/v	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F3 (C16-C34)	mg/L	n/v	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
F4 (C34-C50)	mg/L	n/v	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Bromobenzotrifluoride	%	n/v	102.4	100.5	90.7	104	92.4	95.9	96	96.5	92.7	104.7	90.8	91	94.5	94.7	94.4	93.2	119.7	96.3	91.1

CDWQ - Health Canada (2014). Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

A: Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives/ Operational Guidelines

B: Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentration

C: Guidelines for Canadian Drinking Water Quality - Microbial Parameters

6.5^A: Concentration exceeds the indicated standard.

15.2: Measured concentration did not exceed the indicated standard.

<0.50: Laboratory reporting limit was greater than the applicable standard.

<0.03: Analyte was not detected at a concentration greater than the laboratory reporting limit.

n/v: No standard/guideline value.

ZH: Sample analyzed past recommended hold time.



Appendix B Tables June 16, 2021

Table B-3 Summary of Domestic Well RPDs – Field Duplicates

Sample Location			RW	/-08		RW	<i>I</i> -11	
Sample Date Sample ID			21-Jul-2020 RW-08	21-Jul-2020 QC-01	RPD	21-Jul-2020 RW-11	21-Jul-2020 QC-02	RPD
Lab Work Order	Units	CDWQ	ALS L2477642	ALS L2477630	(%)	ALS L2477629	ALS L2477630	(%)
Lab Sample ID			L2477642-3	L2477630-3		L2477629-1	L2477630-4	
Sample Type				Field duplicate			Field duplicate	
Physical Tests	1 , ,	, 1	000	1 000 1	40/	700	700	20/
Conductivity	umhos/cm	n/v	800	809	1%	723	723	0%
Hardness (as CaCO3)	mg/L	n/v	307	306	0%	0.43	0.35	<u>23%</u>
pH	pH units	6.5-8.5 ^A	8.23	8.27	0%	8.23	8.54 ^A	4%
TDS (Calculated)	mg/L	≤500 ^A	513 ^A	514 ^A	0%	441	443	0%
Turbidity	NTU	≤0.3/1.0/0.1 ^C	28.6 ^C	7.09 ^C	<u>303%</u>	0.66 ^C	0.75 ^C	12%
Anions and Nutrients								
Alkalinity, Total (as CaCO3)	mg/L	n/v	244	250	2%	401	402	0%
Bicarbonate (HCO3)	mg/L	n/v	298	305	2%	489	466	5%
Carbonate (CO3)	mg/L	n/v	<0.60	<0.60	nc	<0.60	12.1	nc
Chloride (CI)	mg/L	≤250 ^A	24.5	24.5	0%	7.82	7.82	0%
Fluoride (F)	mg/L	1.5 ^B	0.803	0.787	2%	0.413	0.411	0%
Hydroxide (OH)	mg/L	n/v	<0.34	<0.34	nc	<0.34	<0.34	nc
Nitrate and Nitrite as N	mg/L	n/v	<0.0051	<0.0051	nc	<0.0051	<0.0051	nc
Nitrate (as N)	mg/L	10 ^B	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc
Nitrite (as N)	mg/L	1 ^B	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc
Sulfate (SO4)	mg/L	≤500 _j A	179	179	0%	6.67	6.62	1%
Bacteriological Tests	ı					•		
Escherichia Coli	MPN/100mL	0 ^c	0	0	0%	0	0	0%
Fecal Coliforms	CFU/100mL	0 ^C	<1	<1	nc	<1	<1	nc
Total Coliforms	MPN/100mL	0c	4 ^c	10 ^c	<u>60%</u>	0	1	<u>100%</u>



Appendix B Tables June 16, 2021

Table B-3 Summary of Domestic Well RPDs – Field Duplicates

Sample Location			RW	'-08		RW	<i>I</i> -11	
Sample Date Sample ID Lab Lab Work Order Lab Sample ID Sample Type	Units	CDWQ	21-Jul-2020 RW-08 ALS L2477642 L2477642-3	21-Jul-2020 QC-01 ALS L2477630 L2477630-3 Field duplicate	RPD (%)	21-Jul-2020 RW-11 ALS L2477629 L2477629-1	21-Jul-2020 QC-02 ALS L2477630 L2477630-4 Field duplicate	RPD (%)
Dissolved Metals								
Dissolved Metals Filtration Location	-	-	FIELD	FIELD		FIELD	FIELD	
Calcium (Ca)-Dissolved	mg/L	n/v	63.6	62.8	1%	0.132	0.093	<u>42%</u>
Iron (Fe)-Dissolved	mg/L	≤0.3 ^A	0.092	0.097	5%	<0.010	0.013	nc
Magnesium (Mg)-Dissolved	mg/L	n/v	36.1	36.2	0%	0.0241	0.0276	13%
Manganese (Mn)-Dissolved	mg/L	≤0.05 ^A	0.00229	0.00226	1%	<0.00010	0.00019	nc
Potassium (K)-Dissolved	mg/L	n/v	13.1	12.9	2%	0.465	0.475	2%
Sodium (Na)-Dissolved	mg/L	≤200 ^A	50.4	49.0	3%	185	186	1%
Volatile Organic Compounds								
Benzene	mg/L	0.005 ^B	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc
Ethyl benzene	mg/L	0.0016 ^A 0.14 ^B	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc
Toluene	mg/L	0.024 ^A 0.06 ^B	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc
o-Xylene	mg/L	n/v	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc
m+p-Xylenes	mg/L	n/v	<0.00040	<0.00040	nc	<0.00040	<0.00040	nc
Xylenes (Total)	mg/L	0.02 ^A 0.09 ^B	<0.00064	<0.00064	nc	<0.00064	<0.00064	nc
F1 (C6-C10)	mg/L	n/v	<0.10	<0.10	nc	<0.10	<0.10	nc
F1-BTEX	mg/L	n/v	<0.10	<0.10	nc	<0.10	<0.10	nc
Total Hydrocarbons (C6-C50)	mg/L	n/v	<0.38	<0.38	nc	<0.38	<0.38	nc
4-Bromofluorobenzene (SS)	%	n/v	91	87.1	4%	86.3	85.2	1%
Hydrocarbons								
F2 (C10-C16)	mg/L	n/v	<0.10	<0.10	nc	<0.10	<0.10	nc
F3 (C16-C34)	mg/L	n/v	<0.25	<0.25	nc	<0.25	<0.25	nc



Appendix B Tables June 16, 2021

Table B-3 Summary of Domestic Well RPDs – Field Duplicates

Sample Location	Units CDV		RW	'-08		RW	<i>I</i> -11	
Sample Date				21-Jul-2020			21-Jul-2020	
Sample ID			21-Jul-2020 RW-08 ALS L2477642 L2477642-3	QC-01		21-Jul-2020 RW-11 ALS L2477629 L2477629-1	QC-02	
Lab		CDWQ		ALS	RPD (%)		ALS	RPD (%)
Lab Work Order		L24		L2477630	(70)		L2477630	(70)
Lab Sample ID				L2477630-3			L2477630-4	
Sample Type				Field duplicate			Field duplicate	
F4 (C34-C50)	mg/L	n/v	<0.25	<0.25	nc	<0.25	<0.25	nc
2-Bromobenzotrifluoride	%	n/v	90.7	91.4	1%	104	97.7	6%

CDWQ - Health Canada (2014). Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

A: Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives/ Operational Guidelines

B: Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentration

C: Guidelines for Canadian Drinking Water Quality - Microbial Parameters

6.5^A: Concentration exceeds the indicated standard.

15.2: Measured concentration did not exceed the indicated standard.

<0.50: Laboratory reporting limit was greater than the applicable standard.

<0.03: Analyte was not detected at a concentration greater than the laboratory reporting limit.

n/v: No standard/guideline value.

RPD: Relative Percent Difference.

61%: RPD exceeds data quality objective of 25%.

nc: RPD is not calculated if one or more values is non-detect or if one or more values is less than five times the reportable detection limit.



Appendix B Tables June 16, 2021

Table B-4 Summary of Domestic Well QA/QC Blanks

Sample Location			TRIP BLANK	FIELD BLANK
Sample Date			22	
Sample ID			TRIP BLANK	FIELD BLANK
Lab	Units	CDWQ	ALS	ALS
Lab Work Order		33.1.2	L2477630	L2477630
Lab Sample ID			L2477630-1	L2477630-2
Sample Type				22 11 1 0 0 0 2
Physical Tests				
Conductivity	umhos/cm	n/v	<1.0	324
Hardness (as CaCO3)	mg/L	n/v	<0.20	167
pH	pH units	6.5-8.5 ^A	6.10	8.36
TDS (Calculated)	mg/L	≤500 ^A	<5.0	182
Turbidity	NTU	≤0.3/1.0/0.1 ^C	<0.10	<0.10
Anions and Nutrients	1,000	5157 1157 511		
Alkalinity, Total (as CaCO3)	mg/L	n/v	1.6	180
Bicarbonate (HCO3)	mg/L	n/v	2	212
Carbonate (CO3)	mg/L	n/v	<0.60	4.2
Chloride (CI)	mg/L	≤250 ^A	<0.10	3.03
Fluoride (F)	mg/L	1.5 ^B	<0.020	0.065
Hydroxide (OH)	mg/L	n/v	<0.34	<0.34
Nitrate and Nitrite as N	mg/L	n/v	<0.0051	0.794
Nitrate (as N)	mg/L	10 ^B	<0.0050	0.794
Nitrite (as N)	mg/L	1 ^B	<0.0010	<0.0010
Sulfate (SO4)	mg/L	≤500 _j A	<0.30	6.05
Bacteriological Tests	3	,		
Escherichia Coli	MPN/100mL	0c	0	-
Fecal Coliforms	CFU/100mL	0c	<1	-
Total Coliforms	MPN/100mL	0 ^c	0	-
Dissolved Metals				
Dissolved Metals Filtration Location	-	-	FIELD	LAB
Calcium (Ca)-Dissolved	mg/L	n/v	<0.050	43.3
Iron (Fe)-Dissolved	mg/L	≤0.3 ^A	<0.010	<0.010
Magnesium (Mg)-Dissolved	mg/L	n/v	<0.0050	14.2
Manganese (Mn)-Dissolved	mg/L	≤0.05 ^A	<0.00010	0.00100
Potassium (K)-Dissolved	mg/L	n/v	<0.050	1.33
Sodium (Na)-Dissolved	mg/L	≤200 ^A	<0.050	2.60
Volatile Organic Compounds				
Benzene	mg/L	0.005 ^B	<0.00050	<0.00050
Ethyl benzene	mg/L	0.0016 ^A 0.14 ^B	<0.00050	<0.00050
Toluene	mg/L	0.024 ^A 0.06 ^B	<0.0010	<0.0010
o-Xylene	mg/L	n/v	<0.00050	<0.00050
m+p-Xylenes	mg/L	n/v	<0.00040	<0.00040
Xylenes (Total)	mg/L	0.02 ^A 0.09 ^B	<0.00064	<0.00064
· · · · · · · · · · · · · · · · · · ·		I	1	



Appendix B Tables June 16, 2021

Table B-4 Summary of Domestic Well QA/QC Blanks

Sample Location			TRIP BLANK	FIELD BLANK
Sample Date				
Sample ID			TRIP BLANK	FIELD BLANK
Lab	Units	CDWQ	ALS	ALS
Lab Work Order			L2477630	L2477630
Lab Sample ID			L2477630-1	L2477630-2
Sample Type				
F1 (C6-C10)	mg/L	n/v	<0.10	<0.10
F1-BTEX	mg/L	n/v	<0.10	<0.10
Total Hydrocarbons (C6-C50)	mg/L	n/v	<0.38	<0.38
4-Bromofluorobenzene (SS)	%	n/v	88.8	85.3
Hydrocarbons	•	•		•
F2 (C10-C16)	mg/L	n/v	<0.10	<0.10
F3 (C16-C34)	mg/L	n/v	<0.25	<0.25
F4 (C34-C50)	mg/L	n/v	<0.25	<0.25
2-Bromobenzotrifluoride	%	n/v	94	91.4

CDWQ - Health Canada (2014). Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.



A: Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives/ Operational Guidelines

B: Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentration

C: Guidelines for Canadian Drinking Water Quality - Microbial Parameters

^{6.5&}lt;sup>A</sup>: Concentration exceeds the indicated standard.

^{15.2:} Measured concentration did not exceed the indicated standard.

<0.50: Laboratory reporting limit was greater than the applicable standard.

<0.03: Analyte was not detected at a concentration greater than the laboratory reporting limit.

n/v: No standard/guideline value.

ZH: Sample analyzed past recommended hold time.

Appendix C Laboratory Results June 16, 2021

Appendix C LABORATORY RESULTS





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-04

Date Collected: 20-JUL-20 Lab Sample ID: L2477642-1

Sampled By:

Matrix: W

PAGE 1 of 8

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-I	F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total I	CCME Total Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 102.4		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS) ved - Low Range	87.3		%			24-JUL-20
KOO4W DISSOI	Bicarbonate (HCO3)	314					24-JUL-20
	Carbonate (CO3)	3.36		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L mg/L	10		24-JUL-20
рН	Tilliate and Tilliae ac IV	10.0001		mg/L	10		2.002.20
рп	рН	8.31		pH units			22-JUL-20
Turbidity	F			p a			
	*Turbidity	2.13		NTU			23-JUL-20
TDS calculate	ed						
	TDS (Calculated)	506		mg/L		500	27-JUL-20
Sulfate in Wa	ater by IC						
	Sulfate (SO4)	175		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wa	ter by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance (15.0000		iiig/L			332 20
Hardness Ca	Hardness (as CaCO3)	325		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9 ATTN: Tassia Stainton Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-04
Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477642-1

Matrix: W

PAGE 2 of 8

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.689		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS			3			
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	67.9		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.137		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	37.7		mg/L			23-JUL-20
Dissolved Manganese (Mn)- Dissolved	0.00246		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	12.7		mg/L			23-JUL-20
Sodium (Na)-Dissolved	39.9		mg/L		200	23-JUL-20
Conductivity						
Conductivity	790		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	14.8		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	263		mg/L			22-JUL-20
Fecal Coliforms	<1	PEHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWG	guidelines on cor iter Quality	ventional treatn	ent and slow sand	N.D. = less than de for diatomaceous e	tection limit. arth filtration ple	ase see
Approved by Hua Wo Account Manager						





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-05

Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477642-2

Matrix: W

PAGE 3 of 8

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F	-4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total H	CCME Total Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 100.5		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
·	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	84.6		%			24-JUL-20
ROU4W DISSON	ved - Low Range	247					24 11 11 20
	Bicarbonate (HCO3)	347		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60 <0.34		mg/L			24-JUL-20
	Hydroxide (OH) *Nitrate and Nitrite as N	<0.04		mg/L	40		24-JUL-20 24-JUL-20
	Nitiale and Nitifie as in	<0.0051		mg/L	10		24-JUL-20
pН	рН	8.25		pH units			22-JUL-20
Turbidity	P	0.20		pri unito			
. u. D.u.ty	*Turbidity	1.50		NTU			23-JUL-20
TDS calculate	•						
	TDS (Calculated)	520		mg/L		500	27-JUL-20
Sulfate in Wa	iter by IC						
	Sulfate (SO4)	173		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level)			_			
	*Nitrite (as N)	0.0012		mg/L	1		22-JUL-20
Nitrate in Wa	Nitrate in Water by IC (Low Level) *Nitrate (as N)			mg/L	10		22-JUL-20
Ion Balance (<0.0050					
Hardness Cal							
Haraness Ca	Hardness (as CaCO3)	356		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-05

Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477642-2

Matrix: W

PAGE 4 of 8

Test Description	Result	Qualifier	Units of	CDWQG	Aesthetic	Date
1000 2000 11 11 11 11 11 11 11 11 11 11 11 11		Quanner	Measure	MAC	Objective	Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.817		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	72.2		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.076		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	42.7		mg/L		0.3	23-JUL-20
Dissolved			mg/L			
Manganese (Mn)- Dissolved	0.00995		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	12.0		mg/L			23-JUL-20
Sodium (Na)-Dissolved	36.5		mg/L		200	23-JUL-20
Conductivity						
Conductivity	814		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	13.7		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	285		mg/L			22-JUL-20
Fecal Coliforms	<1	PEHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	12	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWC	guidelines on con iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-08

Date Collected: 21-JUL-20 Lab Sample ID: L2477642-3

Sampled By:

Matrix: W

PAGE 5 of 8

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4	1						
•	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total H							
OOME TOTAL II	F1-BTEX	<0.10		mg/L			25-JUL-20
	Total Hydrocarbons (C6-	<0.38		mg/L			25-JUL-20
	C50)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		IIIg/L			20 002 20
CCME PHC F2	-F4 in Water						
	F2 (C10-C16)	<0.10		mg/L			24-JUL-20
	F3 (C16-C34)	<0.25		mg/L			24-JUL-20
	F4 (C34-C50)	< 0.25		mg/L			24-JUL-20
Surr:	2-Bromobenzotrifluoride	90.7		%			24-JUL-20
BTX plus F1 b	by GCMS						
	Benzene	<0.00050		mg/L	0.005		24-JUL-20
	Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
	Ethyl benzene	< 0.00050		mg/L	0.14	0.0016	24-JUL-20
	o-Xylene	<0.00050		mg/L	0.11	0.0010	24-JUL-20
	m+p-Xylenes	< 0.00040		mg/L			24-JUL-20
	F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr:	4-Bromofluorobenzene	91.0		%			24-JUL-20
	(SS)			, ,			
ROU4W Dissolv	ed - Low Range						
	Bicarbonate (HCO3)	298		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН							
r	рН	8.23		pH units			22-JUL-20
Turbidity	·						
	*Turbidity	28.6		NTU			23-JUL-20
TDS calculated	•						
1 DO Galoulate	TDS (Calculated)	513		mg/L		500	27-JUL-20
Cultata in Wat				g, _		300	
Sulfate in Wat	-						
	Sulfate (SO4)	179		mg/L		500	22-JUL-20
Nitrite in Wate	r by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wate	er by IC (Low Level)						
	*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance C							
Hardness Cald		007				_	07 !!!! 65
	Hardness (as CaCO3)	307		mg/L		500	27-JUL-20





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-08

Date Collected: 21-JUL-20 Lab Sample ID: L2477642-3

Sampled By:

Matrix: W

PAGE 6 of 8

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.803		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	63.6					23-JUL-20
Iron (Fe)-Dissolved	0.092		mg/L mg/L		0.3	23-JUL-20
Magnesium (Mg)-	36.1		mg/L		0.3	23-JUL-20
Dissolved						
Manganese (Mn)- Dissolved	0.00229		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	13.1		mg/L			23-JUL-20
Sodium (Na)-Dissolved	50.4		mg/L		200	23-JUL-20
Conductivity						
Conductivity	800		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	24.5		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	244		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	4		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWC	guidelines on con Iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						



L2477642 CONTD.... PAGE 7 of 8

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description	
MRHT	The ARHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may	

be valid in some cases (refer to Health Canada guidance).

PEHT Parameter Exceeded Recommended Holding Time Prior to Analysis

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N* Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.

A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening. Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Quality control parameter rationing cations to anions

Bicarbonate See Alkalinity. Report as the anion HCO3-1 Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Chloride Common major anion of water chemistry.

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in

water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.

pH Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Sodium Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for

sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Sulphate Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic

Lead*

Balance

Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477642 Report Date: 27-JUL-20 Page 1 of 7

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R5166298								
WG3369055-30 DUP Alkalinity, Total (as CaC	O3)	L2477642-1 263	259		mg/L	1.6	20	22-JUL-20
WG3369055-24 LCS Alkalinity, Total (as CaC	O3)		105.5		%		85-115	22-JUL-20
WG3369055-29 LCS Alkalinity, Total (as CaC	O3)		100.4		%		85-115	22-JUL-20
WG3369055-21 MB Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	22-JUL-20
WG3369055-26 MB Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	Water							
Batch R5166645								
WG3368156-8 LCS								
Benzene			75.0		%		70-130	23-JUL-20
Toluene			77.1		%		70-130	23-JUL-20
Ethyl benzene			77.4		%		70-130	23-JUL-20
o-Xylene			92.1		%		70-130	23-JUL-20
m+p-Xylenes			88.7		%		70-130	23-JUL-20
WG3368156-9 LCS F1 (C6-C10)			99.1		%		70-130	23-JUL-20
WG3368156-7 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluor	obenzene (SS)		86.3		%		70-130	23-JUL-20
CL-L-IC-N-WP	Water							
Batch R5166703								
WG3367901-10 LCS Chloride (Cl)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB Chloride (CI)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	Water							



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Workorder: L2477642 Report Date: 27-JUL-20

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP		Water							
Batch R5	166298								
WG3369055-30 Conductivity	DUP		L2477642-1 790	783		umhos/cm	0.9	10	22-JUL-20
WG3369055-23 Conductivity	LCS			98.0		%		90-110	22-JUL-20
WG3369055-28 Conductivity	LCS			99.6		%		90-110	22-JUL-20
WG3369055-21 Conductivity	МВ			<1.0		umhos/cm		1	22-JUL-20
WG3369055-26 Conductivity	MB			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP		Water							
Batch R5	166703								
WG3367901-10 Fluoride (F)	LCS			101.4		%		90-110	22-JUL-20
WG3367901-9 Fluoride (F)	MB			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP		Water							
Batch R5	167079								
WG3369781-4 F2 (C10-C16)	LCS			96.6		%		70-130	24-JUL-20
F3 (C16-C34)				92.5		%		70-130	24-JUL-20
F4 (C34-C50)				106.5		%		70-130	24-JUL-20
WG3369781-3 F2 (C10-C16)	МВ			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)				<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)				<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bro	omobenz	zotrifluoride		89.2		%		60-140	24-JUL-20
FC-MF-WP		Water							
Batch R5	164763								
WG3368074-3 Fecal Coliforms	DUP		L2477642-2 <1	<1	RPD-NA	CFU/100mL	N/A	65	22-JUL-20
WG3368074-1 Fecal Coliforms	МВ			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 Fecal Coliforms	МВ			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP		Water							



Workorder: L2477642 Report Date: 27-JUL-20

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Test Ma	atrix Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP W	ater						
Batch R5166699							
WG3368718-4 DUP	L2477642-1						
Calcium (Ca)-Dissolved	67.9	67.7		mg/L	0.3	20	23-JUL-20
Iron (Fe)-Dissolved	0.137	0.139		mg/L	1.3	20	23-JUL-20
Magnesium (Mg)-Dissolved	37.7	37.2		mg/L	1.1	20	23-JUL-20
Manganese (Mn)-Dissolved	0.00246	0.00247		mg/L	0.4	20	23-JUL-20
Potassium (K)-Dissolved	12.7	12.6		mg/L	1.2	20	23-JUL-20
Sodium (Na)-Dissolved	39.9	39.1		mg/L	2.2	20	23-JUL-20
WG3368718-2 LCS Calcium (Ca)-Dissolved		100.5		%		80-120	23-JUL-20
Iron (Fe)-Dissolved		93.5		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved		102.7		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved		102.1		%		80-120	23-JUL-20
Potassium (K)-Dissolved		103.7		%		80-120	23-JUL-20
Sodium (Na)-Dissolved		98.6		%		80-120	23-JUL-20
WG3368718-1 MB Calcium (Ca)-Dissolved		<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved		<0.010		mg/L		0.03	23-JUL-20
Magnesium (Mg)-Dissolved		<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved		<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved		< 0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved		<0.050		mg/L		0.05	23-JUL-20
WG3368718-5 MS	L2477642-1			9		0.00	20 001 20
Calcium (Ca)-Dissolved	L2411042-1	N/A	MS-B	%		-	23-JUL-20
Iron (Fe)-Dissolved		91.2		%		70-130	23-JUL-20
Magnesium (Mg)-Dissolved		N/A	MS-B	%		-	23-JUL-20
Manganese (Mn)-Dissolved		92.4		%		70-130	23-JUL-20
Potassium (K)-Dissolved		N/A	MS-B	%		-	23-JUL-20
Sodium (Na)-Dissolved		N/A	MS-B	%		-	23-JUL-20
NO2-L-IC-N-WP W	ater						
Batch R5166703							
WG3367901-10 LCS Nitrite (as N)		101.6		%		90-110	22-JUL-20
WG3367901-9 MB Nitrite (as N)		<0.0010		mg/L		0.001	22-JUL-20
	ater			Ü			



Workorder: L2477642

Report Date: 27-JUL-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-WP	Water							
Batch R516 WG3367901-10 L Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 Nitrate (as N)	1B		<0.0050		mg/L		0.005	22-JUL-20
PH-WP	Water	•						
Batch R516 WG3369055-30 D pH		L2477642-1 8.31	8.31	J	pH units	0.00	0.2	22-JUL-20
WG3369055-22 L pH	.cs		7.33		pH units		7.3-7.5	22-JUL-20
WG3369055-27 L pH	.cs		7.34		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	Water							
Batch R516 WG3367901-10 L Sulfate (SO4)			102.5		%		90-110	22-JUL-20
	ИΒ		<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	Water	•						
Batch R516								
WG3367867-11 D Total Coliforms	OUP	L2477642-2 12	10		MPN/100mL	21	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 N	IB		0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 N	ИB		0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 N	ИB		0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							-
Batch R516	6411							
WG3369614-5 L Turbidity	.cs		96.5		%		85-115	23-JUL-20
WG3369614-4 N	ИВ							



Workorder: L2477642 Report Date: 27-JUL-20 Page 5 of 7

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-W	Р	Water							
Batch	R5166411								
WG336961	4-4 MB								
Turbidity				< 0.10		NTU		0.1	23-JUL-20

Workorder: L2477642 Report Date: 27-JUL-20 Page 6 of 7

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Workorder: L2477642 Report Date: 27-JUL-20 Page 7 of 7

Hold Time Exceedances:

	Sample						
ALS Product Description	ID [.]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	20-JUL-20 13:57	22-JUL-20 12:00	0.25	46	hours	EHTR-FM
	2	20-JUL-20 13:27	22-JUL-20 12:00	0.25	47	hours	EHTR-FM
	3	21-JUL-20 08:05	22-JUL-20 12:00	0.25	28	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 13:57	22-JUL-20 14:10	30	48	hours	EHTR
	2	20-JUL-20 13:27	22-JUL-20 14:10	30	49	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 13:57	22-JUL-20 12:50	30	47	hours	EHTR
	2	20-JUL-20 13:27	22-JUL-20 12:50	30	47	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477642 were received on 22-JUL-20 08:00.

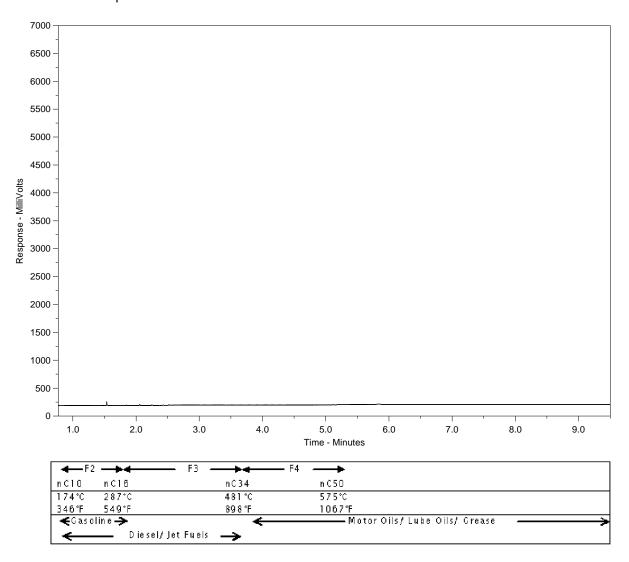
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



ALS Sample ID: L2477642-1 Client Sample ID: RW-04



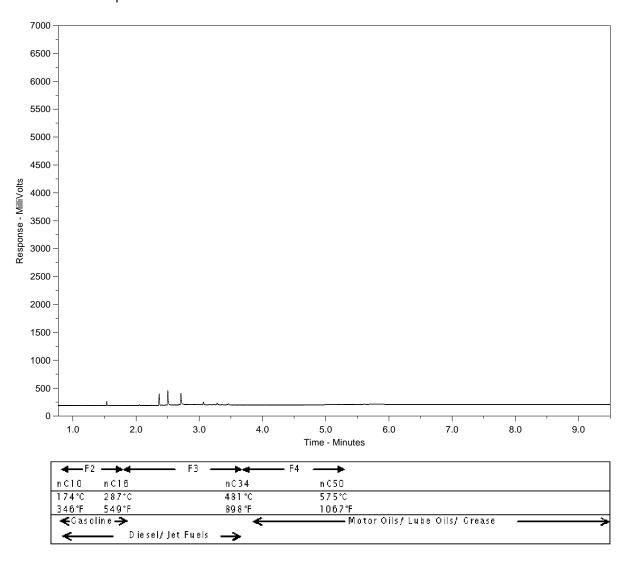
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477642-2 Client Sample ID: RW-05



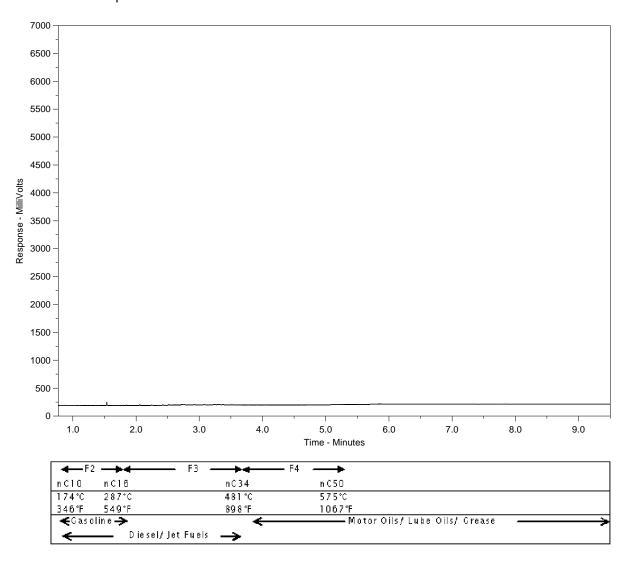
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477642-3 Client Sample ID: RW-08



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

ALS Environmenta



usto palytical Request Form da Toll Free: 1 800 668 9878 www.alsglobal.com

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Page \ of \

Report To			Distribu	tion		Serv	rice R	eques	ted (i	Rush	for ro	utine a	inalys	is sut	ject to	avail	ability)
Company:	Stantec - W2077	✓ Standard	Other			● Re	gular (:	Standard	d Turna	around	Times	s - Busi	ness D	Jays)				
Contact:	TASSIA STAINTON	☑ PDF	✓ Exce!	☑ Digital	☐ Fax .	OPri	iority (2	2-4 Busir	ess Da	3ys) - 5	50% S	urcharç	je - Co	intact /	ALS to (Confirm	1 TAT	
Address:	500 - 311 Portage Ave	Email 1:	tassia.stainton(@stantec.com		OE⊓	nergeno	cy (1-2 E	Bus. Da	ys) - 1	00%	Surchar	ge - C	ontact	ALS to	Confin	m TAT	
	Winnipeg, MB R3B 2B9	Email 2:	karen.mathers(@stantec.com		()Sạ	me Day	y or Wee	kend E	merge	ency -	Contac	t ALS t	to Conf	îrm TA	Ť		
Phone:	204-982-7615 Fax:	Email 3:								Ar	nalys	sis Re	ques	st				
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / P	roject Informati	on				ndicate	belov	w Filt	ered,	Pres	erved	d or b	oth (F	, P, F	/P)	
Hardcopy of	Invoice with Report?	Job #:			<u></u>		(P/P)	(P) (P]	F/P	Р	Р	P	Р		Р	ĺ
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Company of the compan	Work Order.# buse only)	ALS Contact:		Sampler: β	3,7W	1	- J	-F4-Wi	31	HARDNESS-CALC-WP	CCMS	CCMS	OL-WP	L-WP	P-TPART-CALC-WP	TDS	TC,EC-QT97-WP	r of Cor
Sample			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	-77-	30	BTX.F1		HARDI	MET-D-CCMS-WP	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	P-TPAF	TSS +	TC,EC	Number of Containers
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ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-11

Date Collected: 21-JUL-20 Lab Sample ID: L2477629-1

Sampled By:

Matrix: W

PAGE 1 of 7

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F	·4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total F	lydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 104.0		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
·	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	86.3		%			24-JUL-20
ROU4W DISSON	/ed - Low Range	400					04 1111 00
	Bicarbonate (HCO3)	489		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН	-11	8.23					22-JUL-20
Tumbialitus	pН	6.23		pH units			22-JUL-20
Turbidity	*Turbidity	0.66		NTU			23-JUL-20
TDS calculate	ed						
	TDS (Calculated)	441		mg/L		500	27-JUL-20
Sulfate in Wa							
	Sulfate (SO4)	6.67		mg/L		500	22-JUL-20
Nitrite in Wate	er by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wat	rer by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance C							
Hardness Cal							
Haraness Cal	Hardness (as CaCO3)	0.43		mg/L		500	27-JUL-20





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-11
Sampled By:

Date Collected: 21-JUL-20 Lab Sample ID: L2477629-1

Matrix: W

PAGE 2 of 7

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.413		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS			9 =	1.0		
Dissolved Metals III Water by Citc for M3	FIELD					23-JUL-20
Filtration Location	TILLED					25 301 20
Calcium (Ca)-Dissolved	0.132		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	0.0241		mg/L			24-JUL-20
Dissolved Manganese (Mn)- Dissolved	<0.00010		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	0.465		mg/L			23-JUL-20
Sodium (Na)-Dissolved	185		mg/L		200	23-JUL-20
Conductivity						
Conductivity	723		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)			a			
Chloride III Water by IC (Low Lever) Chloride (CI)	7.82		mg/L		250	22-JUL-20
,	7.02		IIIg/L		250	22 301 20
Alkalinity, Total (as CaCO3)	404		,,			00 1111 00
Alkalinity, Total (as CaCO3)	401		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli				Ç		
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
	-		WII 14/ TOOTILE	U		22 002 20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWG	guidelines on cor iter Quality	ventional treatm	ent and slow sand	N.D. = less than de for diatomaceous e	tection limit. arth filtration ple	ase see
1,110						
Approved by						
Hua Wo						
Account Manager						





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-12

Sampled By:

Date Collected: 21-JUL-20 Lab Sample ID: L2477629-2

Matrix: W

PAGE 3 of 7

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-I	- 4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total I	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 92.4		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
·	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	86.3		%			24-JUL-20
ROU4W DISSOI	ved - Low Range Bicarbonate (HCO3)	540					24-JUL-20
	, ,	<0.60		mg/L			24-JUL-20 24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH) *Nitrate and Nitrite as N	2.84		mg/L	10		24-JUL-20
	Wittate and Withte as W	2.04		mg/L	10		24-30L-20
рН	рН	7.88		pH units			22-JUL-20
Turbidity	Pr. I	1.00		pri unito			
ranbialty	*Turbidity	<0.10		NTU			23-JUL-20
TDS calculate	•						
. Do Galoulas	TDS (Calculated)	697		mg/L		500	27-JUL-20
Sulfate in Wa]	3			
Canalo III VI	Sulfate (SO4)	19.0		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level)			3			
	*Nitrite (as N)	<0.0020	DLM	mg/L	1		22-JUL-20
Nitrate in Wa	ter by IC (Low Level) *Nitrate (as N)	2.84		mg/L	10		22-JUL-20
Ion Balance (2.07		illg/L	10		22 001 20
Hardness Ca	Hardness (as CaCO3)	532		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9 ATTN: Tassia Stainton Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-12
Sampled By:

Date Collected: 21-JUL-20 Lab Sample ID: L2477629-2

Matrix: W

PAGE 4 of 7

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.092		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	84.6		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	78.0		_		0.3	23-JUL-20
Dissolved	70.0		mg/L			23-30L-20
Manganese (Mn)- Dissolved	0.00018		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	1.84		mg/L			23-JUL-20
Sodium (Na)-Dissolved	64.7		mg/L		200	23-JUL-20
Conductivity						
Conductivity	1230		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	171		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	443		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	3		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWC	guidelines on cor ater Quality	ventional treatm	ent and slow sand	N.D. = less than de or diatomaceous e	tection limit. arth filtration ple:	ase see
Approved by Hua Wo Account Manager						





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-13

Sampled By:

Date Collected: 21-JUL-20 Lab Sample ID: L2477629-3

Matrix: W

PAGE 5 of 7

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F	- 4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total I	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 95.9		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	85.9		%			24-JUL-20
ROU4W Dissol	ved - Low Range						
	Bicarbonate (HCO3)	475		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	0.289		mg/L	10		24-JUL-20
pН							
	рН	7.94		pH units			22-JUL-20
Turbidity							
	*Turbidity	0.31		NTU			23-JUL-20
TDS calculate	ed						
	TDS (Calculated)	363		mg/L		500	27-JUL-20
Sulfate in Wa	ter by IC						
	Sulfate (SO4)	3.07		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level) *Nitrite (as N)	0.0040		mg/L	1		22-JUL-20
Nitrate in Wa	ter by IC (Low Level)						
	*Nitrate (as N)	0.285		mg/L	10		22-JUL-20
Ion Balance (j			
Hardness Ca							
riai arioss da	Hardness (as CaCO3)	365		mg/L		500	27-JUL-20





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-13

Date Collected: 21-JUL-20 Lab Sample ID: L2477629-3

Sampled By:

Matrix: W

PAGE 6 of 7

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.312		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location	00.0					00 1111 00
Calcium (Ca)-Dissolved	60.9		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010 51.7		mg/L		0.3	23-JUL-20 23-JUL-20
Magnesium (Mg)- Dissolved	51.7		mg/L			23-JUL-20
Manganese (Mn)- Dissolved	0.0117		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	2.07		mg/L			23-JUL-20
Sodium (Na)-Dissolved	4.54		mg/L		200	23-JUL-20
Conductivity						
Conductivity	660		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	5.60		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	390		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
* CDWQG = Health Canada Guideline Limits updated * CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit. - A shaded value in the Results column exceeds CDWC	guidelines on con iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						



Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier Description

DLM

Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Health Canada MAC Health Related Criteria Limits

Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants. Nitrate/Nitrite-N*

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride³ Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening. E. Coli

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Quality control parameter ratioing cations to anions Balance See Alkalinity. Report as the anion HCO3-1 Bicarbonate See Alkalinity. Reported at the anion CO3-2 Carbonate

Calcium See Hardness. Common major cation of water chemistry.

Common major anion of water chemistry. Chloride

Physical test measuring water salinity (dissolved ions or solids) Conductance

Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in Hardness water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are

considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

See alkalinity Hydroxide

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action. Hα

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for Sodium

sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action. Sulphate

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic Criteria is 500 cfu/mL Measure of heterotrophic bacteria present. Plate Count

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477629 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

Test	Matrix	Reference	Result Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water						
Batch R516629	8						
WG3369055-19 LCS							
Alkalinity, Total (as Ca			104.0	%		85-115	22-JUL-20
WG3369055-24 LCS Alkalinity, Total (as Ca			105.5	%		85-115	22-JUL-20
WG3369055-16 MB				_			
Alkalinity, Total (as Ca	aCO3)		<1.0	mg/L		1	22-JUL-20
WG3369055-21 MB	·CO3\		4.0	a /I		4	00 1111 00
Alkalinity, Total (as Ca	aCO3)		<1.0	mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	Water						
Batch R516664							
WG3368156-2 LCS Benzene			116.2	%		70.400	00 1111 00
Toluene			98.2	%		70-130	23-JUL-20
Ethyl benzene			98.4	%		70-130	23-JUL-20
•						70-130	23-JUL-20
o-Xylene			113.0 111.4	%		70-130	23-JUL-20
m+p-Xylenes			111.4	%		70-130	23-JUL-20
WG3368156-3 LCS F1 (C6-C10)			98.7	%		70-130	23-JUL-20
WG3368156-1 MB							
Benzene			<0.00050	mg/L		0.0005	23-JUL-20
Toluene			<0.0010	mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050	mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050	mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040	mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10	mg/L		0.1	23-JUL-20
Surrogate: 4-Bromoflu	iorobenzene (SS)		85.2	%		70-130	23-JUL-20
CL-L-IC-N-WP	Water						
Batch R516670	3						
WG3367901-6 LCS							
Chloride (CI)			102.6	%		90-110	22-JUL-20
WG3367901-5 MB Chloride (CI)			<0.10	mg/L		0.1	22-JUL-20
EC-WP	Water						
Batch R516629	8						
WG3369055-18 LCS Conductivity			97.8	%		90-110	22-JUL-20
WG3369055-23 LCS							



Manganese (Mn)-Dissolved

Quality Control Report

Page 2 of 6

23-JUL-20

80-120

Workorder: L2477629 Report Date: 27-JUL-20

Test Matrix Reference Result Qualifier Units **RPD** Limit Analyzed EC-WP Water **Batch** R5166298 WG3369055-23 LCS 98.0 Conductivity % 90-110 22-JUL-20 WG3369055-16 MB Conductivity <1.0 umhos/cm 22-JUL-20 WG3369055-21 MB Conductivity <1.0 umhos/cm 1 22-JUL-20 F-IC-N-WP Water R5166703 **Batch** WG3367901-6 LCS Fluoride (F) 102.0 % 90-110 22-JUL-20 WG3367901-5 MB Fluoride (F) < 0.020 mg/L 0.02 22-JUL-20 F2-F4-FID-WP Water **Batch** R5167079 WG3369781-2 LCS 99.4 F2 (C10-C16) % 70-130 24-JUL-20 F3 (C16-C34) 91.9 % 70-130 24-JUL-20 F4 (C34-C50) 107.6 % 70-130 24-JUL-20 WG3369781-1 MB F2 (C10-C16) < 0.10 mg/L 0.1 24-JUL-20 F3 (C16-C34) <0.25 mg/L 0.25 24-JUL-20 F4 (C34-C50) <0.25 mg/L 0.25 24-JUL-20 Surrogate: 2-Bromobenzotrifluoride 87.8 % 60-140 24-JUL-20 Water FC-MF-WP **Batch** R5164763 WG3368074-1 MB CFU/100mL Fecal Coliforms <1 1 22-JUL-20 WG3368074-2 CFU/100mL Fecal Coliforms <1 1 22-JUL-20 MET-D-CCMS-WP Water Batch R5166699 WG3368715-2 LCS Calcium (Ca)-Dissolved 99.3 % 80-120 23-JUL-20 Iron (Fe)-Dissolved 94.4 % 80-120 23-JUL-20 Magnesium (Mg)-Dissolved 102.0 % 80-120 23-JUL-20

100.7

%



Workorder: L2477629

Report Date: 27-JUL-20

Page 3 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	Water							
Batch R5166699 WG3368715-2 LCS Potassium (K)-Dissolved	1		103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissol	ved		<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissol	ved		<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved	t		<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	Water							
Batch R5166703 WG3367901-6 LCS Nitrite (as N)			104.0		%		00.440	22 111 22
WG3367901-5 MB Nitrite (as N)			<0.0010		mg/L		90-110	22-JUL-20 22-JUL-20
NO3-L-IC-N-WP	Water							
Batch R5166703								
WG3367901-6 LCS Nitrate (as N)			101.6		%		90-110	22-JUL-20
WG3367901-5 MB Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	Water							
Batch R5166298 WG3369055-17 LCS								
рН			7.34		pH units		7.3-7.5	22-JUL-20
WG3369055-22 LCS pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	Water							
Batch R5166703 WG3367901-6 LCS Sulfate (SO4)			104.2		%		90-110	22-JUL-20
WG3367901-5 MB Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	Water							



Workorder: L2477629 Report Date: 27-JUL-20

Page 4 of 6

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP		Water							
Batch R5	165685								
WG3367867-3	DUP		L2477629-1						
Total Coliforms			0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Co	li		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12	MB								
Total Coliforms				0		MPN/100mL		1	22-JUL-20
Escherichia Co	li			0		MPN/100mL		1	22-JUL-20
WG3367867-13	MB								
Total Coliforms				0		MPN/100mL		1	22-JUL-20
Escherichia Co	li			0		MPN/100mL		1	22-JUL-20
WG3367867-14	MB								
Total Coliforms				0		MPN/100mL		1	22-JUL-20
Escherichia Co	li			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP		Water							
Batch R5	166411								
WG3369614-2	LCS								
Turbidity				95.0		%		85-115	23-JUL-20
WG3369614-1	MB								
Turbidity				<0.10		NTU		0.1	23-JUL-20

Report Date: 27-JUL-20 Workorder: L2477629 Page 5 of 6

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

Not Available N/A

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2477629 Report Date: 27-JUL-20 Page 6 of 6

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	21-JUL-20 10:12	22-JUL-20 12:00	0.25	26	hours	EHTR-FM
	2	21-JUL-20 10:56	22-JUL-20 12:00	0.25	25	hours	EHTR-FM
	3	21-JUL-20 10:35	22-JUL-20 12:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477629 were received on 22-JUL-20 08:00.

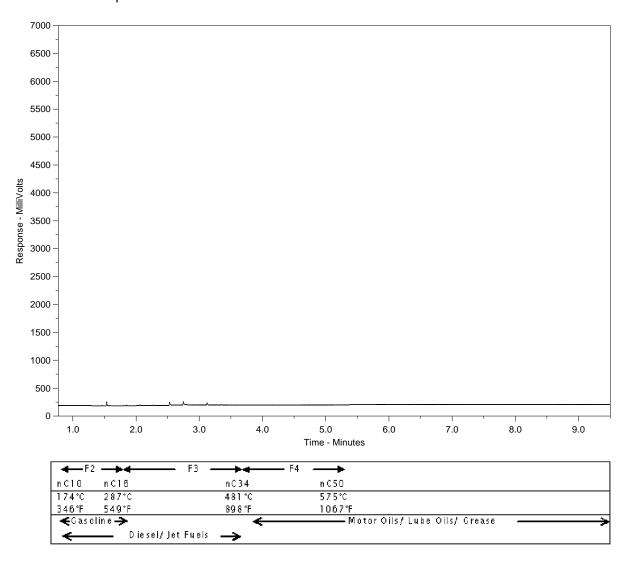
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



ALS Sample ID: L2477629-1 Client Sample ID: RW-11



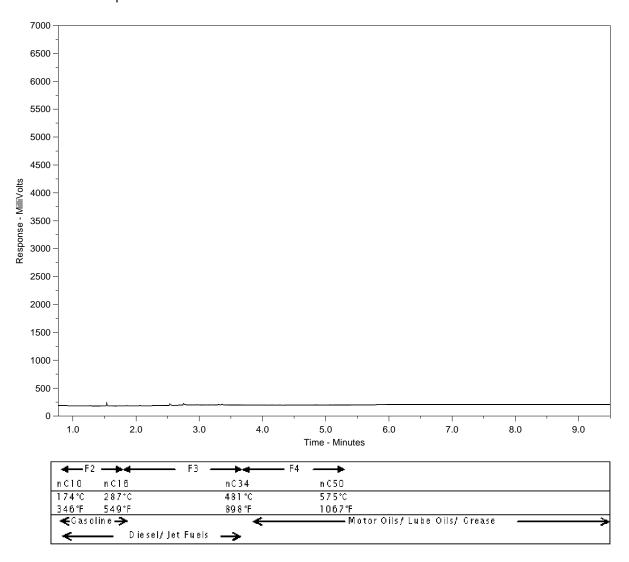
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477629-2 Client Sample ID: RW-12



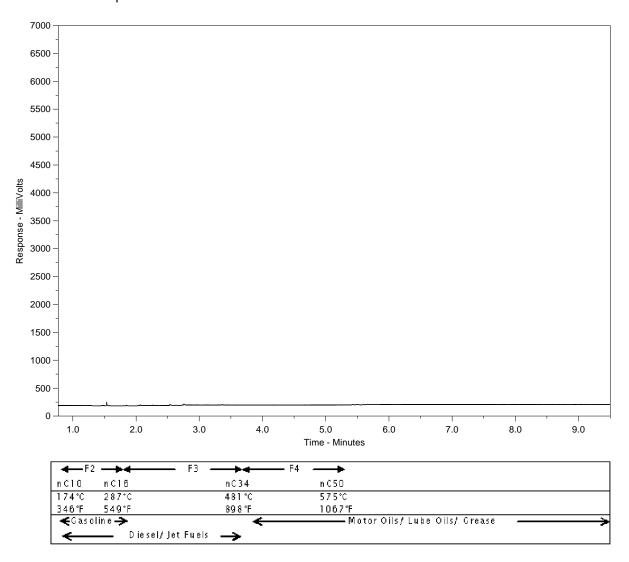
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477629-3 Client Sample ID: RW-13



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477629-GOFC

coc Number: 17 - 749269

age of

JUNE 2016 FROM

www.alsglobal.com Contact and company name below will appear on the final report Report Format / Distribution Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply) Report To PDF X EXCEL X EDD (DIGITAL) Select Report Format: Regular (R) Standard TAT if received by 3 pm - business days - no surcharges apply Company Cassia Stainter Quality Control (QC) Report with Report YES NO 4 day [P4-20%] Contact: Business day [E - 100%] Compare Results to Criteria on Report - provide details below if box checked 3 day [P3-25%] Phone: Same Day, Weekend or Statutory holiday [E2 -200% Company address below will appear on the final report EMAIL | MAIL FAX Select Distribution: 2 day [P2-50%] (Laboratory opening fees may apply)] 500-311 Partage Ave Email 1 or Fax tassia, stainten a starte com · Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm Street: City/Province: or tests that can not be performed according to the service level selected, you will be contacted Postal Code: Email 3 **Analysis Request** Invoice To Same as Report To YES [] NO Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below ON HOLD CONTAINERS Copy of Invoice with Report YES T NO Select Invoice Distribution: EMAIL MAIL FAX þ F10 6 Email 1 or Fax Company: Contact: Email 2 **Project Information** Oil and Gas Required Fields (client use) ٠. ALS Account # / Quote #: 190401 AFE/Cost Center: PO# A 72 Major/Minor Code: Routing Code: SAMPLES P 467 12 91 E PO / AFE: Requisitioner: 778 ,ne LSD: Location: ot : NUMBER Sampler: BE, ZW 43 +1 ALS Lab Work Order # (lab use only): 711 v Jot ALS Contact: 4:11 rates in י מיני לופן Sample Identification and/or Coordinates Date Time ALS Sample # Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) gy-vs-gv 1013 سا 91.03.30 1026 NSZ SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples1 (client use) (electronic COC only) rozen SIF Observations No Are samples taken from a Regulated DW System? П lce Packs 🔲 No YES NO Cooling Initiated Are samples for human consumption/ use? NITIAL COOLER TEMPERATURES *Q FINAL COOLER TEMPERATURES °C. YES NO INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only) SHIPMENT RELEASE (client use) Received by: Time: Received by: Time: II:42

WHITE - LABORATORY COPY



ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477639
Project Ref: 111475107
Sample ID: RW-20

Date Collected: 21-JUL-20 Lab Sample ID: L2477639-1

Sampled By:

Matrix: W

PAGE 1 of 5

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-l	F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total I	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 96.0		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS) ved - Low Range	86.9		%			24-JUL-20
KOU4W DISSUI	Bicarbonate (HCO3)	383		a/I			24-JUL-20
	Carbonate (CO3)	6.00		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L mg/L	10		24-JUL-20
nU	William and William as W	V0.0001		mg/L	10		24 002 20
рН	рН	8.34		pH units			22-JUL-20
Turbidity	pii	0.01		priums			22 002 20
ranbianty	*Turbidity	9.75		NTU			23-JUL-20
TDS calculate	•						
	TDS (Calculated)	451		mg/L		500	27-JUL-20
Sulfate in Wa				Ü			
	Sulfate (SO4)	108		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level)			Ü			
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wa	ter by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance		10.0000		mg/L	10		
Hardness Ca	Hardness (as CaCO3)	322		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9 ATTN: Tassia Stainton Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477639
Project Ref: 111475107
Sample ID: RW-20
Sampled By:

Date Collected: 21-JUL-20 Lab Sample ID: L2477639-1

Matrix: W

PAGE 2 of 5

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.969		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	60.7		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.752		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	41.5		mg/L		0.0	23-JUL-20
Dissolved Manganese (Mn)- Dissolved	0.0158		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	8.75		mg/L			23-JUL-20
Sodium (Na)-Dissolved	31.5		mg/L		200	23-JUL-20
Conductivity						
Conductivity	732		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	5.49		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	324		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWG	guidelines on cor iter Quality	ventional treatm	ent and slow sand	N.D. = less than de for diatomaceous e	tection limit. arth filtration ple	ase see
Approved by Hua Wo Account Manager						





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477639
Project Ref: 111475107
Sample ID: RW-21

Date Collected: 21-JUL-20 Lab Sample ID: L2477639-2

Sampled By:

Matrix: W

PAGE 3 of 5

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1	-F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC	F2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 96.5		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F	1 by GCMS						
,	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	86.5		% %			24-JUL-20
ROU4W Disso	olved - Low Range						
	Bicarbonate (HCO3)	402		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН							
	рН	8.28		pH units			22-JUL-20
Turbidity							
	*Turbidity	7.51		NTU			23-JUL-20
TDS calcula	ted						
	TDS (Calculated)	440		mg/L		500	27-JUL-20
Sulfate in W	ater by IC						
	Sulfate (SO4)	93.8		mg/L		500	22-JUL-20
Nitrite in Wa	ater by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in W	ater by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance				. 			
Hardness C							
riai diless G	Hardness (as CaCO3)	350		mg/L		500	27-JUL-20





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477639
Project Ref: 111475107
Sample ID: RW-21

Date Collected: 21-JUL-20 **Lab Sample ID:** L2477639-2

Sampled By:

Matrix: W

PAGE 4 of 5

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed	
ROU4W Dissolved - Low Range							
Fluoride in Water by IC							
Fluoride (F)	1.17		mg/L	1.5		22-JUL-20	
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals	FIELD					23-JUL-20	
Filtration Location	65.2					23-JUL-20	
Calcium (Ca)-Dissolved Iron (Fe)-Dissolved	0.686		mg/L mg/L		0.3	23-JUL-20	
Magnesium (Mg)-	45.6		mg/L		0.3	23-JUL-20	
Dissolved	.0.0		IIIg/L				
Manganese (Mn)-	0.0202		mg/L	0.12	0.02	23-JUL-20	
Dissolved Potassium (K)-Dissolved	8.59		mg/L			23-JUL-20	
Sodium (Na)-Dissolved	24.8		mg/L		200	23-JUL-20	
Conductivity							
Conductivity	712		umhos/cm			22-JUL-20	
Chloride in Water by IC (Low Level)							
Chloride (CI)	4.62		mg/L		250	22-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	329		mg/L			22-JUL-20	
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20	
Total Coliform and E.coli							
Total Coliforms	0		MPN/100mL	0		22-JUL-20	
Escherichia Coli	0		MPN/100mL	0		22-JUL-20	
CDWQG = Health Canada Guideline Limits updated	JUNE 2019						
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit. * Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality - A blank entry designates no known limit. - A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.							
Approved by Hua Wo Account Manager							



Guidelines & Objectives

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N* Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions
Bicarbonate See Alkalinity. Report as the anion HCO3-1
Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Chloride Common major anion of water chemistry.

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in

water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Sodium Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for

sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Sulphate Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air. Heterotrophic

Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

рΗ

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477639 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

est	Matrix	Reference	Result Qualifier	Units RP	D Limit	Analyzed
ALK-TITR-WP	Water					
Batch R51 WG3369055-24 Alkalinity, Total (105.5	%	85-115	22-JUL-20
WG3369055-21 Alkalinity, Total (<1.0	mg/L	1	22-JUL-20
BTEXS+F1-HSMS-V	VP Water					
Batch R51	166645					
WG3368156-8 Benzene	LCS		75.0	%	70-130	23-JUL-20
Toluene			77.1	%	70-130	23-JUL-20
Ethyl benzene			77.4	%	70-130	23-JUL-20
o-Xylene			92.1	%	70-130	23-JUL-20 23-JUL-20
m+p-Xylenes			88.7	%	70-130	23-JUL-20 23-JUL-20
WG3368156-9	LCS		00.7	70	70-130	23-JUL-20
F1 (C6-C10)	LCS		99.1	%	70-130	23-JUL-20
WG3368156-7 Benzene	МВ		<0.00050	mg/L	0.0005	23-JUL-20
Toluene			<0.0010	mg/L	0.001	23-JUL-20
Ethyl benzene			<0.00050	mg/L	0.0005	23-JUL-20
o-Xylene			<0.00050	mg/L	0.0005	23-JUL-20
m+p-Xylenes			<0.00040	mg/L	0.0004	23-JUL-20
F1 (C6-C10)			<0.10	mg/L	0.1	23-JUL-20
Surrogate: 4-Bro	mofluorobenzene (S	S)	86.3	%	70-130	23-JUL-20
WG3368156-12 F1 (C6-C10)		L2477639-1	93.4	%	50-150	23-JUL-20
CL-L-IC-N-WP	Water					
Batch R51	166703					
WG3367901-10	LCS					
Chloride (CI)			100.1	%	90-110	22-JUL-20
WG3367901-9 Chloride (CI)	МВ		<0.10	mg/L	0.1	22-JUL-20
EC-WP	Water					
Batch R51	166298					
WG3369055-23 Conductivity	LCS		98.0	%	90-110	22-JUL-20
WG3369055-21 Conductivity	МВ		<1.0	umhos/cm	1	22-JUL-20



Workorder: L2477639 Report Date: 27-JUL-20 Page 2 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS Fluoride (F)	3		101.4		%		90-110	22-JUL-20
WG3367901-9 MB Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	Water							
Batch R5167079 WG3369781-2 LCS F2 (C10-C16)	9		99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20 24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobe	nzotrifluoride		87.8		%		60-140	24-JUL-20
FC-MF-WP	Water							
Batch R516476 WG3368074-1 MB Fecal Coliforms	3		<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	Water							
Batch R5166699	9							
WG3368715-2 LCS Calcium (Ca)-Dissolve	ed		99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Diss	olved		102.0		%		80-120	23-JUL-20
Manganese (Mn)-Diss	olved		100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolv	ed		103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved	d		99.0		%		80-120	23-JUL-20
WG3368715-1 MB Calcium (Ca)-Dissolve	ed		<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Diss	olved		<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Diss			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolv	ed		<0.050		mg/L		0.05	23-JUL-20



Workorder: L2477639 Report Date: 27-JUL-20

Page 3 of 6

Test Limit Matrix Reference Result Qualifier Units **RPD** Analyzed MET-D-CCMS-WP Water **Batch** WG3368715-1 MB Sodium (Na)-Dissolved < 0.050 mg/L 0.05 23-JUL-20 NO2-L-IC-N-WP Water **Batch** R5166703 WG3367901-10 LCS Nitrite (as N) 101.6 % 22-JUL-20 90-110 WG3367901-9 MB Nitrite (as N) < 0.0010 mg/L 0.001 22-JUL-20 NO3-L-IC-N-WP Water R5166703 Batch WG3367901-10 LCS Nitrate (as N) 103.0 % 90-110 22-JUL-20 WG3367901-9 MB Nitrate (as N) < 0.0050 mg/L 0.005 22-JUL-20 PH-WP Water Batch R5166298 WG3369055-22 LCS 7.33 pH units рΗ 7.3-7.5 22-JUL-20 SO4-IC-N-WP Water R5166703 **Batch** WG3367901-10 LCS Sulfate (SO4) 102.5 % 90-110 22-JUL-20 WG3367901-9 Sulfate (SO4) < 0.30 mg/L 0.3 22-JUL-20 TC,EC-QT51-WP Water R5165685 Batch WG3367867-10 DUP L2477639-1 **Total Coliforms** 0 MPN/100mL 0.0 65 22-JUL-20 0 Escherichia Coli 0 MPN/100mL 0.0 65 22-JUL-20 WG3367867-12 MB **Total Coliforms** MPN/100mL 0 1 22-JUL-20 Escherichia Coli 0 MPN/100mL 22-JUL-20 WG3367867-13 MB MPN/100mL **Total Coliforms** 0 1 22-JUL-20 Escherichia Coli 0 MPN/100mL 1 22-JUL-20



Workorder: L2477639

Report Date: 27-JUL-20

Page 4 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	Water							
Batch R5165685 WG3367867-14 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							
Batch R5166411 WG3369614-5 LCS Turbidity			96.5		%		85-115	23-JUL-20
WG3369614-4 MB Turbidity			<0.10		NTU		0.1	23-JUL-20

Report Date: 27-JUL-20 Workorder: L2477639 Page 5 of 6

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

Not Available N/A

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM CRM Certified Reference Material Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2477639 Report Date: 27-JUL-20 Page 6 of 6

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	21-JUL-20 12:23	22-JUL-20 12:00	0.25	24	hours	EHTR-FM
	2	21-JUL-20 12:11	22-JUL-20 12:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477639 were received on 22-JUL-20 08:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

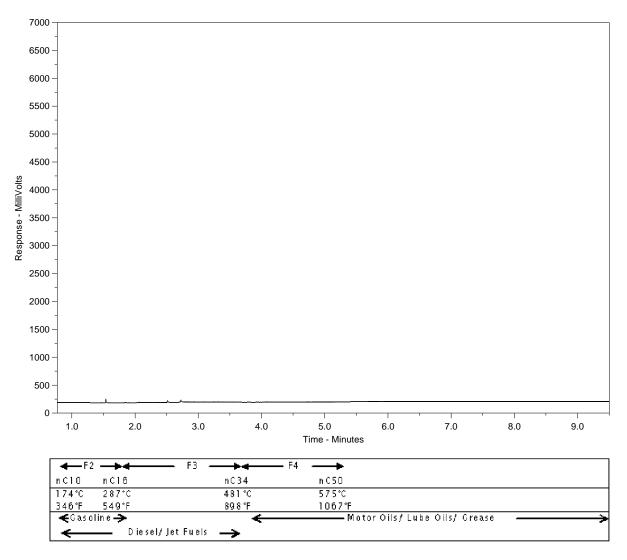
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477639-1 Client Sample ID: RW-20



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

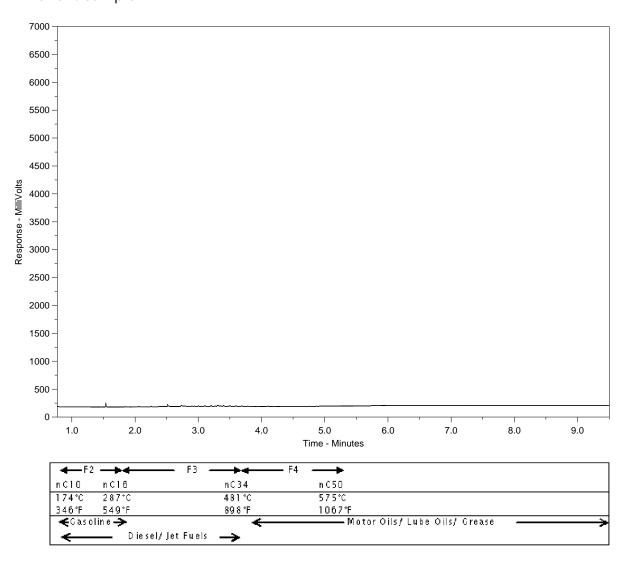
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477639-2 Client Sample ID: RW-21



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS) Environmental



y alytical Request Form II Free: 1 800 668 9878 v.alsglobal.com

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Page _____of ____

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	Winnipeg, MB R3B 2B9		Email 2:	karen.mathers	@stantec.com		◯Same Da	y or W	eekend	Emerg	ency -	Contact	ALS to	o Confir	rm TAT		
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Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477634
Project Ref: 111475107
Sample ID: RW-24

Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477634-1

Matrix: W

PAGE 1 of 4

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4	ļ						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hy	/drocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F2-	-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 92.7		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1 b	y GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	84.5		%			24-JUL-20
ROU4W Dissolve	=	077		,,			04 1111 00
	Bicarbonate (HCO3)	277		mg/L			24-JUL-20
	Carbonate (CO3)	6.12 <0.34		mg/L			24-JUL-20
	Hydroxide (OH) *Nitrate and Nitrite as N	<0.04		mg/L	40		24-JUL-20 24-JUL-20
11	Nitiate and Nitite as in	20.0031		mg/L	10		24-30L-20
рН	рH	8.37		pH units			22-JUL-20
Turbidity	F			pri unito			
. u. z.u.ty	*Turbidity	10.5		NTU			23-JUL-20
TDS calculated	•						
. 20 00.00	TDS (Calculated)	451		mg/L		500	27-JUL-20
Sulfate in Wate				J			
	Sulfate (SO4)	153		mg/L		500	22-JUL-20
Nitrite in Water	r by IC (Low Level)			J			
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wate	r by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Ca	, ,	10.000		iiig/L			== 332 20
Hardness Calc							
naruness Calc	Hardness (as CaCO3)	281		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20 PO No.: 111475107 WO No.: L2477634 Project Ref: 111475107 Sample ID: RW-24

Date Collected: 20-JUL-20 Lab Sample ID: L2477634-1

Sampled By:

Matrix: W

PAGE 2 of 4

Test Description	Result	Qualifier	Units of	CDWQG	Aesthetic	Date
rest Description	Result	Qualifier	Measure	MAC	Objective	Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.877		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	56.8		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.165		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	33.9		mg/L		0.0	23-JUL-20
Dissolved						
Manganese (Mn)- Dissolved	0.0155		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	8.48		mg/L			23-JUL-20
Sodium (Na)-Dissolved	43.1		mg/L		200	23-JUL-20
Conductivity						
Conductivity	696		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	13.7		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	237		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit. - A shaded value in the Results column exceeds CDWQ	guidelines on con iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						



L2477634 CONTD.... PAGE 3 of 4

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description		
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may	nav	

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants. Nitrate/Nitrite-N*

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions See Alkalinity. Report as the anion HCO3-1 Bicarbonate Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Common major anion of water chemistry. Chloride

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are

considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action. рН

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for Sodium

> sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action. Sulphate

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477634 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

State	est I	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
### WG3369055-24 LCS Alkalinily, Total (as CaCO3) 1055 % % 85-115 22-JUL-20 ### WG336905-24 MB Alkalinily, Total (as CaCO3) < 1.0 mg/L 1 22-JUL-20 ### WG336905-24 MB Alkalinily, Total (as CaCO3) < 1.0 mg/L 1 22-JUL-20 ### WG336905-24 MB Alkalinily, Total (as CaCO3) < 1.0 mg/L 1 22-JUL-20 ### WG336915-2 LCS ### Batch	ALK-TITR-WP	Water							
Alkalinity, Total (as CaCO3) 105.5 % 96.115 22.JUL.20 WG3369055-21 MB Alkalinity, Total (as CaCO3) 4.10 mg/L 1 22.JUL.20 Alkalinity, Total (as CaCO3) mg/L 1 22.JUL.20	Batch R5166298								
Misalinity, Total (as CaCos) value valu		•							
Alkalinity, Total (as CaCO3)		3)		105.5		%		85-115	22-JUL-20
### STEXS+F1-HSMS-WP Water	3)		-1.0		ma/l		4	00 1111 00	
Batch				<1.0		mg/L		ı	22-JUL-20
MG3368156-2 LCS		Water							
Benzene									
Toluene 98.2 % 70-130 23-JUL-20 Ethyl benzene 98.4 % 70-130 23-JUL-20 o-Xylene 113.0 % 70-130 23-JUL-20 m+p-Xylenes 111.4 % 70-130 23-JUL-20 WG3368156-3 LCS F1 (C6-C10) 98.7 % 70-130 23-JUL-20 WG3368156-1 MB Benzene				116.2		%		70-130	2311.11 -20
Ethyl benzene 98.4 % 70-130 23-JUL-20 o-Xylene 113.0 % 70-130 23-JUL-20 m+p-Xylenes 111.4 % 70-130 23-JUL-20 WG3368156-3 LCS F1 (C6-C10) 98.7 % 70-130 23-JUL-20 WG3368156-1 MB Benzene									
0-Xylene									
March Marc	•								
MG3368156-3 LCS	-								
F1 (C6-C10) 98.7 % 70-130 23-JUL-20 WG3368156-1 MB Benzene <0.00050 mg/L 0.0005 23-JUL-20 C10uene <0.00010 mg/L 0.0005 23-JUL-20 C10uene <0.00050 mg/L 0.0004 23-JUL-20 C10uene							70 100	20 002 20	
Benzene				98.7		%		70-130	23-JUL-20
Toluene	WG3368156-1 MB								
Ethyl benzene	Benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene	Toluene			<0.0010		mg/L		0.001	23-JUL-20
m+p-Xylenes < 0.00040 mg/L 0.0004 23-JUL-20 F1 (C6-C10)	Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
F1 (C6-C10)	o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS) 85.2 % 70-130 23-JUL-20 CL-L-IC-N-WP Water Batch R5166703 WG3367901-10 LCS Chloride (Cl) 100.1 % 90-110 22-JUL-20 WG3367901-9 MB Chloride (Cl) < 0.10 mg/L 0.1 22-JUL-20 CC-WP Water Batch R5166298 WG3369055-23 LCS Conductivity 98.0 % 90-110 22-JUL-20 WG3369055-21 MB Conductivity < 98.0 % 90-110 22-JUL-20	m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
Batch R5166703 WG3367901-10 LCS Chloride (Cl) 100.1 % 90-110 22-JUL-20 WG3367901-9 MB Chloride (Cl) 40.10 mg/L 0.1 22-JUL-20 CC-WP Water Batch R5166298 WG3369055-23 LCS Conductivity 98.0 % 90-110 22-JUL-20 WG3369055-21 MB Conductivity 41.0 wmhos/cm 1 22-JUL-20	F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Batch R5166703 WG3367901-10 LCS Chloride (CI) 100.1 % 90-110 22-JUL-20 WG3367901-9 MB Chloride (CI) < 0.10 mg/L 0.1 22-JUL-20 EC-WP Water Batch R5166298 WG3369055-23 LCS Conductivity 98.0 % 90-110 22-JUL-20 WG3369055-21 MB Conductivity < 1.0 umhos/cm 1 22-JUL-20	Surrogate: 4-Bromofluorok	benzene (SS)		85.2		%		70-130	23-JUL-20
WG3367901-10 LCS Chloride (Cl) 100.1 % 90-110 22-JUL-20 WG3367901-9 Chloride (Cl) MB mg/L 0.1 22-JUL-20 EC-WP Water Batch R5166298 R5166298 WG3369055-23 Conductivity LCS 98.0 % 90-110 22-JUL-20 WG3369055-21 MB MB Conductivity <1.0 umhos/cm 1 22-JUL-20	CL-L-IC-N-WP	Water							
Chloride (CI) 100.1 % 90-110 22-JUL-20 WG3367901-9 MB Chloride (CI) <0.10 mg/L 0.1 22-JUL-20 EC-WP Water Batch R5166298 WG3369055-23 LCS Conductivity 98.0 % 90-110 22-JUL-20 WG3369055-21 MB Conductivity <1.0 umhos/cm 1 22-JUL-20	Batch R5166703								
WG3367901-9 Chloride (CI) MB 0.1 22-JUL-20 EC-WP Water WG3369055-23 LCS 90-110 22-JUL-20 WG3369055-21 MB WB <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>									
Chloride (CI) < 0.10 mg/L 0.1 22-JUL-20	Chloride (CI)			100.1		%		90-110	22-JUL-20
EC-WP Water Batch R5166298 WG3369055-23 LCS Conductivity 98.0 % 90-110 22-JUL-20 WG3369055-21 MB Conductivity < <1.0 umhos/cm 1 22-JUL-20				.0.40		~~ ~ /l		0.4	
Batch R5166298 WG3369055-23 LCS Conductivity 98.0 % 90-110 22-JUL-20 WG3369055-21 MB Conductivity <1.0	Chionde (Ci)			<0.10		mg/∟		0.1	22-JUL-20
WG3369055-23 Conductivity LCS WG3369055-21 MB 98.0 % 90-110 22-JUL-20 Conductivity <1.0	C-WP	Water							
Conductivity 98.0 % 90-110 22-JUL-20 WG3369055-21 MB MB 1 22-JUL-20 Conductivity <1.0									
WG3369055-21 MB MB Conductivity <1.0				98 N		%		00 110	22 11 11 20
Conductivity <1.0 umhos/cm 1 22-JUL-20	•			50.0		70		90-110	22-JUL-2U
				<1.0		umhos/cm		1	22-JUL-20
		W-1						•	000



Workorder: L2477634 Report Date: 27-JUL-20 Page 2 of 6

							Analyzed
Water							
166703 LCS		101.4		%		90-110	22-JUL-20
МВ		<0.020		mg/L		0.02	22-JUL-20
Water							
167079							
LCS		99.4		%		70-130	24-JUL-20
		91.9		%			24-JUL-20
		107.6		%			24-JUL-20
МВ		~0.10		ma/l			
				•			24-JUL-20 24-JUL-20
							24-JUL-20 24-JUL-20
omobenzotrifluoride				_			24-JUL-20 24-JUL-20
		07.0		70		00-140	24-JUL-20
MB							
		<1		CFU/100mL		1	22-JUL-20
MB		<1		CFU/100mL		1	22-JUL-20
Water							
166699							
LCS ssolved		99.3		%		80-120	23-JUL-20
							23-JUL-20
							23-JUL-20
		100.7					23-JUL-20
•		103.3					23-JUL-20
ssolved							23-JUL-20
MB scalved							
							23-JUL-20
							23-JUL-20
							23-JUL-20
Dissolved Dissolved		<0.00010		mg/L		0.0001 0.05	23-JUL-20 23-JUL-20
	MB Water 167079 LCS MB mobenzotrifluoride Water 164763 MB MB Water 166699 LCS ssolved /ed)-Dissolved jobissolved ssolved ssolved wed)-Dissolved jobissolved	MB Water 167079 LCS MB MB MB Water 164763 MB MB Water 166699 LCS ssolved ved 0)-Dissolved 0)-Dissolved ssolved ssolved ssolved ssolved wd 0)-Dissolved ssolved ssolved ssolved ved 0)-Dissolved ssolved ssolved ssolved ssolved ssolved ssolved ssolved ssolved olipsolved ssolved ssolved ssolved ssolved olipsolved	LCS	MB	MB	MB	



Workorder: L2477634 Report Date: 27-JUL-20 Page 3 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	Water							
Batch R5166699 WG3368715-1 MB Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS Nitrite (as N)			101.6		%		90-110	22-JUL-20
WG3367901-9 MB Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	Water							
Batch R5166298 WG3369055-22 LCS pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	Water							
Batch R5166703								
WG3367901-10 LCS Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	Water							
Batch R5165685 WG3367867-7 DUP		L2477634-1						
Total Coliforms		0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20



Workorder: L2477634

Report Date: 27-JUL-20

Page 4 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	Water							
Batch R5165685 WG3367867-14 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							
Batch R5166411 WG3369614-2 LCS Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB Turbidity			<0.10		NTU		0.1	23-JUL-20

Report Date: 27-JUL-20 Workorder: L2477634 Page 5 of 6

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

Not Available N/A

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2477634 Report Date: 27-JUL-20

Page 6 of 6

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН	1	20-JUL-20 17:27	22-JUL-20 12:00	0.25	42	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 17:27	22-JUL-20 14:10	30	45	hours	EHTR
Total Coliform and E.coli	1	20-JUL-20 17:27	22-JUL-20 12:50	30	43	hours	EHTR
Legend & Qualifier Definition	ne:						

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477634 were received on 22-JUL-20 08:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

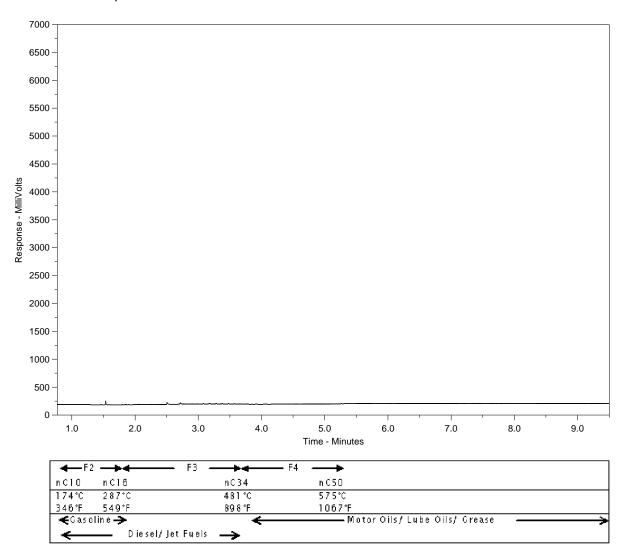
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477634-1 Client Sample ID: RW-24



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

1.2477634-COFC

coc Number: 17 - 749865

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www.alsglobal.com

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ALS Lab Wor	k Order # (lab use only):	ALS Contact: Sampler: & , ZW				(五) A		믮	1 1							A	₽	
ALS Sample #	Sample Identification and/or Coordinates	1	Date	Time		NUMBER	7		1	1 1		'					AM	EG.
(lab use only)	(This description will appear on the report)		(dd-mmm-yy)	(hh:mm)	Sample Type	2	نز کھا	10	F			-					S/	l sos
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Drinkin	g Water (DW) Samples¹ (client use) Special instructions /		add on report by click stronic COC only)	king on the drop-do	wn list below	Frozen		- 3	SAMP	LE COND	ervation		Yes	lab usi	e only)	- No		
Are samples taker	n from a Regulated DW System?	,,,,,,		-		ice Pac	_	. ∐. 1. :	uboo F	Custody			Yes	H		No No		╏
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Are samples for h	uman consumption/ use?					INITIAL COOLER TEMPERATURES °C				-	1		FINAL CC	OOLER TE	MPERATU	RES °C		
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	SHIPMENT RELEASE (client use)	<u> </u>	INITIAL SHIPMEN	T RECEPTION (la	b use only)	6 \	+-			FINAL	SHIPMEN	IT REC	EPTIC	N (lab	use on	ly)		-
Released by	Date: 1 21 2400 Time:	Received by: Date:				Re	ceived b	y:		Date						Time:		
W. C.	Date: Date:	UI 2 2 2020				حرر												

^{1.} If any water samples are taken from a Regulated Drinking Water (DW). System, please submit using an Authorized DW COC for



Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477628
Project Ref: 111475107
Sample ID: RW-26

Date Collected: 21-JUL-20 Lab Sample ID: L2477628-1

Sampled By:

Matrix: W

PAGE 1 of 3

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-I	F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total I	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 104.7		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20
Surr:	4-Bromofluorobenzene (SS) ved - Low Range	85.1		%			23-JUL-20
KOO4W DISSOI	Bicarbonate (HCO3)	391					24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L mg/L	10		24-JUL-20
рН	White and White do IV	30.0001		IIIg/L	10		24 002 20
рп	рН	7.97		pH units			22-JUL-20
Turbidity	F			pri unito			
. a. Diaity	*Turbidity	3.98		NTU			23-JUL-20
TDS calculate	•						
	TDS (Calculated)	509		mg/L		500	27-JUL-20
Sulfate in Wa	ater by IC						
	Sulfate (SO4)	146		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wa	ter by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance (13.3333		g, L			
Hardness Ca							
naturiess Ca	Hardness (as CaCO3)	353		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477628
Project Ref: 111475107
Sample ID: RW-26

Date Collected: 21-JUL-20 Lab Sample ID: L2477628-1

Sampled By:

Matrix: W

PAGE 2 of 3

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.282		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	64.1					23-JUL-20
Iron (Fe)-Dissolved	0.188		mg/L mg/L		0.3	23-JUL-20
Magnesium (Mg)-	46.8		mg/L		0.3	23-JUL-20
Dissolved						
Manganese (Mn)- Dissolved	0.0105		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	6.13		mg/L			23-JUL-20
Sodium (Na)-Dissolved	42.2		mg/L		200	23-JUL-20
Conductivity						
Conductivity	799		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	11.5		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	321		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	6		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWG	guidelines on con Iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						



Guidelines & Objectives

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N* Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions
Bicarbonate See Alkalinity. Report as the anion HCO3-1
Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Chloride Common major anion of water chemistry.

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in

water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Sodium Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for

sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Sulphate Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic
Plate Count

Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

рΗ

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477628 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
LK-TITR-WP	Water							
Batch R5166298								
WG3369055-19 LCS								
Alkalinity, Total (as CaC	O3)		104.0		%		85-115	22-JUL-20
WG3369055-16 MB Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	22-JUL-20
TEXS+F1-HSMS-WP	Water				Ü			
Batch R5166645								
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-1 MB Benzene			<0.00050)	mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050)	mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluo	robenzene (SS	5)	85.2		%		70-130	23-JUL-20
L-L-IC-N-WP	Water	•)	00.2		70		70-100	25-30L-20
Batch R5166703								
WG3367901-6 LCS								
Chloride (CI)			102.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Chloride (CI)			<0.10		mg/L		0.1	22-JUL-20
C-WP	Water							
Batch R5166298								
WG3369055-18 LCS Conductivity			97.8		%		90-110	22-JUL-20
WG3369055-16 MB Conductivity			<1.0		umhos/cm		1	22-JUL-20
•								300



Page 2 of 6

Workorder: L2477628 Report Date: 27-JUL-20

Test Matrix Reference Result Qualifier Units **RPD** Limit Analyzed F-IC-N-WP Water Batch R5166703 WG3367901-6 LCS Fluoride (F) 102.0 % 90-110 22-JUL-20 WG3367901-5 MB Fluoride (F) <0.020 mg/L 0.02 22-JUL-20 F2-F4-FID-WP Water **Batch** R5167079 WG3369781-2 LCS F2 (C10-C16) % 99.4 70-130 24-JUL-20 F3 (C16-C34) 91.9 % 24-JUL-20 70-130 F4 (C34-C50) 107.6 % 70-130 24-JUL-20 WG3369781-1 MB F2 (C10-C16) <0.10 mg/L 0.1 24-JUL-20 F3 (C16-C34) <0.25 mg/L 0.25 24-JUL-20 F4 (C34-C50) < 0.25 mg/L 0.25 24-JUL-20 Surrogate: 2-Bromobenzotrifluoride 87.8 % 60-140 24-JUL-20 FC-MF-WP Water Batch R5164763 WG3368074-1 MB Fecal Coliforms CFU/100mL <1 1 22-JUL-20 WG3368074-2 Fecal Coliforms <1 CFU/100mL 22-JUL-20 MET-D-CCMS-WP Water Batch R5166699 WG3368715-2 LCS Calcium (Ca)-Dissolved 99.3 % 80-120 23-JUL-20 Iron (Fe)-Dissolved % 94.4 80-120 23-JUL-20 Magnesium (Mg)-Dissolved 102.0 % 80-120 23-JUL-20 Manganese (Mn)-Dissolved 100.7 % 80-120 23-JUL-20 Potassium (K)-Dissolved 103.3 % 80-120 23-JUL-20 Sodium (Na)-Dissolved 99.0 % 80-120 23-JUL-20 WG3368715-1 MB Calcium (Ca)-Dissolved < 0.050 mg/L 0.05 23-JUL-20 < 0.010 Iron (Fe)-Dissolved mg/L 0.01 23-JUL-20 <0.0050 Magnesium (Mg)-Dissolved mg/L 0.005 23-JUL-20 Manganese (Mn)-Dissolved <0.00010 mg/L 0.0001 23-JUL-20 Potassium (K)-Dissolved < 0.050 mg/L 0.05 23-JUL-20



Workorder: L2477628 Report Date: 27-JUL-20 Page 3 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	Water							
Batch R5166699 WG3368715-1 MB Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	Water							
Batch R5166703 WG3367901-6 LCS Nitrite (as N)			104.0		%		90-110	22-JUL-20
WG3367901-5 MB Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	Water							
Batch R5166703 WG3367901-6 LCS Nitrate (as N)			101.6		%		90-110	22-JUL-20
WG3367901-5 MB Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	Water							
Batch R5166298 WG3369055-17 LCS pH			7.34		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	Water							
Batch R5166703 WG3367901-6 LCS								
Sulfate (SO4)			104.2		%		90-110	22-JUL-20
WG3367901-5 MB Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	Water							
Batch R5165685								
WG3367867-2 DUP Total Coliforms		L2477628-1 6	2	DUPM	MPN/100mL	100	65	22-JUL-20
Escherichia Coli		0	0	201 1	MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20



Workorder: L2477628

Report Date: 27-JUL-20

Page 4 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	Water							
Batch R5165685 WG3367867-14 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							
Batch R5166411 WG3369614-2 LCS Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB Turbidity			<0.10		NTU		0.1	23-JUL-20

Workorder: L2477628 Report Date: 27-JUL-20 Page 5 of 6

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUPM	MPN duplicate results were outside default ALS Data Quality Objective, but within 95% confidence interval for MPN reference method. Sample results are reliable.

Workorder: L2477628 Report Date: 27-JUL-20 Page 6 of 6

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	21-JUL-20 11:20	22-JUL-20 12:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477628 were received on 22-JUL-20 08:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

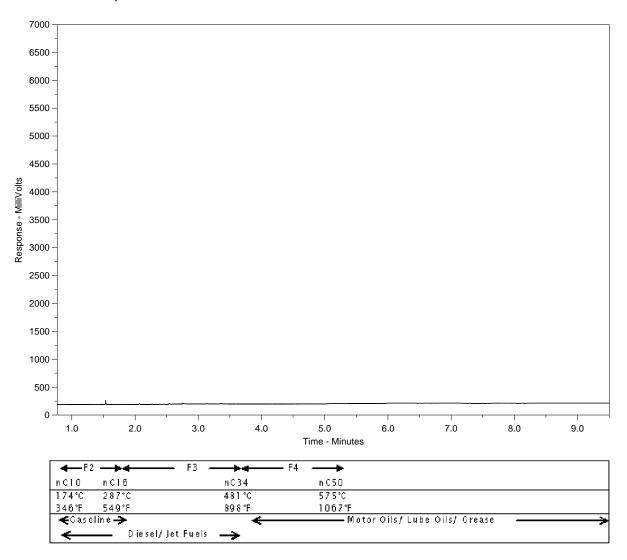
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477628-1 Client Sample ID: RW-26



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477628-COFC

COC Number: 17 - 749270

Page of

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REFER TO BACK	PAGE FOR ALS LOCATIONS AND SAMPLING INF	ORMATION		WHI	TE - LABORATORY	COPY YELLO	W - CLI	ENT COPY	,									JUNE	E 2018 FRONT



Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9 ATTN: Tassia Stainton

 Date:
 27-JUL-20

 PO No.:
 111475107

 WO No.:
 L2477636

 Project Ref:
 111475107

 Sample ID:
 RW-32

Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477636-1

Matrix: W

PAGE 1 of 8

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-	F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total	CCME Total Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC I	F2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 91.0		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	89.4		%			24-JUL-20
ROU4W Disso	Ived - Low Range						
	Bicarbonate (HCO3)	234		mg/L			24-JUL-20
	Carbonate (CO3)	4.68		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН							
	рН	8.35		pH units			22-JUL-20
Turbidity							
	*Turbidity	0.22		NTU			23-JUL-20
TDS calculat							
	TDS (Calculated)	419		mg/L		500	27-JUL-20
Sulfate in Wa	ater by IC						
	Sulfate (SO4)	142		mg/L		500	22-JUL-20
Nitrite in Wa	ter by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wa	ater by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance							
Hardness Ca							
	Hardness (as CaCO3)	227		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9 ATTN: Tassia Stainton Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-32
Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477636-1

Matrix: W

PAGE 2 of 8

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed	
ROU4W Dissolved - Low Range							
Fluoride in Water by IC							
Fluoride (F)	0.411		mg/L	1.5		22-JUL-20	
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					23-JUL-20	
Calcium (Ca)-Dissolved	37.9		mg/L			23-JUL-20	
Iron (Fe)-Dissolved	0.014		mg/L		0.3	23-JUL-20	
Magnesium (Mg)- Dissolved	32.3		mg/L			23-JUL-20	
Manganese (Mn)- Dissolved	0.00549		mg/L	0.12	0.02	23-JUL-20	
Potassium (K)-Dissolved	5.31		mg/L			23-JUL-20	
Sodium (Na)-Dissolved	55.1		mg/L		200	23-JUL-20	
Conductivity							
Conductivity	674		umhos/cm			22-JUL-20	
Chloride in Water by IC (Low Level)							
Chloride (CI)	26.9		mg/L		250	22-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	199		mg/L			22-JUL-20	
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20	
Total Coliform and E.coli							
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20	
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20	
CDWQG = Health Canada Guideline Limits updated	JUNE 2019						
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit. * Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality - A blank entry designates no known limit. - A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.							
Approved by Hua Wo Account Manager							





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-33

Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477636-2

Matrix: W

PAGE 3 of 8

Т	Fest Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4							
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydi	CCME Total Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F2-F4 in Water							
	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 94.5		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1 by	BTX plus F1 by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	86.6		%			24-JUL-20
ROU4W Dissolved	=	000					04 11 11 00
	Bicarbonate (HCO3)	269		mg/L			24-JUL-20
	Carbonate (CO3)	5.40		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН	pН	8.35		nll unita			22-JUL-20
Turbidity	μι	0.55		pH units			22-30L-20
-	*Turbidity	2.31		NTU			23-JUL-20
TDS calculated	•						
	TDS (Calculated)	434		mg/L		500	27-JUL-20
Sulfate in Water	by IC						
	Sulfate (SO4)	139		mg/L		500	22-JUL-20
Nitrite in Water b	y IC (Low Level)			_			
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
	Nitrate in Water by IC (Low Level) *Nitrate (as N)			mg/L	10		22-JUL-20
Ion Balance Calc		<0.0050		g, _			
Hardness Calculated							
	Hardness (as CaCO3)	249		mg/L		500	27-JUL-20





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-33

Date Collected: 20-JUL-20 Lab Sample ID: L2477636-2

Sampled By:

Matrix: W

PAGE 4 of 8

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.509		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	44.5					23-JUL-20
Iron (Fe)-Dissolved	0.060		mg/L mg/L		0.3	23-JUL-20
Magnesium (Mg)-	33.4		mg/L		0.3	23-JUL-20
Dissolved	00.1		IIIg/L			20 002 20
Manganese (Mn)- Dissolved	0.00552		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	6.84		mg/L			23-JUL-20
Sodium (Na)-Dissolved	50.1		mg/L		200	23-JUL-20
Conductivity						
Conductivity	696		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	22.6		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	229		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWG	guidelines on con iter Quality	ventional treatm	ent and slow sand	N.D. = less than de l or diatomaceous e	tection limit. arth filtration ple	ase see
Approved by Hua Wo Account Manager						





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-27

Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477636-3

Matrix: W

PAGE 5 of 8

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F	- 4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total I	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 90.8		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	88.0		%			24-JUL-20
ROU4W Dissol	ved - Low Range						
	Bicarbonate (HCO3)	243		mg/L			24-JUL-20
	Carbonate (CO3)	6.36		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН							
	рН	8.39		pH units			22-JUL-20
Turbidity							
	*Turbidity	2.79		NTU			23-JUL-20
TDS calculate	ed						
	TDS (Calculated)	428		mg/L		500	27-JUL-20
Sulfate in Wa	ter by IC						
	Sulfate (SO4)	142		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wa	ter by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance (Calculation						
Hardness Ca	Iculated						
	Hardness (as CaCO3)	237		mg/L		500	27-JUL-20





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-27

Date Collected: 20-JUL-20 Lab Sample ID: L2477636-3

Sampled By:

Matrix: W

PAGE 6 of 8

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.445		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	41.0		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.349		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	32.8	1	mg/L		0.5	23-JUL-20
Dissolved			g, _			
Manganese (Mn)- Dissolved	0.0108		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	6.08		mg/L			23-JUL-20
Sodium (Na)-Dissolved	56.0		mg/L		200	23-JUL-20
Conductivity						
Conductivity	686		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	24.4		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	210		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	4	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	2	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWC	 If present as N guidelines on cor ater Quality 	ventional treatm	ent and slow sand	N.D. = less than de for diatomaceous e	tection limit. arth filtration ple	ase see
Approved by Hua Wo Account Manager						



L2477636 CONTD.... PAGE 7 of 8

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description	
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may	_

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants. Nitrate/Nitrite-N*

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions See Alkalinity. Report as the anion HCO3-1 Bicarbonate Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Common major anion of water chemistry. Chloride

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are

considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action. рН

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for Sodium

> sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action. Sulphate

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477636 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

Test Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R5166298								
WG3369055-24 LCS								
Alkalinity, Total (as CaC	O3)		105.5		%		85-115	22-JUL-20
WG3369055-21 MB	. = - \							
Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	Water							
Batch R5166645								
WG3368156-10 DUP Benzene		L2477636-3 < 0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24 1111 20
Toluene		<0.0010	<0.00030				30	24-JUL-20
Ethyl benzene		<0.0010	<0.0010	RPD-NA	mg/L mg/l	N/A	30	24-JUL-20
•		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	24-JUL-20
o-Xylene		<0.00050	<0.00050	RPD-NA RPD-NA	mg/L	N/A	30	24-JUL-20
m+p-Xylenes					mg/L	N/A	30	24-JUL-20
F1 (C6-C10)		<0.10	<0.10	RPD-NA	mg/L	N/A	30	24-JUL-20
WG3368156-2 LCS Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-8 LCS								
Benzene 			75.0		%		70-130	23-JUL-20
Toluene			77.1		%		70-130	23-JUL-20
Ethyl benzene			77.4		%		70-130	23-JUL-20
o-Xylene			92.1		%		70-130	23-JUL-20
m+p-Xylenes			88.7		%		70-130	23-JUL-20
WG3368156-9 LCS F1 (C6-C10)			00.1		%		70.400	00 !!!! 00
, ,			99.1		/0		70-130	23-JUL-20
WG3368156-1 MB Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20



Workorder: L2477636

Report Date: 27-JUL-20 Page 2 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	Water							
Batch R5166645 WG3368156-1 MB Surrogate: 4-Bromofluor	obenzene (SS)		85.2		%		70-130	23-JUL-20
WG3368156-7 MB	, ,							
Benzene			< 0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluor	obenzene (SS)		86.3		%		70-130	23-JUL-20
CL-L-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS Chloride (CI)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB Chloride (CI)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	Water							
Batch R5166298								
WG3369055-23 LCS Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	Water							
Batch R5167079								
WG3369781-2 LCS F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20



Page 3 of 6

Workorder: L2477636 Report Date: 27-JUL-20

Test Matrix Reference Result Qualifier Units **RPD** Limit Analyzed F2-F4-FID-WP Water **Batch** R5167079 WG3369781-1 MB <0.25 F3 (C16-C34) mg/L 0.25 24-JUL-20 F4 (C34-C50) <0.25 mg/L 0.25 24-JUL-20 Surrogate: 2-Bromobenzotrifluoride 87.8 % 60-140 24-JUL-20 FC-MF-WP Water **Batch** R5164763 WG3368074-1 MB CFU/100mL Fecal Coliforms <1 1 22-JUL-20 WG3368074-2 CFU/100mL Fecal Coliforms <1 22-JUL-20 Water MET-D-CCMS-WP R5166699 Batch WG3368715-2 LCS Calcium (Ca)-Dissolved 99.3 % 80-120 23-JUL-20 Iron (Fe)-Dissolved 94.4 % 80-120 23-JUL-20 Magnesium (Mg)-Dissolved 102.0 % 80-120 23-JUL-20 Manganese (Mn)-Dissolved 100.7 % 80-120 23-JUL-20 Potassium (K)-Dissolved 103.3 % 80-120 23-JUL-20 Sodium (Na)-Dissolved 99.0 % 80-120 23-JUL-20 WG3368715-1 MB 23-JUL-20 Calcium (Ca)-Dissolved < 0.050 mg/L 0.05 <0.010 Iron (Fe)-Dissolved mg/L 0.01 23-JUL-20 Magnesium (Mg)-Dissolved <0.0050 mg/L 0.005 23-JUL-20 Manganese (Mn)-Dissolved < 0.00010 mg/L 0.0001 23-JUL-20 Potassium (K)-Dissolved < 0.050 mg/L 0.05 23-JUL-20 Sodium (Na)-Dissolved < 0.050 mg/L 0.05 23-JUL-20 NO2-L-IC-N-WP Water R5166703 Batch WG3367901-10 LCS Nitrite (as N) 101.6 % 90-110 22-JUL-20 WG3367901-9 MB Nitrite (as N) < 0.0010 mg/L 0.001 22-JUL-20 NO3-L-IC-N-WP Water



Workorder: L2477636 Report Date: 27-JUL-20 Page 4 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	Water							
Batch R5166298 WG3369055-22 LCS pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	Water							
Batch R5165685 WG3367867-9 DUP		L2477636-3						
Total Coliforms		4	2	DUPM	MPN/100mL	71	65	22-JUL-20
Escherichia Coli		2	0	DUPM	MPN/100mL	2	2	22-JUL-20
WG3367867-12 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							
Batch R5166411								
WG3369614-6 DUP Turbidity		L2477636-1 0.22	0.22		NTU	1.8	15	23-JUL-20
WG3369614-5 LCS Turbidity			96.5		%		85-115	23-JUL-20
WG3369614-4 MB Turbidity			<0.10		NTU		0.1	23-JUL-20

Workorder: L2477636 Report Date: 27-JUL-20 Page 5 of 6

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUPM	MPN duplicate results were outside default ALS Data Quality Objective, but within 95% confidence interval for MPN reference method. Sample results are reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Workorder: L2477636 Report Date: 27-JUL-20 Page 6 of 6

Hold Time Exceedances:

	Sample						
ALS Product Description	ID [.]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	20-JUL-20 16:18	22-JUL-20 12:00	0.25	44	hours	EHTR-FM
	2	20-JUL-20 15:50	22-JUL-20 12:00	0.25	44	hours	EHTR-FM
	3	20-JUL-20 15:05	22-JUL-20 12:00	0.25	45	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 16:18	22-JUL-20 14:10	30	46	hours	EHTR
	2	20-JUL-20 15:50	22-JUL-20 14:10	30	46	hours	EHTR
	3	20-JUL-20 15:05	22-JUL-20 14:10	30	47	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 16:18	22-JUL-20 12:50	30	45	hours	EHTR
	2	20-JUL-20 15:50	22-JUL-20 12:50	30	45	hours	EHTR
	3	20-JUL-20 15:05	22-JUL-20 12:50	30	46	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477636 were received on 22-JUL-20 08:00.

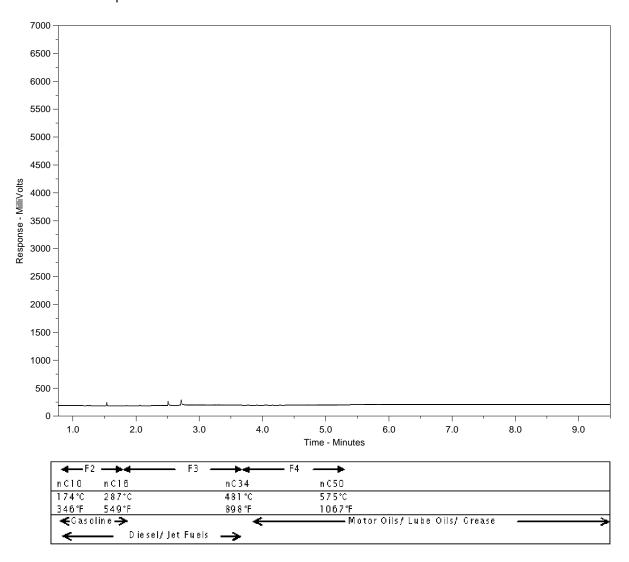
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



ALS Sample ID: L2477636-1 Client Sample ID: RW-32



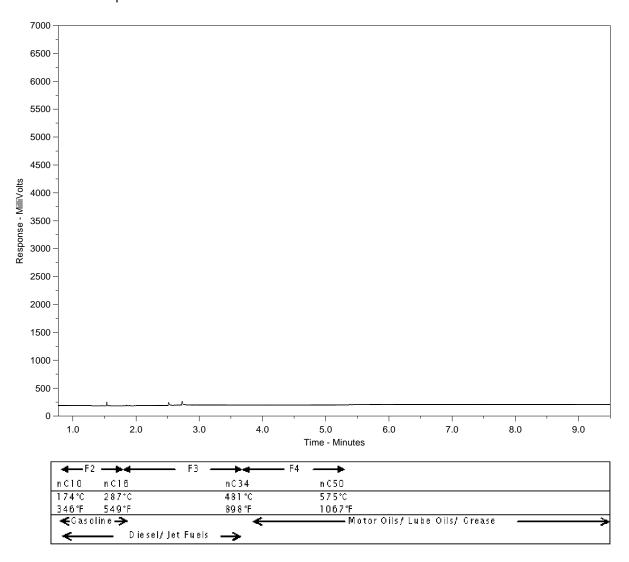
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477636-2 Client Sample ID: RW-33



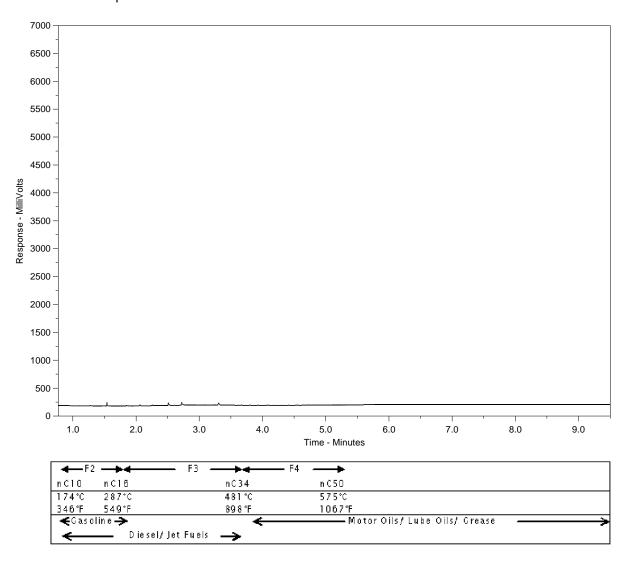
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477636-3 Client Sample ID: RW-27



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



Chain of Custody (COC) / Analytical Request Form

Canada Toli Free: 1 800 668 9878

L2477636-COFC

COC Number: 17 - 749863

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Report To	Contact and company name below will appear	or on the final report		Report Form						,	elow - Co	ntact yo	ur AM t	o confir	m all E	&P TATs	surcharg	jes may	apply)	
Company:	Stantes WAOD	S	Select Report Fo	rmat: PDF	EXCEL X E	DD (DIGITAL)		Reg	ular [R]	\ \	tandard TA1	If receive	ed by 3 p	m - busine	ess days	- no surch	arges apply	,		
Contact:	Tassia Stainton		Quality Control (C	C) Report with Repo			<u></u>	4 day	P4-20%] [HCY	1 Bi	ısiness	day [E	- 100°	%]			-	
Phone:	304-983-765		Compare Resu	lts to Criteria on Report - ¡	provide details below if	box checked	PRIORITY (Business Days)	3 day	P3-25%	ı	E C	Sam	e Day,	Weekei	nd or S	statutory	holiday	E2 -2	00%	
	Company address below will appear on the final	report S	Select Distributio	n: 🔀 EMAIL	MAIL []	FAX	(Bush	2 day	[P2-50%	1 🔲	1 2	(Lab	oratory	openi:	ng fee:	s may ap	oply)]	•		
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ALS Sample #	Sample Identification	and/or Coordinates		Date	Time	Sample Type	13		ئے کے	کے او	~				. -	_			<	l ä
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Drinkin	g Water (DW) Samples' (client use)			tronic COC only)			Froze	ıπ]	SI	Obser	vations	Y	es			No		
	n from a Regulated DW System?						ice P	acks	los	Cubes	Cu	stody se	eal intac	ct '	Yes			No	[]
☐ Y	ES NO						Cooli	ng Initia	ted []										
Are samples for t	numan consumption/ use?							ļN	IITIAL CO	OLER TEN	PERATURE	s°c_)		FI	NAL COOL	ER TEMPE	RATURE	S°C	
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	SHIPMENT RELEASE (client use)			-INITIAL SHIPMEN		b use only)	<u> </u>				Fif	IAL \$H			PTION	(lab us	e only)			
Released (3)	hard Date John al, ?	MDD CCA	Received by:	Z)	Date: 5 2 2	non 5	Ume:		Receive	d by:			Date	:				Ti	me:	
REFER TO BACK	PAGE FOR ALS LOCATIONS AND SAME ING INC	OBMATION	····	14/41	TE LADO ATABA	WOOD VELLO	W.CII	ENT CO	PV										106	2018 FRONT



Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9 ATTN: Tassia Stainton Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477637
Project Ref: 111475107
Sample ID: RW-41
Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477637-1

Matrix: W

PAGE 1 of 4

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1	-F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total	Hydrocarbons						
	F1-BTEX	<0.10		mg/L			25-JUL-20
	Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC	F2-F4 in Water						
	F2 (C10-C16)	<0.10		mg/L			24-JUL-20
	F3 (C16-C34)	<0.25		mg/L			24-JUL-20
	F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr:	2-Bromobenzotrifluoride	94.7		%			24-JUL-20
BTX plus F	1 by GCMS						
	Benzene	<0.00050		mg/L	0.005		24-JUL-20
	Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
	Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
	o-Xylene	<0.00050		mg/L			24-JUL-20
	m+p-Xylenes	<0.00040		mg/L			24-JUL-20
	F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	88.2		%			24-JUL-20
ROU4W Disso	olved - Low Range						
	Bicarbonate (HCO3)	215		mg/L			24-JUL-20
	Carbonate (CO3)	4.80		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН							
	рН	8.34		pH units			22-JUL-20
Turbidity							
	*Turbidity	0.14		NTU			23-JUL-20
TDS calcula	ted						
	TDS (Calculated)	428		mg/L		500	27-JUL-20
Sulfate in W	ater by IC						
	Sulfate (SO4)	146		mg/L		500	22-JUL-20
Nitrita in Wa	ater by IC (Low Level)			9_			
With the in wa	*Nitrite (as N)	<0.0010		ma/l	4		22-JUL-20
Alliano (- In 144	, ,	3.0010		mg/L	1		22 001 20
Nitrate in W	ater by IC (Low Level)	0.0050		4			00 1111 00
	*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance							
Hardness C							
	Hardness (as CaCO3)	217		mg/L		500	27-JUL-20





ATTN: Tassia Stainton

Date: 27-JUL-20 **PO No.:** 111475107 **WO No.:** L2477637 **Project Ref:** 111475107 Sample ID: RW-41

Date Collected: 20-JUL-20 Lab Sample ID: L2477637-1

Sampled By:

Matrix: W

PAGE 2 of 4

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.362		mg/L	1.5		22-JUL-20
()	0.302		IIIg/L	1.5		22 301 20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	LAB					23-JUL-20
Calcium (Ca)-Dissolved	37.9		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	29.7		mg/L			23-JUL-20
Dissolved	0.00007					00 1111 00
Manganese (Mn)- Dissolved	0.00287		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	5.16		mg/L			23-JUL-20
Sodium (Na)-Dissolved	64.7		mg/L		200	23-JUL-20
Conductivity						
Conductivity	683		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	33.3		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as	184					22-JUL-20
CaCO3)	104		mg/L			22-30L-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa-A blank entry designates no known limit. A shaded value in the Results column exceeds CDWQ	guidelines on con iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						



L2477637 CONTD.... PAGE 3 of 4

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description
MRHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants. Nitrate/Nitrite-N*

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions See Alkalinity. Report as the anion HCO3-1 Bicarbonate Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Common major anion of water chemistry. Chloride

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are

considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action. рН

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for Sodium

> sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action. Sulphate

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477637 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R5166298								
WG3369055-24 LCS	00)				0.4			
Alkalinity, Total (as CaC	O3)		105.5		%		85-115	22-JUL-20
WG3369055-21 MB Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	Water							
Batch R5166645								
WG3368156-8 LCS								
Benzene			75.0		%		70-130	23-JUL-20
Toluene			77.1		%		70-130	23-JUL-20
Ethyl benzene			77.4		%		70-130	23-JUL-20
o-Xylene			92.1		%		70-130	23-JUL-20
m+p-Xylenes			88.7		%		70-130	23-JUL-20
WG3368156-9 LCS F1 (C6-C10)			99.1		%		70-130	23-JUL-20
WG3368156-7 MB Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluor	obenzene (SS	S)	86.3		%		70-130	23-JUL-20
WG3368156-11 MS		L2477637-1						
Benzene			87.2		%		50-150	23-JUL-20
Toluene			91.0		%		50-150	23-JUL-20
Ethyl benzene			90.3		%		50-150	23-JUL-20
o-Xylene			105.8		%		50-150	23-JUL-20
m+p-Xylenes			99.7		%		50-150	23-JUL-20
CL-L-IC-N-WP	Water							
Batch R5166703								
WG3367901-10 LCS Chloride (CI)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB Chloride (CI)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	Water							



Workorder: L2477637

Report Date: 27-JUL-20

Page 2 of 6

Test M	latrix Referenc	e Result Qualific	er Units RPD	Limit	Analyzed
EC-WP V	Vater				
Batch R5166298 WG3369055-23 LCS Conductivity		98.0	%	90-110	22-JUL-20
WG3369055-21 MB Conductivity		<1.0	umhos/cm	1	22-JUL-20
F-IC-N-WP V	Vater				
Batch R5166703 WG3367901-10 LCS Fluoride (F)		101.4	%	90-110	22-JUL-20
WG3367901-9 MB Fluoride (F)		<0.020	mg/L	0.02	22-JUL-20
F2-F4-FID-WP V	Vater				
Batch R5167079					
WG3369781-2 LCS F2 (C10-C16)		99.4	%	70-130	24-JUL-20
F3 (C16-C34)		91.9	%	70-130	24-JUL-20
F4 (C34-C50)		107.6	%	70-130	24-JUL-20
WG3369781-1 MB F2 (C10-C16)		<0.10	mg/L	0.1	24-JUL-20
F3 (C16-C34)		<0.25	mg/L	0.25	24-JUL-20
F4 (C34-C50)		<0.25	mg/L	0.25	24-JUL-20
Surrogate: 2-Bromobenzotr	ifluoride	87.8	%	60-140	24-JUL-20
FC-MF-WP V	Vater				
Batch R5164763 WG3368074-1 MB					
Fecal Coliforms		<1	CFU/100mL	1	22-JUL-20
WG3368074-2 MB Fecal Coliforms		<1	CFU/100mL	1	22-JUL-20
MET-D-CCMS-WP V	Vater				
Batch R5166699 WG3368715-2 LCS					
Calcium (Ca)-Dissolved		99.3	%	80-120	23-JUL-20
Iron (Fe)-Dissolved		94.4	%	80-120	23-JUL-20
Magnesium (Mg)-Dissolved	I	102.0	%	80-120	23-JUL-20
Manganese (Mn)-Dissolved	i	100.7	%	80-120	23-JUL-20
Potassium (K)-Dissolved		103.3	%	80-120	23-JUL-20
Sodium (Na)-Dissolved		99.0	%	80-120	23-JUL-20
WG3368715-1					



Workorder: L2477637

Report Date: 27-JUL-20

Page 3 of 6

Гest	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	Water							
Batch R5166699 WG3368715-1 MB Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolv	ved		<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolv			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS								
Nitrite (as N) WG3367901-9 MB Nitrite (as N)			101.6 <0.0010		% ma/l		90-110	22-JUL-20
, ,	\ A /=4=#		<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	Water							
WG3367901-10 LCS Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	Water							
Batch R5166298 WG3369055-22 LCS pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	Water							
Batch R5166703 WG3367901-10 LCS			400.5		04			
Sulfate (SO4) WG3367901-9 MB Sulfate (SO4)			102.5 <0.30		% mg/L		90-110	22-JUL-20
TC,EC-QT51-WP	Water		\0.50		mg/∟		0.3	22-JUL-20
Batch R5165685 WG3367867-12 MB	774101				MDM			
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20



Workorder: L2477637

Report Date: 27-JUL-20

Page 4 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	Water							
Batch R5165685 WG3367867-13 MB Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							
Batch R5166411 WG3369614-5 LCS Turbidity			96.5		%		85-115	23-JUL-20
WG3369614-4 MB Turbidity			<0.10		NTU		0.1	23-JUL-20

Report Date: 27-JUL-20 Workorder: L2477637 Page 5 of 6

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2477637 Report Date: 27-JUL-20 Page 6 of 6

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН	1	20-JUL-20 14:29	22-JUL-20 12:00	0.25	46	hours	EHTR-FM
Bacteriological Tests		20 002 20 1 1.20	22 002 20 12:00	0.20		nouro	
Fecal Coliform							
	1	20-JUL-20 14:29	22-JUL-20 14:10	30	48	hours	EHTR
Total Coliform and E.coli	1	20-JUL-20 14:29	22-JUL-20 12:50	30	46	hours	EHTR
Lagand & Qualifier Definition							

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477637 were received on 22-JUL-20 08:00.

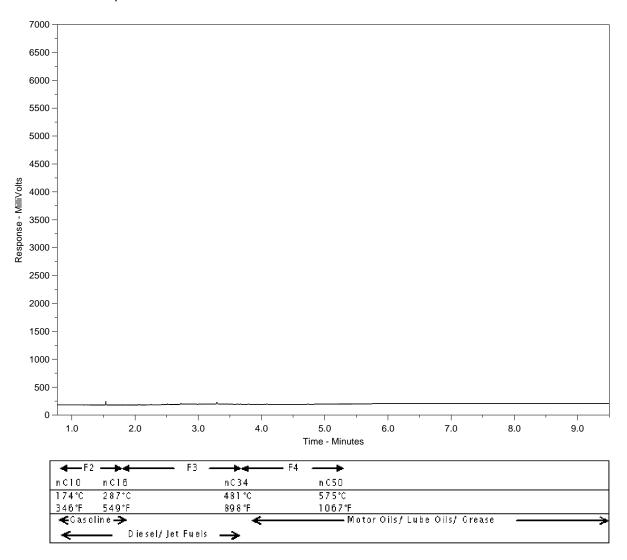
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



ALS Sample ID: L2477637-1 Client Sample ID: RW-41



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



Chain of Custody (COC) / Analytical Request Form

L2477637-COFC

COC Number: 17 - 749862

ge of

Canada Toll Free: 1 800 668 9878 www.alsglobal.com Report To Contact and company name below will appear on the final report Report Format / Distribution Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply) POF X EXCEL X EDD (DIGITAL) Company: Stantec W8077 Select Report Format: Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply Tassia Stainton 204-983-7615 YES NO ع ربي عبر [E - 100%] به يا الله 1 Business day Contact: Quality Control (QC) Report with Report 4 day [P4-20%] Phone: Compare Results to Criteria on Report - provide details below if box checked 3 day [P3-25%] Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] EMAIL | MAIL | FAX Company address below will appear on the final report Select Distribution: 2 day [P2-50%] 500-311 Portage Ave Street: Email 1 or Fax taggia, staintin a starter com Date and Time Required for all E&P TATs: dd-mmm-yy, hh:mm Email 2 Kasen, matters a stante com City/Province or tests that can not be performed according to the service level selected, you will be contacted. Postal Code: Email 3 Analysis Request YES NO Invoice To Same as Report To Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below ON HOLD OF CONTAINERS Copy of Invoice with Report YES NO Select Invoice Distribution: MAIL | MAJL FAX F10 D الإنصا Company: Email 1 or Fax Com flate 6 Rec: Contact: Email 2 L et etest in t 3 Project Information Oil and Gas Required Fields (client use) .52: SD91 ogu 1380HON ALS Account # / Quote #: AFE/Cost Center: S 42 2007 tec. 1415 Job#: **///475/07** Major/Minor Code Routing Code: 弘 din Prod SAMPLES dt: PO / AFE: ್ಷಕಾ Requisitioner: mit d Sec. 188. SD: Location: **५८६** जन्म स NUMBER Sampler: RB, 2W ALS Lab Work Order # (lab use only): ALS Contact: Sample Identification and/or Coordinates Date Time ALS Sample # Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) PSPI 90-91-90 LJ SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples1 (client use) (electronic COC only) Frozen SIF Observations Nο Are samples taken from a Regulated DW System? П Ice Packs Yes No YES NO Cooling Initiated Are samples for human consumption/ use? INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C YES NO SHIPMENT RELEASE (client use) FINAL SHIPMENT RECEPTION (lab use only) INITIAL SHIPMENT RECEPTION (lab use only) Time: Received by: Received by: (CLE



ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477626
Project Ref: 111475107
Sample ID: RW-42

Date Collected: 21-JUL-20 Lab Sample ID: L2477626-1

Sampled By:

Matrix: W

PAGE 1 of 3

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1	-F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC	F2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 94.4		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F	1 by GCMS						
,	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20
Surr:	4-Bromofluorobenzene (SS)	92.0		%			23-JUL-20
ROU4W Disso	olved - Low Range						
	Bicarbonate (HCO3)	412		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН							
	рН	7.88		pH units			22-JUL-20
Turbidity							
	*Turbidity	2.35		NTU			23-JUL-20
TDS calcula	ted						
	TDS (Calculated)	469		mg/L		500	27-JUL-20
Sulfate in W	ater by IC						
	Sulfate (SO4)	107		mg/L		500	22-JUL-20
Nitrite in Wa	ater by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in W	ater by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance				. 			
Hardness C							
riai uness G	Hardness (as CaCO3)	347		mg/L		500	27-JUL-20





ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477626
Project Ref: 111475107
Sample ID: RW-42

Date Collected: 21-JUL-20 Lab Sample ID: L2477626-1

Sampled By:

Matrix: W

PAGE 2 of 3

			Units of	CDWQG	Aesthetic	Date
Test Description	Result	Qualifier	Measure	MAC	Objective	Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	1.16		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Calcium (Ca)-Dissolved	65.7		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.109		mg/L		0.3	23-JUL-20
Magnesium (Mg)- Dissolved	44.4		mg/L			23-JUL-20
Manganese (Mn)- Dissolved	0.0103		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	9.26		mg/L			23-JUL-20
Sodium (Na)-Dissolved	32.2		mg/L		200	23-JUL-20
Conductivity						
Conductivity	755		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	7.85		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	338		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	2		MPN/100mL	0		22-JUL-20
Escherichia Coli	1		MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWQ	guidelines on con ter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager	_					



Guidelines & Objectives

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N* Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions
Bicarbonate See Alkalinity. Report as the anion HCO3-1
Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Chloride Common major anion of water chemistry.

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in

water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Sodium Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for

sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Sulphate Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air. Heterotrophic

Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

рΗ

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477626 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R5166	6298							
WG3369055-25 D Alkalinity, Total (as		L2477626-1 338	335		mg/L	0.7	20	22-JUL-20
WG3369055-24 Lead Alkalinity, Total (as			105.5		%		85-115	22-JUL-20
WG3369055-21 M Alkalinity, Total (as			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	Water							
Batch R5166	6645							
WG3368156-2 L	cs		116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
	cs		98.7		%		70-130	23-JUL-20
	IB							
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Brome	ofluorobenzene (SS)		85.2		%		70-130	23-JUL-20
CL-L-IC-N-WP	Water							
Batch R5166	6703							
	cs							
Chloride (CI)			102.6		%		90-110	22-JUL-20
WG3367901-5 M Chloride (CI)	IB		<0.10		mg/L		0.1	22-JUL-20
EC-WP	Water							
Batch R5166	6298							
WG3369055-25 D Conductivity	UP	L2477626-1 755	758		umhos/cm	0.4	10	22-JUL-20
WG3369055-23 Le	cs		98.0		%		90-110	22-JUL-20
WG3369055-21 M	IB							



Workorder: L2477626 Report Date: 27-JUL-20

Page 2 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	Water							
Batch R5166296 WG3369055-21 MB Conductivity	3		<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	Water							
Batch R5166703 WG3367901-6 LCS Fluoride (F)	3		102.0		%		90-110	22-JUL-20
WG3367901-5 MB Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	Water							
Batch R5167079 WG3369781-2 LCS F2 (C10-C16))		99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobe	nzotrifluoride		87.8		%		60-140	24-JUL-20
FC-MF-WP	Water							
Batch R5164763	3							
WG3368074-4 DUP Fecal Coliforms		L2477626-1 <1	<1	RPD-NA	CFU/100mL	N/A	65	22-JUL-20
WG3368074-1 MB Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	Water							
Batch R5166699)							
WG3368715-4 DUP Calcium (Ca)-Dissolve	d	L2477626-1 65.7	65.8		mg/L	0.1	20	23-JUL-20
Iron (Fe)-Dissolved		0.109	0.110		mg/L	1.1	20	23-JUL-20
Magnesium (Mg)-Disse	olved	44.4	44.3		mg/L	0.3	20	23-JUL-20
Manganese (Mn)-Diss	olved	0.0103	0.0103		mg/L	0.0	20	23-JUL-20
Potassium (K)-Dissolv	ed	9.26	9.35		mg/L	1.0	20	23-JUL-20



Workorder: L2477626 Report Date: 27-JUL-20 Page 3 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	Water							
Batch R5166699								
WG3368715-4 DUP Sodium (Na)-Dissolved		L2477626-1 32.2	32.8		mg/L	1.6	20	23-JUL-20
WG3368715-2 LCS Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissol	ved		102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissol	ved		100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved	d		103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			< 0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissol	ved		<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissol	ved		<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved	d		<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
WG3368715-5 MS Calcium (Ca)-Dissolved		L2477626-1	N/A	MS-B	%		_	23-JUL-20
Iron (Fe)-Dissolved			88.9		%		70-130	23-JUL-20
Magnesium (Mg)-Dissol	ved		N/A	MS-B	%		-	23-JUL-20
Manganese (Mn)-Dissol			90.9	2	%		70-130	23-JUL-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	23-JUL-20
Sodium (Na)-Dissolved	~		N/A	MS-B	%			23-JUL-20
NO2-L-IC-N-WP	Water		14/7	WO B	70		-	23-30L-20
	water							
Batch R5166703 WG3367901-6 LCS								
Nitrite (as N)			104.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	Water							
Batch R5166703								
WG3367901-6 LCS Nitrate (as N)			101.6		%		90-110	22-JUL-20
WG3367901-5 MB Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	Water							



Workorder: L2477626 Report Date: 27-JUL-20

Page 4 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WP	Water							
Batch R5166	5298							
WG3369055-25 D pH	UP	L2477626-1 7.88	7.87	J	pH units	0.01	0.2	22-JUL-20
WG3369055-22 L 0 pH	cs		7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	Water							
	6703 CS							
Sulfate (SO4)	_		104.2		%		90-110	22-JUL-20
WG3367901-5 M Sulfate (SO4)	В		<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	Water							
Batch R5165								
WG3367867-1 D Total Coliforms	UP	L2477626-1 2	1	J	MPN/100mL	1	2	22-JUL-20
Escherichia Coli		1	0	J	MPN/100mL	1	2	22-JUL-20
WG3367867-12 M Total Coliforms	В		0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 M Total Coliforms	В		0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 M Total Coliforms	В		0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							
Batch R5166								
	CS		95.0		%		85-115	23-JUL-20
WG3369614-1 M Turbidity	В		<0.10		NTU		0.1	23-JUL-20

Workorder: L2477626 Report Date: 27-JUL-20 Page 5 of 6

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Workorder: L2477626 Report Date: 27-JUL-20 Page 6 of 6

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	21-JUL-20 11:41	22-JUL-20 12:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477626 were received on 22-JUL-20 08:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

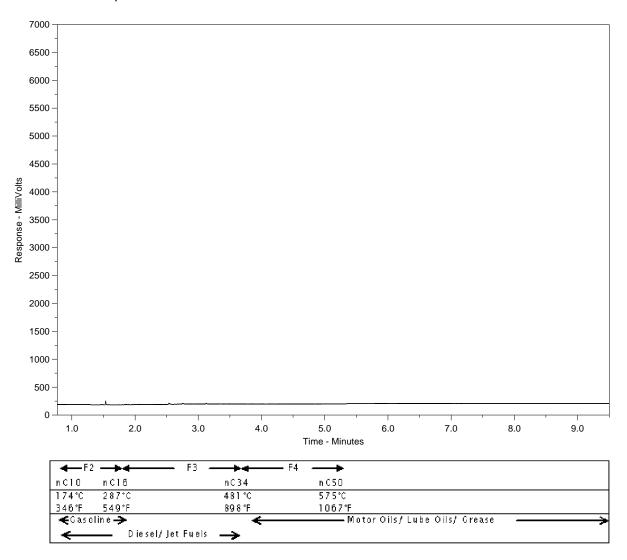
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477626-1 Client Sample ID: RW-42



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.



Chain of Custody (COC) / Analytical Request Form

L2477626-COFC

coc Number: 17 - 749271

Page 🔭 of

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report	<u> </u>	Report Format / Distribution					Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)											
Company:	Stanta - W2077	Select Report Fo	ormat: 🙀 PDF [EXCEL M E		Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply													
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Phone:	304-982-7615	Compare Res	ults to Criteria on Report -			RIOR	3 day [P	3-25%]		ME.H.G	Same Day, Weekend or Statutory holiday [E2 -2009					200%	r—		
	Company address below will appear on the final report	Select Distribution	on: EMAIL	MAIL]	FAX	a g 2 day [P2-50%]					(Laboratory opening fees may apply)]								
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City/Province:	1200, MB	Email 2 Ko	van nathers a	sputec c	- M	For tests	that can no	t be perform	ed accordin	g to the se	rvice leve	l selected,	you will	be contac	ted.				
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ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	2	5	700	أرج									SA	USPE
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Released by	2001 CO.10 broom	T		Date: JUL 2	Z 2020	$\psi^{\nu \nu}$			-										
REFER TO BACK	PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	17 V	WHI	TE - LABORATORY	COPY YELLO	W - CLIE	NT COPY	/			•	•						.East	E 2018 FRONT



Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477632
Project Ref: 111475107
Sample ID: RW-44

Date Collected: 20-JUL-20 Lab Sample ID: L2477632-1

Sampled By:

Matrix: W

PAGE 1 of 6

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F	- 4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total I	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 93.2		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	88.4		%			24-JUL-20
ROU4W DISSOI	ved - Low Range	054					24-JUL-20
	Bicarbonate (HCO3)	251		mg/L			
	Carbonate (CO3)	<0.60 <0.34		mg/L			24-JUL-20
	Hydroxide (OH) *Nitrate and Nitrite as N	<0.0051		mg/L	40		24-JUL-20 24-JUL-20
	Nitrate and Nitrite as in	<0.0031		mg/L	10		24-30L-20
рН	рН	8.29		pH units			22-JUL-20
Turbidity	Pii	0.20		pri units			22 002 20
ruiblaity	*Turbidity	0.39		NTU			23-JUL-20
TDS calculate	•						
. Do oaloular	TDS (Calculated)	392		mg/L		500	27-JUL-20
Sulfate in Wa				J			
	Sulfate (SO4)	119		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level)			J			
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wa	ter by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance (15.0000		g/ L			
Hardness Ca							
naiuliess Ca	Hardness (as CaCO3)	222		mg/L		500	27-JUL-20





Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477632
Project Ref: 111475107
Sample ID: RW-44
Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477632-1

Matrix: W

PAGE 2 of 6

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.869		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location	44.4					23-JUL-20
Calcium (Ca)-Dissolved	44.4 0.068		mg/L		0.0	23-JUL-20 23-JUL-20
Iron (Fe)-Dissolved	27.0		mg/L		0.3	
Magnesium (Mg)- Dissolved	27.0		mg/L			23-JUL-20
Manganese (Mn)- Dissolved	0.00345		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	8.70		mg/L			23-JUL-20
Sodium (Na)-Dissolved	47.0		mg/L		200	23-JUL-20
Conductivity						
Conductivity	633		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	22.9		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	206		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWQ	guidelines on con iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477632
Project Ref: 111475107
Sample ID: RW-45

Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477632-2

Matrix: W

PAGE 3 of 6

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Surr: 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 119.7		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1 by GCMS						
Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	87.1		%			24-JUL-20
ROU4W Dissolved - Low Range Bicarbonate (HCO3)	249		/I			24-JUL-20
· · · ·	4.68		mg/L			24-JUL-20 24-JUL-20
Carbonate (CO3)	<0.34		mg/L			24-JUL-20 24-JUL-20
Hydroxide (OH) *Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20 24-JUL-20
	40.0031		mg/L	10		24-30L-20
pH pH	8.33		pH units			22-JUL-20
Turbidity	0.00		priums			22 002 20
*Turbidity	0.18		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	406		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	126		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation			9, =			
Hardness Calculated						
Hardness (as CaCO3)	230		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477632
Project Ref: 111475107
Sample ID: RW-45

Date Collected: 20-JUL-20 Lab Sample ID: L2477632-2

Sampled By:

Matrix: W

PAGE 4 of 6

Test Description	Result	Qualifier	Units of	CDWQG	Aesthetic	Date
rest Description	Result	Qualifier	Measure	MAC	Objective	Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.793		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	43.3		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.030		mg/L		0.3	23-JUL-20
Magnesium (Mg)-	29.5		mg/L		0.5	23-JUL-20
Dissolved			9_			
Manganese (Mn)- Dissolved	0.00641		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	7.19		mg/L			23-JUL-20
Sodium (Na)-Dissolved	50.0		mg/L		200	23-JUL-20
Conductivity						
Conductivity	656		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	23.6		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	212		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit. - A shaded value in the Results column exceeds CDWQ	guidelines on con iter Quality	ventional treatm	ent and slow sand	N.D. = less than de d or diatomaceous e	ection limit. arth filtration ple	ase see
Approved by Hua Wo Account Manager						



L2477632 CONTD.... PAGE 5 of 6

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description		
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may	nav	

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants. Nitrate/Nitrite-N*

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions See Alkalinity. Report as the anion HCO3-1 Bicarbonate Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Common major anion of water chemistry. Chloride

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are

considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action. рН

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for Sodium

> sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action. Sulphate

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477632 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

est N	Matrix Reference	Result Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP \	V ater					
Batch R5166298 WG3369055-24 LCS	a.		04			
Alkalinity, Total (as CaCO3	3)	105.5	%		85-115	22-JUL-20
WG3369055-21 MB Alkalinity, Total (as CaCO3	3)	<1.0	mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP \	Vater					
Batch R5166645						
WG3368156-2 LCS Benzene		116.2	%		70-130	23-JUL-20
Toluene		98.2	%		70-130	23-JUL-20
Ethyl benzene		98.4	%		70-130	23-JUL-20
o-Xylene		113.0	%		70-130	23-JUL-20
m+p-Xylenes		111.4	%		70-130	23-JUL-20
WG3368156-3 LCS F1 (C6-C10)		98.7	%		70-130	23-JUL-20
WG3368156-1 MB Benzene		<0.00050	mg/L		0.0005	23-JUL-20
Toluene		<0.0010	mg/L		0.001	23-JUL-20
Ethyl benzene		<0.00050	mg/L		0.0005	23-JUL-20
o-Xylene		<0.00050	mg/L		0.0005	23-JUL-20
m+p-Xylenes		<0.00040	mg/L		0.0004	23-JUL-20
F1 (C6-C10)		<0.10	mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorob	enzene (SS)	85.2	%		70-130	23-JUL-20
CL-L-IC-N-WP \	V ater					
Batch R5166703						
WG3367901-11 DUP Chloride (CI)	L2477632-1 22.9	22.9	mg/L	0.0	20	22-JUL-20
WG3367901-10 LCS Chloride (Cl)		100.1	%		90-110	22-JUL-20
WG3367901-9 MB						
Chloride (CI)		<0.10	mg/L		0.1	22-JUL-20
WG3367901-12 MS Chloride (CI)	L2477632-1	108.7	%		75-125	22-JUL-20
EC-WP \	Water					
Batch R5166298						
WG3369055-23 LCS Conductivity		98.0	%		90-110	22-JUL-20
WG3369055-21 MB						



Workorder: L2477632

Report Date: 27-JUL-20

Page 2 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	Water							
Batch R5166298 WG3369055-21 MB Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	Water							
Batch R5166703								
WG3367901-11 DUP Fluoride (F)		L2477632-1 0.869	0.863		mg/L	0.7	20	22-JUL-20
WG3367901-10 LCS Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
WG3367901-12 MS Fluoride (F)		L2477632-1	104.3		%		75-125	22-JUL-20
F2-F4-FID-WP	Water							
Batch R5167079 WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenz	otrifluoride		87.8		%		60-140	24-JUL-20
FC-MF-WP	Water							
Batch R5164763								
WG3368074-1 MB Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	Water							
Batch R5166699 WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolv			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolv	ved		100.7		%		80-120	23-JUL-20



SO4-IC-N-WP

Water

Quality Control Report

Workorder: L2477632

Report Date: 27-JUL-20

Page 3 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	Water							
Batch R51666	99							
WG3368715-2 LC			100.0		0/			
Potassium (K)-Disso			103.3 99.0		%		80-120	23-JUL-20
Sodium (Na)-Dissolv			99.0		%		80-120	23-JUL-20
WG3368715-1 MB Calcium (Ca)-Dissolv			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dis	ssolved		<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dis	ssolved		<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Disso	lved		< 0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolv	ed		< 0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	Water							
Batch R51667	03							
WG3367901-11 DU Nitrite (as N)	P	L2477632-1 < 0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3367901-10 LC3	s		101.6		%		90-110	22-JUL-20
WG3367901-9 MB	i							
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
WG3367901-12 MS Nitrite (as N)	i	L2477632-1	109.0		%		75-125	22-JUL-20
NO3-L-IC-N-WP	Water							
Batch R51667	03							
WG3367901-11 DU Nitrate (as N)	P	L2477632-1 < 0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3367901-10 LC	S							
Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB Nitrate (as N)	i		<0.0050		mg/L		0.005	22-JUL-20
WG3367901-12 MS Nitrate (as N)		L2477632-1	110.9		%		75-125	22-JUL-20
PH-WP	Water							
Batch R51662	98							
WG3369055-22 LC pH	S		7.33		pH units		7.3-7.5	22-JUL-20



Workorder: L2477632 Report Date: 27-JUL-20 Page 4 of 6

est		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP		Water							
Batch R51	166703								
WG3367901-11 Sulfate (SO4)	DUP		L2477632-1 119	119		mg/L	0.4	20	22-JUL-20
WG3367901-10 Sulfate (SO4)	LCS			102.5		%		90-110	22-JUL-20
WG3367901-9 Sulfate (SO4)	MB			<0.30		mg/L		0.3	22-JUL-20
WG3367901-12 Sulfate (SO4)	MS		L2477632-1	N/A	MS-B	%		-	22-JUL-20
TC,EC-QT51-WP		Water							
	165685								
WG3367867-5	DUP		L2477632-1						
Total Coliforms			0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli			0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-6	DUP		L2477632-2						
Total Coliforms			0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli			0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 Total Coliforms	MB			0		MPN/100mL		1	22-JUL-20
Escherichia Coli				0		MPN/100mL		1	22-JUL-20
WG3367867-13 Total Coliforms	MB			0		MPN/100mL		1	22-JUL-20
Escherichia Coli				0		MPN/100mL		1	22-JUL-20
WG3367867-14	MB								
Total Coliforms				0		MPN/100mL		1	22-JUL-20
Escherichia Coli				0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP		Water							
Batch R51	166411								
WG3369614-2 Turbidity	LCS			95.0		%		85-115	23-JUL-20
WG3369614-1 Turbidity	МВ			<0.10		NTU		0.1	23-JUL-20

Workorder: L2477632 Report Date: 27-JUL-20 Page 5 of 6

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Workorder: L2477632 Report Date: 27-JUL-20 Page 6 of 6

Hold Time Exceedances:

	Sample						
ALS Product Description	ID [.]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	20-JUL-20 18:06	22-JUL-20 12:00	0.25	42	hours	EHTR-FM
	2	20-JUL-20 18:20	22-JUL-20 12:00	0.25	42	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 18:06	22-JUL-20 14:10	30	44	hours	EHTR
	2	20-JUL-20 18:20	22-JUL-20 14:10	30	44	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 18:06	22-JUL-20 12:50	30	43	hours	EHTR
	2	20-JUL-20 18:20	22-JUL-20 12:50	30	42	hours	EHTR
Legend & Qualifier Definition	ne:						

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477632 were received on 22-JUL-20 08:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

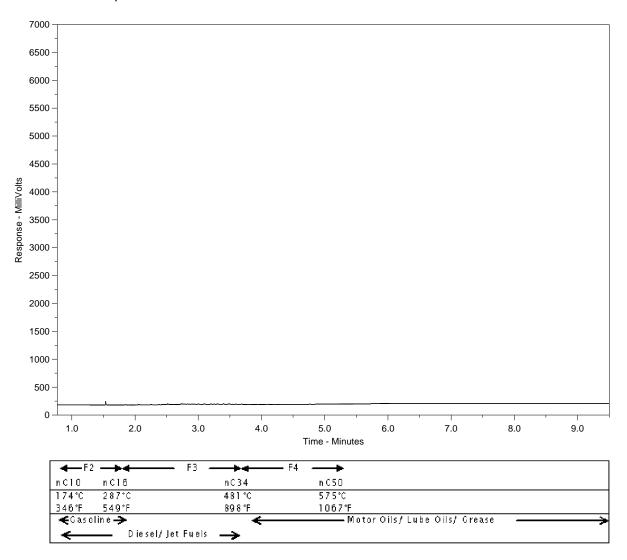
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477632-1 Client Sample ID: RW-44



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

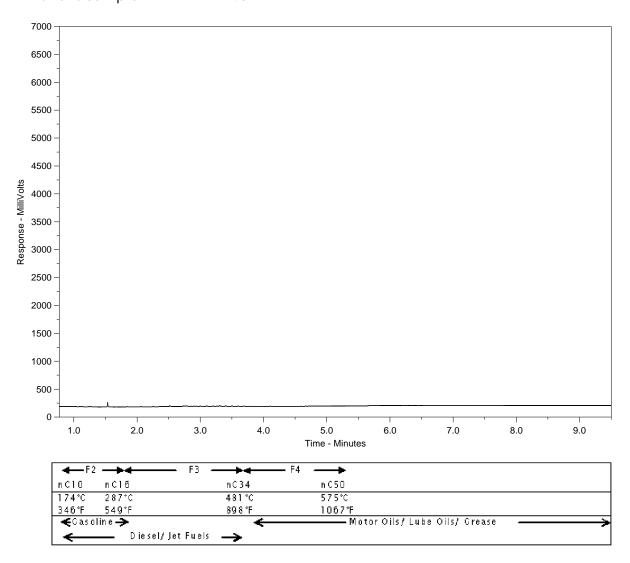
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477632-2 Client Sample ID: RW-45



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

Chain of Custody (COC) / Analytica Request Form

Canada Toll Free: 1 800 668 9878

L2477632-COFC

COC Number: 17 - 749866

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www.alsglobal.com Contact and company name below will appear on the final report Report Format / Distribution Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply) Report To PDF X EXCEL X EDD (DIGITAL) Select Report Format: Regular (R1 Standard TAT if received by 3 pm - business days - no surcharges apply Company: YES NO Quality Control (QC) Report with Report 4 day [P4-20%] Business day [E - 100%] Contact: Compare Results to Criteria on Report - provide details below if box checked 3 day [P3-25%] Phone: Same Day, Weekend or Statutory holiday [E2 -200% K EMAIL | MAIL FAX Company address below will appear on the final report (Laboratory opening fees may apply)] Select Distribution: 2 day [P2-50%] Email 1 or Fax tossia stoutena stoute com Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm Street: Bil Portage Ne City/Province: kaon, mathaisa starta com or tests that can not be performed according to the service level selected, you will be contacted Postal Code: Email 3 Analysis Request Invoice To Same as Report To YEŞ NO Invoice Distribution indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below ON HOLD CONTAINERS YES NO Select Invoice Distribution: EMAIL MAIL FAX 9 917 Copy of Invoice with Report Email 1 or Fax Company: 9000 Email 2 Contact: TEST TO **Project Information** d s Oil and Gas Required Fields (client use) .tt. , 'n ALS Account # / Quote #: QSOUNY AFE/Cost Center: *** 3 40 111475101 Major/Minor Code: Routing Code: 1.04 403 SAMPLES Ь 10 PO / AFE: Requisitioner: 4 161 1: ocation; NUMBER 10. Ą, 7 25 ALS Lab Work Order # (lab use only): ALS Contact: Sampler: BB、 ユル 15:15 ti Sample Identification and/or Coordinates Date Time ALS Sample # Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) 80.0J.80 *IBDI*P SAMPLE CONDITION AS RECEIVED (lab use only) Special instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples¹ (client use) (electronic COC only) SIF Observations Nσ Are samples taken from a Regulated DW System? Ice Packs 🔲 Ice Cubes Custody seal intact No YES NO Cooling Initiated Are samples for human consumption/ use? INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C I YES I NO FINAL SHIPMENT RECEPTION (lab use only) SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) Released by o Time: Received by Received by: Date: JUNE 2016 FROM



Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477635
Project Ref: 111475107
Sample ID: RW-51

Sampled By:

Date Collected: 20-JUL-20 Lab Sample ID: L2477635-1

Matrix: W

PAGE 1 of 4

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-l	F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total I	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 96.3		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	90.4		%			24-JUL-20
ROU4W DISSOI	ved - Low Range	204		,,			24-JUL-20
	Bicarbonate (HCO3)	294		mg/L			
	Carbonate (CO3)	3.60 <0.34		mg/L			24-JUL-20
	Hydroxide (OH) *Nitrate and Nitrite as N	<0.04		mg/L	40		24-JUL-20 24-JUL-20
	Nitrate and Nitrite as IV	<0.0051		mg/L	10		24-JUL-20
рН	рН	8.31		pH units			22-JUL-20
Turbidity	ριτ	0.01		priums			22 002 20
ranbialty	*Turbidity	1.35		NTU			23-JUL-20
TDS calculate	•						
1 DO Calculat	TDS (Calculated)	463		mg/L		500	27-JUL-20
Sulfate in Wa				9			
Odnate in We	Sulfate (SO4)	153		mg/L		500	22-JUL-20
Nitrite in Wat	er by IC (Low Level)			9.=			
William Wal	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wa	ter by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance		30.0000		illg/L	10		22 001 20
Hardness Ca	Hardness (as CaCO3)	295		mg/L		500	27-JUL-20





Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477635
Project Ref: 111475107
Sample ID: RW-51

Date Collected: 20-JUL-20 Lab Sample ID: L2477635-1

Sampled By:

Matrix: W

PAGE 2 of 4

Test Description	Result	Qualifier	Units of	CDWQG	Aesthetic	Date
100t B000tiption	rtoodit	Qualifici	Measure	MAC	Objective	Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.535		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location	55.0		,,			00 1111 00
Calcium (Ca)-Dissolved	55.2		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.105		mg/L		0.3	23-JUL-20
Magnesium (Mg)- Dissolved	38.2		mg/L			23-JUL-20
Manganese (Mn)- Dissolved	0.00813		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	9.77		mg/L			23-JUL-20
Sodium (Na)-Dissolved	40.9		mg/L		200	23-JUL-20
Conductivity						
Conductivity	733		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	17.4		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	247		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWQ	guidelines on con iter Quality	ventional treatm	ent and slow sand	N.D. = less than de l or diatomaceous e	tection limit. arth filtration ple	ase see
Approved by Hua Wo Account Manager						



L2477635 CONTD.... PAGE 3 of 4

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description		
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may	nav	

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants. Nitrate/Nitrite-N*

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions See Alkalinity. Report as the anion HCO3-1 Bicarbonate Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Common major anion of water chemistry. Chloride

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are

considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action. рН

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for Sodium

> sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action. Sulphate

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477635 Report Date: 27-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
LK-TITR-WP	Water							
Batch R516	66298							
WG3369055-24 L								
Alkalinity, Total (as			105.5		%		85-115	22-JUL-20
WG3369055-21 M Alkalinity, Total (as			<1.0		mg/L		1	22-JUL-20
TEXS+F1-HSMS-W	•				ŭ		·	00_ 0
Batch R516	66645							
WG3368156-2 L	_CS							
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 I	_CS		98.7		%		70-130	23-JUL-20
WG3368156-1 N	MB		<0.00050		mg/L		0.0005	22 11 11 20
Toluene			<0.0010		mg/L			23-JUL-20 23-JUL-20
Ethyl benzene			<0.0010		mg/L		0.001	
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0005	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.0004	23-JUL-20
, ,	nofluorobenzene (SS	2)	<0.10 85.2		™g/∟ %		0.1	23-JUL-20
Surrogate. 4-Bron		o)	00.2		70		70-130	23-JUL-20
L-L-IC-N-WP	Water							
Batch R516								
WG3367901-10 L Chloride (CI)	_CS		100.1		%		90-110	22-JUL-20
WG3367901-9	МВ							
Chloride (CI)			<0.10		mg/L		0.1	22-JUL-20
C-WP	Water							
Batch R516	6298							
WG3369055-23 L Conductivity	_CS		98.0		%		90-110	22-JUL-20
WG3369055-21 Conductivity	МВ		<1.0		umhos/cm		1	22-JUL-20
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Workorder: L2477635 Report Date: 27-JUL-20

Test Matrix Reference Result Qualifier Units **RPD** Limit Analyzed F-IC-N-WP Water Batch R5166703 WG3367901-10 LCS Fluoride (F) 101.4 % 90-110 22-JUL-20 WG3367901-9 MB Fluoride (F) <0.020 mg/L 0.02 22-JUL-20 F2-F4-FID-WP Water **Batch** R5167079 WG3369781-2 LCS F2 (C10-C16) % 99.4 70-130 24-JUL-20 F3 (C16-C34) 91.9 % 24-JUL-20 70-130 F4 (C34-C50) 107.6 % 70-130 24-JUL-20 WG3369781-1 MB F2 (C10-C16) <0.10 mg/L 0.1 24-JUL-20 F3 (C16-C34) <0.25 mg/L 0.25 24-JUL-20 F4 (C34-C50) < 0.25 mg/L 0.25 24-JUL-20 Surrogate: 2-Bromobenzotrifluoride 87.8 % 60-140 24-JUL-20 FC-MF-WP Water Batch R5164763 WG3368074-1 MB Fecal Coliforms CFU/100mL <1 1 22-JUL-20 WG3368074-2 Fecal Coliforms <1 CFU/100mL 1 22-JUL-20 MET-D-CCMS-WP Water Batch R5166699 WG3368715-2 LCS Calcium (Ca)-Dissolved 99.3 % 80-120 23-JUL-20 Iron (Fe)-Dissolved % 94.4 80-120 23-JUL-20 Magnesium (Mg)-Dissolved 102.0 % 80-120 23-JUL-20 Manganese (Mn)-Dissolved 100.7 % 80-120 23-JUL-20 Potassium (K)-Dissolved 103.3 % 80-120 23-JUL-20 Sodium (Na)-Dissolved 99.0 % 80-120 23-JUL-20 WG3368715-1 MB Calcium (Ca)-Dissolved < 0.050 mg/L 0.05 23-JUL-20 < 0.010 Iron (Fe)-Dissolved mg/L 0.01 23-JUL-20 <0.0050 Magnesium (Mg)-Dissolved mg/L 0.005 23-JUL-20 Manganese (Mn)-Dissolved <0.00010 mg/L 0.0001 23-JUL-20 Potassium (K)-Dissolved < 0.050 mg/L 0.05 23-JUL-20



Workorder: L2477635 Report Date: 27-JUL-20 Page 3 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP Batch R5166699 WG3368715-1 MB	Water							
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP Batch R5166703 WG3367901-10 LCS	Water							
Nitrite (as N) WG3367901-9 MB			101.6		%		90-110	22-JUL-20
Nitrite (as N)	Water		<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP Batch R5166703 WG3367901-10 LCS	Water							
Nitrate (as N) WG3367901-9 MB			103.0		%		90-110	22-JUL-20
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	Water							
Batch R5166298 WG3369055-22 LCS pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	Water							
Batch R5166703								
WG3367901-10 LCS Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	Water							
Batch R5165685 WG3367867-8 DUP		1 0477025 4						
Total Coliforms		L2477635-1 0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20



Workorder: L2477635 Report Date: 27-JUL-20 Page 4 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	Water							
Batch R5165685 WG3367867-14 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							
Batch R5166411 WG3369614-2 LCS Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB Turbidity			<0.10		NTU		0.1	23-JUL-20

Report Date: 27-JUL-20 Workorder: L2477635 Page 5 of 6

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

Not Available N/A

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2477635 Report Date: 27-JUL-20

Page 6 of 6

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	20-JUL-20 16:50	22-JUL-20 12:00	0.25	43	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 16:50	22-JUL-20 14:10	30	45	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 16:50	22-JUL-20 12:50	30	44	hours	EHTR
Logond & Qualifier Definition	201						

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477635 were received on 22-JUL-20 08:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

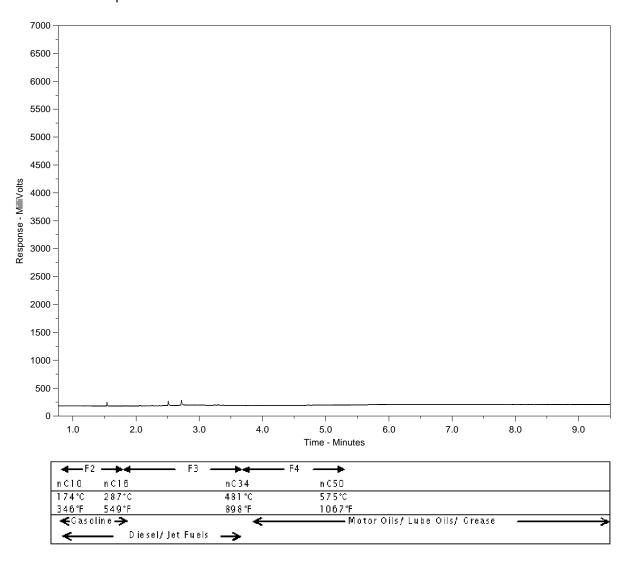
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477635-1 Client Sample ID: RW-51



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

Environmental

Chain of Custody (COC) / Analytical Request Form L2477635-COFC

coc Number: 17 - 749864

Page \ of \

Canada Toll Free: 1 800 668 9878

	www.aisglobal.com																		
eport To	Contact and company name below will appe	ar on the final report		Report Format	/ Distribution			Select	Service	Level B	elow - Con	act your	AM to c	onfirm e	all E&P 7	ATs (su	rcharges m	ay apply)	
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ontact:	Torsia Stounton		Quality Control (0	QC) Report with Repo			y (aya)	4 day [P	4-20%]) HCV	1 Busi	ness d	lay [E - 1	100%]				
hone:	304-983-761S		Compare Resu	ults to Criteria on Report - 1			REES E	3 day [P	3-25%]		JERG1	Same D	ay, W	eekend	or Stati	itory he	oliday [E2	-200%	۲
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ALS Sample #	Sample Identification	and/or Coordinates		Date	Time		1≅		ΝŹ	ک ا	•	*** (18	4					4	8
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	n from a Regulated DW System?	. <u> </u>	(elec	etronic COC only)			Froze		_ 🗆			Observati		Yes		=	No		
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Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: TRIP

Sampled By: Date Collected:

Lab Sample ID: L2477630-1

Matrix: W

PAGE 1 of 11

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1	-F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC	F2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 94.0		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F				,,,			
DIX plast	Benzene	<0.00050		mg/L	0.005		23-JUL-20
	Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L	0.06 0.14	0.024 0.0016	23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20
Surr:	4-Bromofluorobenzene (SS)	88.8		%			23-JUL-20
ROU4W Disso	lved - Low Range						
	Bicarbonate (HCO3)	2.0		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН							
	рН	6.10		pH units			22-JUL-20
Turbidity							
	*Turbidity	<0.10		NTU			23-JUL-20
TDS calcula	ted						
	TDS (Calculated)	<5.0		mg/L		500	27-JUL-20
Sulfate in W	ater by IC						
	Sulfate (SO4)	<0.30		mg/L		500	22-JUL-20
Nitrite in Wa	ter by IC (Low Level) *Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in W	ater by IC (Low Level)						
	*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Hardness C							
	Hardness (as CaCO3)	<0.20		mg/L		500	27-JUL-20
Fluoride in \				,			





Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: TRIP
Sampled By:

Date Collected:

Lab Sample ID: L2477630-1

Matrix: W

PAGE 2 of 11

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	<0.020		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	<0.050					23-JUL-20
Iron (Fe)-Dissolved	<0.030		mg/L mg/L		0.3	23-JUL-20
Magnesium (Mg)-	<0.0050		mg/L		0.3	23-JUL-20
Dissolved	10.000		IIIg/L			
Manganese (Mn)- Dissolved	<0.00010		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	<0.050		mg/L			23-JUL-20
Sodium (Na)-Dissolved	<0.050		mg/L		200	23-JUL-20
Conductivity						
Conductivity	<1.0		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	<0.10		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	1.6		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
* CDWQG = Health Canada Guideline Limits updated * CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit. - A shaded value in the Results column exceeds CDWQ	guidelines on con Iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						





Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630

Project Ref: 111475107
Sample ID: FIELD BLANK

Sampled By: Date Collected:

Lab Sample ID: L2477630-2

Matrix: W

PAGE 3 of 11

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Surr: 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 91.4		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1 by GCMS						
Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20 23-JUL-20
Surr: 4-Bromofluorobenzene (SS)	85.3		%			23-JUL-20
ROU4W Dissolved - Low Range	040		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			04 1111 00
Bicarbonate (HCO3)	212		mg/L			24-JUL-20
Carbonate (CO3)	4.20 <0.34		mg/L			24-JUL-20
Hydroxide (OH) *Nitrate and Nitrite as N	0.794		mg/L	40		24-JUL-20 24-JUL-20
	0.794		mg/L	10		24-JUL-20
рН рН	8.36		pH units			22-JUL-20
Turbidity			pri dimo			
*Turbidity	<0.10		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	182		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	6.05		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)	-0.0040					22 11 11 20
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level) *Nitrate (as N)	0.794		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated Hardness (as CaCO3)	167		mg/L		500	27-JUL-20
· latarioso (do odoco)	107		IIIg/L		300	





Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: FIELD BLANK

Sampled By: Date Collected:

Lab Sample ID: L2477630-2

Matrix: W

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Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed		
ROU4W Dissolved - Low Range		 						
Fluoride in Water by IC								
Fluoride III Water by IC Fluoride (F)	0.065		mg/L	1.5		22-JUL-20		
()	0.003		IIIg/L	1.5		22 JOL 20		
Dissolved Metals in Water by CRC ICPMS Dissolved Metals	LAB					23-JUL-20		
Filtration Location	LAB					23-JUL-20		
Calcium (Ca)-Dissolved	43.3		mg/L			23-JUL-20		
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20		
Magnesium (Mg)-	14.2		mg/L			23-JUL-20		
Dissolved Manganese (Mn)- Dissolved	0.00100		mg/L	0.12	0.02	23-JUL-20		
Potassium (K)-Dissolved	1.33		mg/L			23-JUL-20		
Sodium (Na)-Dissolved	2.60		mg/L		200	23-JUL-20		
Conductivity								
Conductivity	324		umhos/cm			22-JUL-20		
Chloride in Water by IC (Low Level)								
Chloride (CI)	3.03		mg/L		250	22-JUL-20		
Alkalinity, Total (as CaCO3)								
Alkalinity, Total (as CaCO3)	180		mg/L			22-JUL-20		
CDWQG = Health Canada Guideline Limits updated	JUNE 2019							
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit. * Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality - A blank entry designates no known limit. - A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.								
Approved by Hua Wo Account Manager								





Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: QC-01
Sampled By:

Date Collected: 21-JUL-20 Lab Sample ID: L2477630-3

Matrix: W

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	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-	F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC I	F2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 91.4		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1	by GCMS						
• **	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	87.1		% %			24-JUL-20
ROU4W Disso	Ived - Low Range						
	Bicarbonate (HCO3)	305		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
рН							
	рН	8.27		pH units			22-JUL-20
Turbidity	*Turbidity	7.09		NTU			23-JUL-20
TDS calculat	ted						
	TDS (Calculated)	514		mg/L		500	27-JUL-20
Sulfate in Wa	ater by IC						
	Sulfate (SO4)	179		mg/L		500	22-JUL-20
Nitrite in Wa	ter by IC (Low Level)						
	*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wa	ater by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance							
Hardness Ca							
1101011033 06	Hardness (as CaCO3)	306		mg/L		500	27-JUL-20





Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: QC-01
Sampled By:

Date Collected: 21-JUL-20 Lab Sample ID: L2477630-3

Matrix: W

PAGE 6 of 11

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed	
ROU4W Dissolved - Low Range							
Fluoride in Water by IC							
Fluoride (F)	0.787		mg/L	1.5		22-JUL-20	
Dissolved Metals in Water by CRC ICPMS			_				
Dissolved Metals	FIELD					23-JUL-20	
Filtration Location	62.0					23-JUL-20	
Calcium (Ca)-Dissolved Iron (Fe)-Dissolved	62.8 0.097		mg/L		0.0	23-JUL-20 23-JUL-20	
	36.2		mg/L		0.3	23-JUL-20 23-JUL-20	
Magnesium (Mg)- Dissolved	36.2		mg/L			23-JUL-20	
Manganese (Mn)- Dissolved	0.00226		mg/L	0.12	0.02	23-JUL-20	
Potassium (K)-Dissolved	12.9		mg/L			23-JUL-20	
Sodium (Na)-Dissolved	49.0		mg/L		200	23-JUL-20	
Conductivity							
Conductivity	809		umhos/cm			22-JUL-20	
Chloride in Water by IC (Low Level)							
Chloride (CI)	24.5		mg/L		250	22-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	250		mg/L			22-JUL-20	
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20	
Total Coliform and E.coli							
Total Coliforms	10		MPN/100mL	0		22-JUL-20	
Escherichia Coli	0		MPN/100mL	0		22-JUL-20	
CDWQG = Health Canada Guideline Limits updated	JUNE 2019						
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit. * Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality - A blank entry designates no known limit. - A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.							
Approved by Hua Wo Account Manager							





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ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: QC-02

Date Collected: 21-JUL-20 Lab Sample ID: L2477630-4

Sampled By:

Matrix: W

PAGE 7 of 11

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F	4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total H	CCME Total Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC F2	2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 97.7		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F1 l	by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	85.2		%			24-JUL-20
ROU4W DISSOIV	ved - Low Range	466					24 11 11 20
	Bicarbonate (HCO3)			mg/L			24-JUL-20
	Carbonate (CO3)	12.1 <0.34		mg/L			24-JUL-20
	Hydroxide (OH) *Nitrate and Nitrite as N	<0.04		mg/L	40		24-JUL-20 24-JUL-20
	Nittate and Nittite as in	<0.0051		mg/L	10		24-JUL-20
рН	рН	8.54		nH unita			22-JUL-20
Turbidity	ριι	0.54		pH units			22-30L-20
rarbialty	*Turbidity	0.75		NTU			23-JUL-20
TDS calculate	d						
	TDS (Calculated)	443		mg/L		500	27-JUL-20
Sulfate in Wat	ter by IC						
	Sulfate (SO4)	6.62		mg/L		500	22-JUL-20
Nitrite in Wate	er by IC (Low Level) *Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Wat	er by IC (Low Level) *Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Polonos C		10.0000		illg/L	10		22 001 20
Ion Balance Calculation							
Hardness Cal	culated Hardness (as CaCO3)	0.35		mg/L		500	27-JUL-20





Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9 ATTN: Tassia Stainton Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: QC-02
Sampled By:

Date Collected: 21-JUL-20 Lab Sample ID: L2477630-4

Matrix: W

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Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.411		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	0.093					23-JUL-20
Iron (Fe)-Dissolved	0.093		mg/L mg/L		0.3	23-JUL-20
Magnesium (Mg)-	0.0276		mg/L		0.3	23-JUL-20
Dissolved	0.02.0		IIIg/L			
Manganese (Mn)-	0.00019		mg/L	0.12	0.02	23-JUL-20
Dissolved Potassium (K)-Dissolved	0.475		mg/L			23-JUL-20
Sodium (Na)-Dissolved	186		mg/L		200	23-JUL-20
Conductivity						
Conductivity	723		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)			4111110070111			
Chloride (CI)	7.82		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)			9_			
Alkalinity, Total (as CaCO3)	402		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	1		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For Summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWC	guidelines on cor iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						

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Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: RW-57

Date Collected: 21-JUL-20 Lab Sample ID: L2477630-5

Sampled By:

Matrix: W

PAGE 9 of 11

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1	-F4						
	Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total	Hydrocarbons						
	F1-BTEX Total Hydrocarbons (C6- C50)	<0.10 <0.38		mg/L mg/L			25-JUL-20 25-JUL-20
CCME PHC	F2-F4 in Water						
Surr:	F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) 2-Bromobenzotrifluoride	<0.10 <0.25 <0.25 91.1		mg/L mg/L mg/L %			24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
BTX plus F	l by GCMS						
	Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10)	<0.00050 <0.0010 <0.00050 <0.00050 <0.00040 <0.10		mg/L mg/L mg/L mg/L mg/L mg/L	0.005 0.06 0.14	0.024 0.0016	24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20 24-JUL-20
Surr:	4-Bromofluorobenzene (SS)	83.6		% %			24-JUL-20
ROU4W Disso	Ived - Low Range						
	Bicarbonate (HCO3)	214		mg/L			24-JUL-20
	Carbonate (CO3)	<0.60		mg/L			24-JUL-20
	Hydroxide (OH)	<0.34		mg/L			24-JUL-20
	*Nitrate and Nitrite as N	<0.010		mg/L	10		24-JUL-20
pН							
	рН	8.29		pH units			22-JUL-20
Turbidity	*Turbidity	0.46		NTU			23-JUL-20
TDS calcula							
1 D3 Calcula	TDS (Calculated)	531		mg/L		500	27-JUL-20
Sulfate in W				g/ _		300	
Sunate in W	Sulfate (SO4)	135		mg/L		500	22-JUL-20
Nitrite in Wa	ter by IC (Low Level) *Nitrite (as N)	<0.0020	DLM	mg/L	1		22-JUL-20
Nitrate in W	ater by IC (Low Level)			9, _	,		
Mindle III W	*Nitrate (as N)	<0.010	DLM	mg/L	10		22-JUL-20
Ion Balance	Calculation						
Hardness Ca	alculated						
	Hardness (as CaCO3)	186		mg/L		500	27-JUL-20

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Stantec Consulting (Winnipeg) 500 - 311 Portage Ave Winnipeg MB R3B 2B9

ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: RW-57

Date Collected: 21-JUL-20 Lab Sample ID: L2477630-5

Sampled By:

Matrix: W

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Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.965		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals	FIELD					23-JUL-20
Filtration Location Calcium (Ca)-Dissolved	37.7					23-JUL-20
Iron (Fe)-Dissolved	0.085		mg/L mg/L		0.3	23-JUL-20
Magnesium (Mg)-	22.3		mg/L		0.3	23-JUL-20
Dissolved			g/ =			
Manganese (Mn)- Dissolved	0.00088		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	9.96		mg/L			23-JUL-20
Sodium (Na)-Dissolved	108		mg/L		200	23-JUL-20
Conductivity						
Conductivity	876		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (CI)	113		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	176		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20
CDWQG = Health Canada Guideline Limits updated	JUNE 2019					
* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only * Turbidity guideline based on membrane filtration. For summary Table of Guidelines for Canadian Drinking Wa - A blank entry designates no known limit A shaded value in the Results column exceeds CDWQ	guidelines on con Iter Quality	ventional treatm	ent and slow sand			ase see
Approved by Hua Wo Account Manager						
Ğ						

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Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier Description

DLM

Ηа

Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N* Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

E. Coli* Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

Manganese* Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions
Bicarbonate See Alkalinity. Report as the anion HCO3-1
Carbonate See Alkalinity. Reported at the anion CO3-2

Calcium See Hardness. Common major cation of water chemistry.

Chloride Common major anion of water chemistry.

Conductance Physical test measuring water salinity (dissolved ions or solids)

Hardness

Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

Hydroxide See alkalinity

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Sodium Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for

sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Sulphate Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Heterotrophic

Plate Count

Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2477630 Report Date: 29-JUL-20 Page 1 of 6

Client: Stantec Consulting (Winnipeg)

500 - 311 Portage Ave Winnipeg MB R3B 2B9

Contact: Tassia Stainton

est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
LK-TITR-WP	Water							
Batch R516629	98							
WG3369055-24 LCS								
Alkalinity, Total (as C			105.5		%		85-115	22-JUL-20
WG3369055-21 MB Alkalinity, Total (as C			<1.0		mg/L		1	22-JUL-20
TEXS+F1-HSMS-WP	Water							
Batch R516664	45							
WG3368156-2 LCS	5							
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS F1 (C6-C10)	3		98.7		%		70-130	23-JUL-20
WG3368156-1 MB Benzene			<0.00050)	mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050)	mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofle	uorobenzene (SS	5)	85.2		%		70-130	23-JUL-20
L-L-IC-N-WP	Water	•)	00.2		70		70-130	25-30L-20
Batch R516670								
WG3367901-6 LCS								
Chloride (CI)			102.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Chloride (CI)			<0.10		mg/L		0.1	22-JUL-20
C-WP	Water							
Batch R516629	98							
WG3369055-23 LCS Conductivity	3		98.0		%		90-110	22-JUL-20
WG3369055-21 MB Conductivity			<1.0		umhos/cm		1	22-JUL-20
·			11.0		4111100/0111		1	22-JUL-20
-IC-N-WP	Water							



Page 2 of 6

Workorder: L2477630 Report Date: 29-JUL-20

Test Matrix Reference Result Qualifier Units **RPD** Limit Analyzed F-IC-N-WP Water Batch R5166703 WG3367901-6 LCS Fluoride (F) 102.0 % 90-110 22-JUL-20 WG3367901-5 MB Fluoride (F) <0.020 mg/L 0.02 22-JUL-20 F2-F4-FID-WP Water **Batch** R5167079 WG3369781-2 LCS F2 (C10-C16) % 99.4 70-130 24-JUL-20 F3 (C16-C34) 91.9 % 24-JUL-20 70-130 F4 (C34-C50) 107.6 % 70-130 24-JUL-20 WG3369781-1 MB F2 (C10-C16) <0.10 mg/L 0.1 24-JUL-20 F3 (C16-C34) <0.25 mg/L 0.25 24-JUL-20 F4 (C34-C50) < 0.25 mg/L 0.25 24-JUL-20 Surrogate: 2-Bromobenzotrifluoride 87.8 % 60-140 24-JUL-20 FC-MF-WP Water Batch R5164763 WG3368074-1 MB Fecal Coliforms CFU/100mL <1 1 22-JUL-20 WG3368074-2 Fecal Coliforms <1 CFU/100mL 1 22-JUL-20 MET-D-CCMS-WP Water Batch R5166699 WG3368715-2 LCS Calcium (Ca)-Dissolved 99.3 % 80-120 23-JUL-20 Iron (Fe)-Dissolved % 94.4 80-120 23-JUL-20 Magnesium (Mg)-Dissolved 102.0 % 80-120 23-JUL-20 Manganese (Mn)-Dissolved 100.7 % 80-120 23-JUL-20 Potassium (K)-Dissolved 103.3 % 80-120 23-JUL-20 Sodium (Na)-Dissolved 99.0 % 80-120 23-JUL-20 WG3368715-1 MB Calcium (Ca)-Dissolved < 0.050 mg/L 0.05 23-JUL-20 < 0.010 Iron (Fe)-Dissolved mg/L 0.01 23-JUL-20 <0.0050 Magnesium (Mg)-Dissolved mg/L 0.005 23-JUL-20 Manganese (Mn)-Dissolved <0.00010 mg/L 0.0001 23-JUL-20 Potassium (K)-Dissolved < 0.050 mg/L 0.05 23-JUL-20



Workorder: L2477630 Report Date: 29-JUL-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP Batch R5166699 WG3368715-1 MB Sodium (Na)-Dissolved	Water		<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP Batch R5166703 WG3367901-6 LCS	Water							
Nitrite (as N) WG3367901-5 MB Nitrite (as N)			104.0 <0.0010		% mg/L		90-110	22-JUL-20 22-JUL-20
NO3-L-IC-N-WP	Water		<0.0010		mg/L		0.001	22-JUL-20
Batch R5166703 WG3367901-6 LCS Nitrate (as N)			101.6		%		90-110	22-JUL-20
WG3367901-5 MB Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP Batch R5166298 WG3369055-22 LCS pH	Water		7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP Batch R5166703 WG3367901-6 LCS	Water							
Sulfate (SO4) WG3367901-5 MB			104.2		%		90-110	22-JUL-20
Sulfate (SO4) TC,EC-QT51-WP	Water		<0.30		mg/L		0.3	22-JUL-20
Batch R5165685 WG3367867-4 DUP Total Coliforms		L2477630-4	0	J	MPN/100mL	1	2	22-JUL-20
Escherichia Coli		0	0	-	MPN/100mL	0.0	- 65	22-JUL-20
WG3367867-12 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20



Workorder: L2477630

Report Date: 29-JUL-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	Water							
Batch R5165689 WG3367867-14 MB Total Coliforms	i i		0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	Water							
Batch R516641' WG3369614-2 LCS Turbidity	I		95.0		%		85-115	23-JUL-20
WG3369614-1 MB			33.0		70		00-110	23-JUL-20
Turbidity			<0.10		NTU		0.1	23-JUL-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	Not provided	22-JUL-20 12:00	0.25	4.1	hours	EHTR-FM
	2	Not provided	22-JUL-20 12:00	0.25	4.1	hours	EHTR-FM
	3	21-JUL-20	22-JUL-20 12:00	0.25	24	hours	EHTR-FM
	4	21-JUL-20	22-JUL-20 12:00	0.25	24	hours	EHTR-FM
	5	21-JUL-20 09:08	22-JUL-20 12:00	0.25	27	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477630 were received on 22-JUL-20 08:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

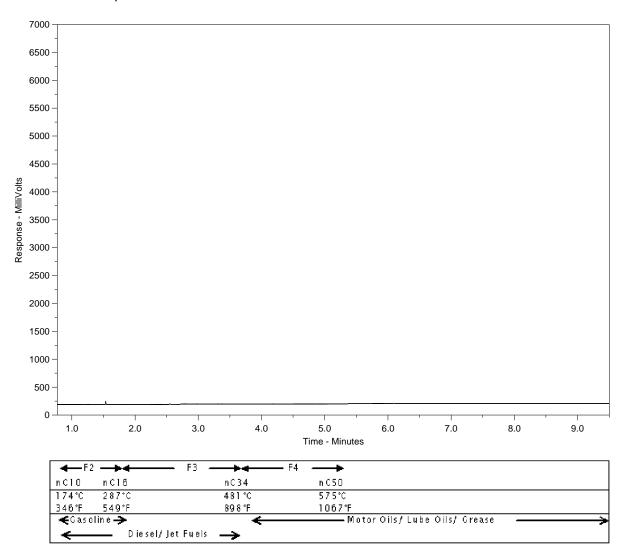
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



ALS Sample ID: L2477630-1

Client Sample ID: TRIP



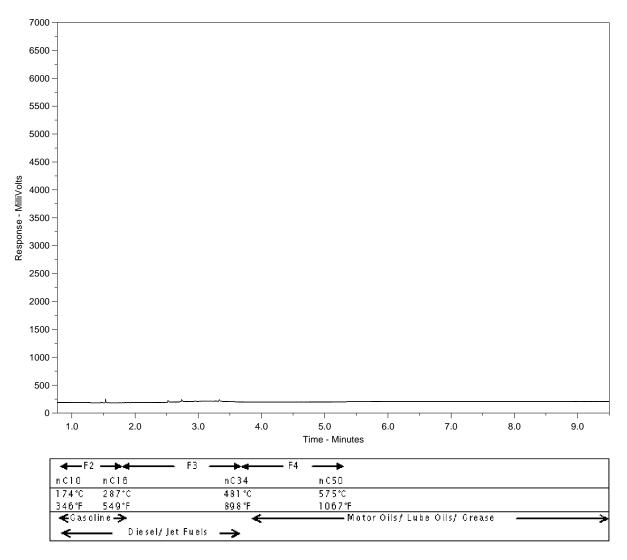
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477630-2 Client Sample ID: FIELD BLANK



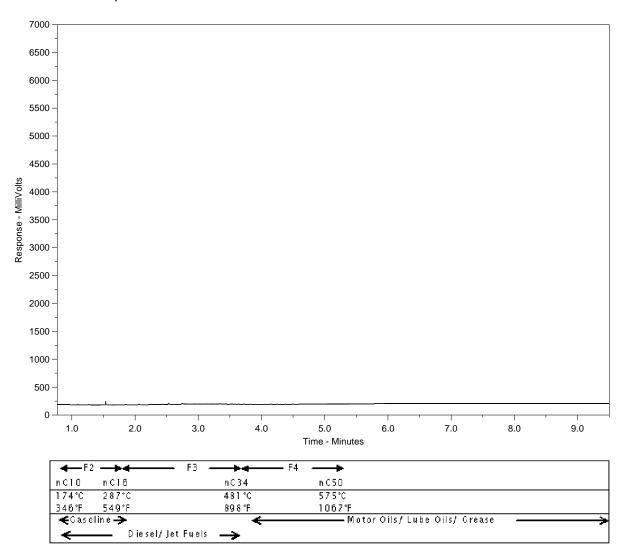
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477630-3 Client Sample ID: QC-01



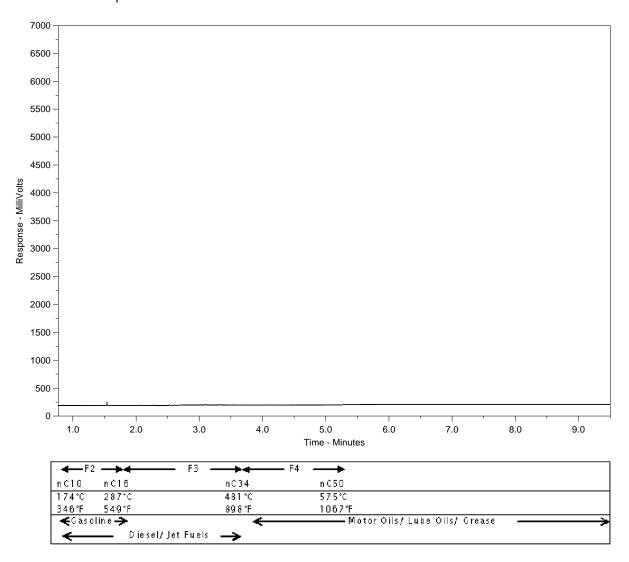
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477630-4 Client Sample ID: QC-02



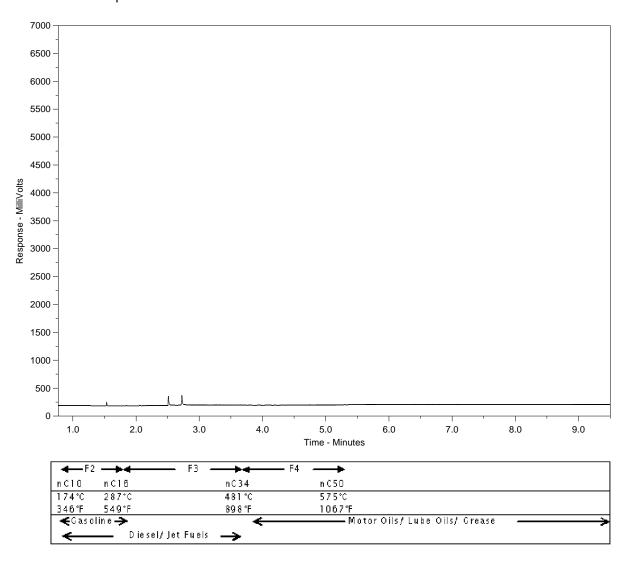
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.



ALS Sample ID: L2477630-5 Client Sample ID: RW-57



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 17 - 749268

www.alsglobal.com Contact and company name below will appear on the final report Report To Report Format / Distribution Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply) Select Report Format: PDF X EXCEL X EDD (DIGITAL) Company: Stanter-1.190] Regular (R) Standard TAT if received by 3 pm - business days - no surcharges apply Yossia Stanton Quality Control (QC) Report with Report Contact: 4 day [P4-20%] Business day [E - 100%] . Compare Results to Criteria on Report - provide details below if box checked Phone: 3 day [P3-25%] Same Day, Weekend or Statutory holiday [E2 -200% Company address below will appear on the final report Select Distribution: X EMAIL | MAIL FAX 2 day [P2-50%] (Laboratory opening fees may apply)] Email 1 or Fax tosso, Stolaton & Starter com Vortage Ava Street: Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm Koren mother estanter com City/Province: or tests that can not be performed according to the service level selected, you will be contacted. Postal Code: Email 3 Analysis Request YES NO Invoice To Same as Report To Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below ON HOLD CONTAINERS EMAIL | Copy of Invoice with Report YES NO Select Invoice Distribution: Company: Email 1 or Fax Contact: Email 2 36 Project Information Oil and Gas Required Fields (client use) رخ ۳ 145 ALS Account # / Quote #: ABBHOL AFE/Cost Center: PO# シュストン Major/Minor Code: Routing Code: ≱π_λ SAMPLES **IA** ... 6 PO / AFE: ta. Requisitioner: LSD: Location: NUMBER mt 1 82 5. Sampler: BB, ZW ALS Lab Work Order # (lab use only): ALS Contact: Sample Identification and/or Coordinates Date Time ALS Sample # Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) 1.) 6 01-0 0909 SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples1 (client use) (electronic COC only) Frozen SIF Observations Nο Are samples taken from a Regulated DW System? П Ice Packs Nο T YES NO Cooling Initiated Are samples for human consumption/ use? INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C YES NO INITIAL SHIPMENT RECEPTION (lab use only) SHIPMENT RELEASE (client use) FINAL SHIPMENT RECEPTION (lab use only) Released by: Time: Received by Received by: しんご REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION YELLOW - CLIENT COPY