2301 McCullough Road, Unit D
Nanaimo, British Columbia
Canada V9S 4M9
Tel: 250.585.0800
Fax: 250.585.0802
Toll Free: 1.888.641.6795
www.waterlineresources.com

March 31, 2017
2719-16-001

BC Ministry of Environment
Regional Operations Branch,
Routine Environmental Reporting Submission Mailbox
Sent Via: EnvAuthorizationsReporting@gov.bc.ca

Attention: Routine Environmental Reporting Submission Mailbox

To Whom it May Concern,

RE: Rockyview Resources Inc. (1069130 BC Ltd.), Former Elk Falls Pulp Mill, 4405 Island Highway, Campbell River, BC. Permit 31602-3.2, October 2016 and February 2017 Environmental Monitoring Program

1.0 INTRODUCTION

1069130 BC Ltd. (Rockyview Resources Inc.) retained Waterline Resources Inc. (Waterline) to complete an environmental monitoring program in October 2016 and February 2017 for the landfills associated with the former Elk Falls Pulp Mill. The site is located at 4405 Island Highway in Campbell River, British Columbia (Figure 1). The property was purchased in May 2016 and the new owner is complying with environmental monitoring requirements under Ministry of Environment (MOE) Permit 1602-3.2. In addition to satisfying the requirements outlined in the permit, this letter is intended to satisfy additional requests by MOE[1] identified in Waterline's proposal dated September 10, 2016 and the subsequently accepted proposed program[2].

The scope of work included:

- Assessing impacts to groundwater from the landfills and leachate (Phases 1 and 2 of the New Landfill and the Old Landfill during low (e.g., August to September) and high (January to February) groundwater conditions;
- Presenting all available groundwater and leachate data;
- Summarizing groundwater flow and hydraulic properties;
- Analyzing additional parameters, including leachate indicators and metals;
- Comparing water quality data to relevant site-specific water quality standards; and
- Inspecting the site fencing.

[1] Waterline Resources Inc., September 10, 2016. Environmental Monitoring Proposal, Former Elk Falls Pulp Mill, 4405 Island Highway, Campbell River, BC, Permit #1602-3.2. Proposal Number 2719-16-000.
[2] Bryan Vroom (MOE), August 24, 2016. Personal communication with Karen Cresine via e-mail.

Leachate and groundwater monitoring and reporting requirements in Section 4 of the permit were previously satisfied for the October 2016[3,4] and February 2017[5,6] events and are not discussed in this letter.

2.0 BACKGROUND

The site location is shown on Figure 1 and he site plan is presented on Figure 2. Two inactive landfills are located to the west of the mill site and are two areas of environmental concern that were considered in this report. Casey Creek is located immediately southeast of the Old Landfill and Georgia Strait is located immediately northeast of the Old Landfill.

Regional topography at the site slopes towards the northeast (Figure 1). The Old Landfill slopes steeply down to the tidal flats along Georgia Strait, where wells such as M-C1 are located. The New Landfill is located approximately 400 m west of the Old Landfill. Phases 1 and 2 of the New Landfill were constructed and Phase 3 was not constructed. Leachate collection systems are installed at both landfills and leachate management is completed by facility personnel. The landfill leachate collection systems comprise:

- A leachate collection ditch inside a toe dyke, as well as a vacuum header system connected to 118 well points at the Old Landfill; and
- A system of perforated leachate collection pipes installed in the base of the lined cells at the New Landfill.

The facility permit includes requirements sampling landfill leachate at the New and Old Landfills twice a year for pH, specific conductivity (SC), and chemical oxygen demand (COD) and groundwater monitoring at three wells surrounding the New Landfill on a quarterly basis for pH, SC, and COD. These results have typically been submitted to MOE within one week of receiving the laboratory analytical results.

The soils beneath and in the vicinity of these landfills was previously described as silty, clay and sand to a maximum investigation depth of approximately 30 m (Table 1).

[3] Waterline Resources Inc., 2016. Rockyview Resources Inc. (1069130 BC Ltd.), Former Elk Falls Pulp Mill, 4405 Island Highway, Campbell River, BC, Permit #1602-3.2, Quarterly Groundwater Monitoring Report. Project Number 2719-16-001.
[4] Waterline Resources Inc., 2016. Rockyview Resources Inc. (1069130 BC Ltd.), Former Elk Falls Pulp Mill, 4405 Island Highway, Campbell River, BC, Permit #1602-3.2, Semi-Annual Leachate Report. Project Number 2719-16-001.
[5] Waterline Resources Inc., 2017. Rockyview Resources Inc. (1069130 BC Ltd.), Former Elk Falls Pulp Mill, 4405 Island Highway, Campbell River, BC, Permit #1602-3.2, Quarterly Groundwater Monitoring Report. Project Number 2719-16-001.
[6] Waterline Resources Inc., 2017. Rockyview Resources Inc. (1069130 BC Ltd.), Former Elk Falls Pulp Mill, 4405 Island Highway, Campbell River, BC, Permit #1602-3.2, Semi-Annual Leachate Report. Project Number 2719-16-001.

3.0 GUIDELINES

In British Columbia, the CSR[7] under the Environmental Management Act[8] provide enforceable environmental standards for a variety of media, including soil and groundwater. These standards were developed using generic assumptions and risk based methods, for a variety of land uses and receptor pathway considerations.

The CSR marine aquatic life (AW) and freshwater AW standards were considered, as the Pacific Ocean is immediately northeast of the Old Landfill and Casey Creek is immediately southeast of this landfill. A portion of the new landfill is within the agricultural land reserve so the irrigation (IW) and livestock (LW) guidelines were also considered. For purposes here, Contaminated Sites Regulation (CSR) industrial (IL) standards were applied.

Generic assumptions used to derive the CSR soil and groundwater quality standards, which are intended to protect aquatic receptors, are based on an assumed groundwater transport distance of at least 10 m to an aquatic receptor[9]. The Approved or Working Surface Water Quality Guidelines[10,11] apply to surface water bodies and monitoring locations within 10 m of surface water bodies and were applied at the TH Series and M-C1 monitoring well locations, which are within 10 m of the tidal flats or within the tidal flats.

4.0 METHODS

Waterline standard methods for groundwater monitoring and sampling were followed and are provided for reference in Appendix A. Groundwater and leachate monitoring and sampling and site inspection activities were completed on September 29, 30 and October 6, 2016 (herein referred to as the fall 2016 event). An additional groundwater and leachate monitoring event was completed on February 17, 2016 (herein referred to as the winter 2017 event). As outlined in the proposed program, a blind duplicate was collected for QA/QC purposes during the September 2016 event. Monitoring well details are summarized in Table 1 and the analytical program is summarized in Table 2.

[7] BC Ministry of Environment, January 2017. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture, Summary Report. Water Protection & Sustainability Branch. http://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/final_approved_wqg_summary_march_2016.pdf

[8] BC Ministry of Environment, 2015. Working Water Quality Guidelines for British Columbia. http://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/bc_env_working_water_quality_guidelines.pdf

[9] BC Ministry of Environment, April 2013. Technical Guidance 15 on Contaminated Sites, Concentration Limits for the Protection of Aquatic Receiving Environments. Version 1.0.

[10] Ministry of Environment, January 2017. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture, Summary Report. Water Protection and Sustainability Branch.

[11] Ministry of Environment, 2015. Working Water Quality Guidelines for British Columbia (2015).

5.0 RESULTS

5.1 Groundwater Elevations

The majority of top of casing elevations were not surveyed (Table 1), aside from wells in the vicinity of the New Landfill. Consequently, the majority of available groundwater level data presented in Table 3, including all groundwater levels at the Old Landfill, could only be presented as metres below ground level (mbgl) and top of casing depths.

Groundwater elevations at wells with total depths ranging from 7.5 to 14 mbgl at the New Landfill (herein referred to as the shallow wells) were used to interpret groundwater flow. These shallow wells had water levels ranging from 10.54 mbgl to above ground level during the fall 2016 event. Monitoring well MW13-1 had a flowing artesian water level (i.e., the water level was 0.84 m above ground level (magl)).

Previously measured hydraulic conductivity of soil across shallow wells at the New Landfill ranged from $4x10^{-8}$ to $1x10^{-5}$ m/s (metres per second) and had a geometric mean hydraulic conductivity of $1x10^{-6}$ m/s (Table 1). Deeper wells at the New Landfill with total depths between 23 and 30 mbgl, had previously measured hydraulic conductivities of $5x10^{-9}$ and $1x10^{-3}$ m/s.

The groundwater flow interpretation is shown on Figure 2. The groundwater flow direction at the New Landfill was to the northeast, consistent with regional topography. The estimated horizontal hydraulic gradient at the New Landfill was 0.06 m/m during the fall 2016 event. Using the above geometric mean hydraulic conductivity, the estimated hydraulic gradient, and an assumed effective porosity of 0.3, the average linear groundwater velocity was estimated to be seven metres per year (m/yr) in the shallow water table zone beneath and close to the landfills.

5.2 Leachate and Groundwater Quality

Available leachate and groundwater quality are summarized in Table 4 (general chemistry), Table 5 (field readings and other parameters), Table 6 (Metals), Table 7 (polycyclic aromatic hydrocarbons (PAHs)), Table 8 (polychlorinated biphenyls), Table 9 (hydrocarbons), and Table 10 (resins and fatty acids). Leachate and groundwater quality for primary contaminants of concern are summarized on Figure 2. The laboratory analytical report is included in Appendix B.

The following summary of leachate and groundwater quality focuses on primary environmental parameters that may indicate a problem or concern. The reader is referred to the various summary tables for additional parameters that are not discussed below.

5.2.1 Salinity

Salinity is the measure of the salt content dissolved in water resulting from the dissolution of compounds like sodium chloride, magnesium sulfate, or potassium nitrate. Chloride and sulphate concentrations were found to be greater than applicable standards in the New Landfill leachate

discharge (NLLD) location during spring 2016 and/or winter 2017 events (Table 4). Chloride and sulphate concentrations in groundwater at the downgradient monitoring well MW13-1 were less than the applied standards during the spring 2016 and winter 2017 events. Chloride and sulphate at tidal flat monitor M-C1 were greater than the applicable standards but could be interpreted to be related to its proximity to the ocean.

Where chloride and sulphate were not previously analyzed, specific conductivity (EC) can be used as an indicator of potential salinity impacts. Specific conductivity results during the spring 2016 and winter 2017 events are consistent with chloride and salinity results presented above. Historical electrical conductivity results are comparable to the spring 2016 and winter 2017 results.

5.2.2 Dissolved Metals

Dissolved metals greater than the applied standards from leachate samples collected at the New Landfill included arsenic, boron, chromium, molybdenum, and vanadium. However, these dissolved metals were less than the applied standards at downgradient well MW13-1, located approximately 100 m northeast of the New Landfill.

Dissolved metals in leachate samples collected from the Old Landfill collection system exceeded the applied standards (for irrigation and livestock water use) for boron and chromium. At tidal flat monitoring well M-C1, dissolved boron was greater than the marine water quality guideline during the winter 2017 but not the fall 2016 event. Note that for simplicity, irrigation and livestock guidelines were considered against the entire data set. The Old Landfill and tidal flat area is outside the ALR, and being adjacent to the ocean, the drinking water, irrigation or livestock guidelines are not considered applicable in this area. Boron and chromium concentrations in M-C1 or the Old Landfill leachate samples did not exceed freshwater or marine aquatic life guidelines, and are not considered a significant issue.

5.2.3 Chemical Oxygen Demand (COD)

COD is a bulk indicator of oxygen demand from chemical reactions that may be related to contaminants of concern or other naturally-occurring geochemistry. COD appeared to not be particularly useful for monitoring potential impacts from these landfills based on the following:

- Salinity parameter reactions are not typically microbially mediated;
- COD within the New and Old Landfill leachate has decreased since 2005 and was less than or comparable to downgradient and upgradient monitoring locations;
- COD at upgradient well MW13-2 during the fall 2016 event was greater than all other COD results, including leachate; and
- COD in groundwater beneath the New Landfill liner was non-detectable on February 24, 2016.

5.2.4 Other Parameters

Phenols, PCBs, hydrocarbons, PAHs, resins and fatty acids, and ammonia were generally non-detectable and all of these parameters were less than the applied standards in the sampled leachate and groundwater; these parameters are not considered to be primary contaminants of concern. Tannins and lignins concentration analyzed in landfill leachate samples during both events and one resin and fatty acid (dehydroabietic acid) in the New Landfill leachate during the fall 2016, but not the spring 2017 event, were elevated compared to downgradient and upgradient groundwater samples. Tannins and lignins and resins do not currently have regulated standards assigned by MOE for comparison purposes.

5.3 Wildlife Exclusion Fencing

Wildlife exclusion fencing at the New Landfill was generally intact and in good condition, aside for two damaged sections, as shown on Figure 2. The Old Landfill is not fenced. The owner has committed to repairing and maintaining the fencing as required under permit.

6.0 DISCUSSION AND RECOMMENDATIONS

Chloride and sulphate in the New Landfill leachate samples were greater than applicable standards and concentrations in the surrounding groundwater monitoring wells. These parameters represent the primary contaminants of concern at the New Landfill site. Both chloride and sulphate travel conservatively in groundwater which means they are non-reactive and don't degrade or attenuate and therefore are indicators of contaminant migration and potential impacts. These salinity parameters were less than the applicable standards at downgradient well MW13-1.

Dissolved boron appears to represent the primary contaminant of potential concern remaining at the Old Landfill. The dissolved boron concentration in groundwater at the downgradient well (M-C1) exceeded the irrigation or livestock guidelines, but not the aquatic guidelines. Some uncertainty also exists whether dissolved boron at M-C1 is related to natural conditions in the marine environment or from Old Landfill influences.

Waterline recommends that the permit requirements should be amended to reflect the findings of this report. The following proposed program is recommended to be completed twice a year during comparable seasonal conditions (i.e., fall and winter):

- Measure groundwater levels at MW05-01, MW05-2, MW05-3, MW05-4, MW13-1 and MW13-2.
- Install an additional groundwater monitoring location (i.e. temporary mini-piezometer) on the tidal flat, which is cross-slope of the Old Landfill and representative of "background" conditions to better understand natural dissolved metals concentrations in the tidal flats.
- Measure field pH, specific conductivity and temperature at all sample locations.

- Confirm salinity and dissolved metals concentrations at MW13-1 through ongoing monitoring of these parameters.
- Measure salinity in groundwater samples from the New Landfill leachate and MW13-1.
- Confirm dissolved boron results from the winter 2017 event by collecting dissolved metals in groundwater samples from the Old Landfill leachate and M-C1.

Waterline also recommends that the following should be completed:

- Fencing at the New Landfill should be repaired.
- The leachate collection system at the New Landfill should continue to be operated.
- Consideration should be given to halting operation of the Old Landfill leachate collection system. A trial shut down of the Old Landfill leachate collection system would allow natural groundwater flow conditions to return and provide an opportunity to understand the current condition of groundwater migrating from the Old Landfill without the influence of water drawn from the tidal flats.
- A packer or a comparable device should be installed at MW13-1 to prevent flowing conditions, in the event that the water level is greater than the top of casing.
- The findings of the upcoming fall and winter events should be summarized in a report that is submitted to MOE. Waterline suggests that the same submission date as this report (March 31st) would be considered appropriate.

7.0 CERTIFICATION

This document was prepared under the direction of a professional geologist, geoscientist or engineer registered in the Province of British Columbia.

Waterline Resources Inc. trusts that the information provided in this document is sufficient for your requirements. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Respectfully submitted,

Waterline Resources Inc.

Brent Lennox, M.Sc., P.Geol. (AB)
Senior Hydrogeologist

Reviewed By:

Darren David, M.Sc., P.Geo (BC)
Principal Hydrogeologist

Eric Pringle, M.A.Sc., P.Eng. (BC)
Principal Hydrogeological Engineer

8.0 LIMITATIONS AND USE

The information presented in this document was compiled exclusively for Rockyview Resources Inc. (1069130 BC Ltd.) (the Client) by Waterline Resources Inc. (Waterline). This work was completed in accordance with the scope of work for this project that was agreed between Waterline and the Client. Waterline exercised reasonable skill, care and diligence to assess the information acquired during the preparation of this document, but makes no guarantees or warranties as to the accuracy or completeness of this information. The information contained in this document is based upon, and limited by, the circumstances and conditions acknowledged herein, and upon information available at the time of the preparation of this document. Any information provided by others is believed to be accurate but cannot be guaranteed. No other warranty, expressed or implied, is made as to the professional services provided to the Client.

Any use, reliance on, or decision made, by a third party based on this document is the sole responsibility of said third party. Waterline makes no representation or warranty to any third party with regard to this document and, or the work referred to in this document, and accepts no duty of care to any third party or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred as a result of the use of, reliance on, any decision made, or any action taken based on, this document or the work referred to in this document.

When Waterline submits instruments of professional service; including, reports, drawings and project-related deliverables, the Client agrees that only original signed and stamped paper versions shall be considered as original documents. The hard copy versions submitted by Waterline to the Client shall be considered as copies of the original documents, and in the event of a dispute or discrepancy, the signed and stamped original documents retained by Waterline shall govern over all copies, electronic or otherwise, provided to the Client.

This document is intended to be used in its entirety, and no individual part of the document may be taken as representative of the findings of the document. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form, by any third party, without the expressed written permission of the Client or Waterline.

TABLES

Table 1: Investigation Location Details

Location	UTM Coordinates		Depth		Elevation (mard)						Hydraulic Conduct. (m/s)	Formation Screened	Installation Date	Comments
	Easting	Northing	Borehole (mbgl)	Well (mbtoc)	Ground	Top of Casing	Sand Pack		Screen					
							Top	Bottom	Top	Bottom				
BH05-2	334917.8	5549427.9	6.6	6.51	66.11	66.07	61.36	59.56	61.06	59.56	7.E-08	Sand	27-Oct-05	Not located in 2016, destroyed/abandoned
BH05-3	334772.9	5549314.8	3.1	2.95	72.99	72.90	71.14	69.94	70.84	69.94	4.E-08	Clayey silt	5-Nov-05	Not located in 2016, destroyed/abandoned
MW05-1	334621.0	5549174.4	13.7	14.63	81.15	82.06	70.78	67.43	70.48	67.43	5.E-06	Silty sand	24-Oct-05	
MW05-2	334745.2	5549438.2	11.0	11.81	71.90	72.74	64.88	60.63	63.98	60.93	7.E-06	Silty sand	25-Oct-05	
MW05-3	335085.2	5549469.2	7.5	8.43	47.39	48.35	43.27	39.92	42.97	39.92	8.E-07	Sand	26-Oct-05	
MW05-4	335071.2	5549567.7	10.7	11.50	46.04	46.87	-	-	38.42	35.37	1.E-05	Sand	26-Oct-05	
MW05-5	334839.4	5549357.1	22.3	23.12	70.42	71.29	49.97	48.17	49.97	48.17	-	Sand	28-Oct-05	
MW05-6	334720.6	5549279.8	23.5	23.39	75.11	75.03	54.99	51.64	54.84	51.64	5.E-09	Silt and sand	4-Nov-05	
MW05-7	334838.6	5549360.8	29.3	30.03	70.32	71.08	44.41	41.06	44.11	41.06	1.E-03	Silty sand	20-Dec-05	
MW13-1	335287	5549210	12.2	12.90	51.13	52.00	-	-	-	-	-	-	2013	Downgradient of Phase 1 & 2 portion of new landfill
MW13-2	334748	5548795	9.1	9.75	79.13	80.00	-	-	-	-	-	-	2013	Upgradient of Phase 1 & 2 portion of new landfill
NLLD	-	-	-	-	-	-	-	-	-	-	-	-	-	New landfill leachate discharge at mill site
NL-Sump	-	-	-	-	-	-	-	-	-	-	-	-	-	New landfill leachate collection at sump
NLGW	-	-	-	-	-	-	-	-	-	-	-	-	-	New landfill groundwater underflow, under liner drain system
OLLD	-	-	-	-	-	-	-	-	-	-	-	-	-	Old landfill leachate discharge at mill site
OLWP	-	-	-	-	-	-	-	-	-	-	-	-	-	Old landfill wellpoint discharge at the leachate pumping station
M-A1 (PVC)	-	-	-	6.74	-	-	-	-	-	-	-	-	-	
M-A1 (Steel)	-	-	-	4.16	-	-	-	-	-	-	-	-	-	
M-A2	-	-	-	7.18	-	-	-	-	-	-	-	-	-	
M-A3	-	-	-	6.64	-	-	-	-	-	-	-	-	-	
M-B1 (Steel)	-	-	-	4.37	-	-	-	-	-	-	-	-	-	
M-B2	-	-	-	6.80	-	-	-	-	-	-	-	-	-	
M-B3	-	-	-	6.92	-	-	-	-	-	-	-	-	-	
M-C1 (PVC)	-	-	-	4.16	-	-	-	-	-	-	-	-	-	
M-C1 (Steel)	-	-	-	4.69	-	-	-	-	-	-	-	-	-	
M-C2	-	-	-	6.76	-	-	-	-	-	-	-	-	-	
M-C3	-	-	-	6.84	-	-	-	-	-	-	-	-	-	
M-D1 (Steel)	-	-	-	5.09	-	-	-	-	-	-	-	-	-	
M-D2	-	-	-	6.90	-	-	-	-	-	-	-	-	-	
M-D2 (PVC)	-	-	-	7.70	-	-	-	-	-	-	-	-	-	
M-E1	-	-	-	4.90	-	-	-	-	-	-	-	-	-	
M-E3	-	-	-	6.86	-	-	-	-	-	-	-	-	-	

Notes:
mbgl indicates metres below ground level
mbtoc indicates metres below top of casing
mard indicates metres above relative datum
UTM Coordinates based on hand held Garmin GPS, NAD 83, Zone 11U

1.1774E-06

Table 2: Summary of Analytical Program

2719-16-001

Former Elk Falls Pulp Mill, Campbell River, BC

Location	Field Sample ID	Sample Matrix	Date	Lab ID	Analytical Groups										Comments
					BTEX/VPH	LEPH/HEPH with PAH	Phenols	PCBs	Metals	COD	Ammonia	Tannins & Lignins	Resins & Fatty Acids	Salinity	
MW05-1	MW05-1	Water	29-Sep-16	PQ8764	X	X	X	X	D/T	X		X	X	X	
MW13-1	MW13-1	Water	29-Sep-16	PQ8761	X	X	X	X	D/T	X		X	X	X	
MW13-1	MW13-1 DUP	Water	29-Sep-16	PQ8762	X	X	X	X	D/T	X		X	X	X	Duplicate
MW13-2	MW13-2	Water	29-Sep-16	PQ8763	X	X	X	X	D/T	X		X	X	X	
NLLD	NLLD	Water	30-Sep-16	PQ8765	X	X	X	X	D/T	X		X	X	X	
OLWP	OLWP	Water	30-Sep-16	PQ8766	X	X	X	X	D/T	X		X	X	X	
M-C1 (Steel)	M-C1	Water	6-Oct-16	PS2353	X	X	X	X	D/T	X		X	X	X	
MW05-1	MW05-1	Water	16-Feb-17	QO6865	X	X	X	X	D/T	X	X	X	X	X	
MW13-1	MW13-1	Water	16-Feb-17	QO6863	X	X	X	X	D/T	X	X	X	X	X	
MW13-2	MW13-2	Water	16-Feb-17	QO6864	X	X	X	X	D/T	X	X	X	X	X	
NLLD	NLLD	Water	16-Feb-17	QO6867	X	X	X	X	D/T	X	X	X	X	X	
OLWP	OLWP	Water	16-Feb-17	QO6868	X	X	X	X	D/T	X	X	X	X	X	
M-C1 (Steel)	M-C1	Water	16-Feb-17	QO6866	X	X	X	X	D/T	X	X	X	X	X	

Notes:
Dissolved metals indicated by 'D', total metals indicated by 'T'.

Table 3: Water Level Monitoring Data **2719-16-001**

Former Elk Falls Pulp Mill, Campbell River, BC

Location	Date	Depth to Water		Elevations (mard)			Comments
		mbtoc	mbgl	Top of Casing	Ground	Ground-water	
TH-1A	22-Jul-91	2.40	2.40	36.58	36.58	34.18	
TH-1A	30-Jul-91	2.18	2.18	36.58	36.58	34.40	
TH-1B	22-Jul-91	1.72	1.72	36.59	36.59	34.87	
TH-1B	30-Jul-91	1.60	1.60	36.59	36.59	34.99	
TH-2A	22-Jul-91	2.20	2.20	36.78	36.78	34.58	
TH-2A	30-Jul-91	2.15	2.15	36.78	36.78	34.63	
TH-2B	22-Jul-91	2.21	2.21	36.79	36.79	34.58	
TH-2B	30-Jul-91	3.90	3.90	36.79	36.79	32.89	
TH-3A	22-Jul-91	2.66	2.66	36.75	36.75	34.09	
TH-3A	30-Jul-91	2.70	2.70	36.75	36.75	34.05	
TH-3B	30-Jul-91	2.70	2.70	36.75	36.75	34.05	
TH-3C	22-Jul-91	1.82	1.82	36.75	36.75	34.93	
TH-3C	30-Jul-91	2.00	2.00	36.75	36.75	34.75	
TH-4A	22-Jul-91	2.32	2.32	37.10	37.10	34.78	
TH-4A	30-Jul-91	2.80	2.80	37.10	37.10	34.30	
TH-4B	22-Jul-91	2.25	2.25	37.09	37.09	34.84	
TH-4B	30-Jul-91	2.65	2.65	37.09	37.09	34.44	
TH-4C	22-Jul-91	3.80	3.80	37.08	37.08	33.28	
TH-5A	22-Jul-91	3.01	3.01	39.77	39.77	36.76	
TH-5A	30-Jul-91	3.25	3.25	39.77	39.77	36.52	
TH-5B	22-Jul-91	3.08	3.08	39.77	39.77	36.69	
TH-5B	30-Jul-91	3.46	3.46	39.77	39.77	36.31	
TH-6A	22-Jul-91	2.80	2.80	36.88	36.88	34.08	
TH-6A	30-Jul-91	3.00	3.00	36.88	36.88	33.88	
TH-6B	22-Jul-91	2.68	2.68	36.89	36.89	34.21	
BH05-1	4-Nov-05	0.69	0.76	73.67	73.73	72.98	
BH05-1	16-Nov-05	0.71	0.78	73.67	73.73	72.95	
BH05-1	17-Nov-05	0.74	0.80	73.67	73.73	72.93	
BH05-1	24-Nov-05	0.76	0.82	73.67	73.73	72.91	
BH05-1	1-Dec-05	0.76	0.82	73.67	73.73	72.91	
BH05-1	4-Jan-06	0.71	0.77	73.67	73.73	72.96	
BH05-1	30-Jun-06	1.23	1.30	73.67	73.73	72.44	
BH05-2	4-Nov-05	1.41	1.45	66.07	66.11	64.66	
BH05-2	16-Nov-05	1.36	1.40	66.07	66.11	64.71	
BH05-2	17-Nov-05	1.46	1.50	66.07	66.11	64.61	
BH05-2	24-Nov-05	1.44	1.48	66.07	66.11	64.63	
BH05-2	1-Dec-05	1.40	1.44	66.07	66.11	64.67	
BH05-2	20-Dec-05	1.46	1.50	66.07	66.11	64.61	
BH05-2	4-Jan-06	1.44	1.48	66.07	66.11	64.63	
BH05-2	30-Jun-06	2.00	2.04	66.07	66.11	64.07	
BH05-3	16-Nov-05	1.89	1.99	72.90	72.99	71.01	
BH05-3	17-Nov-05	1.91	2.00	72.90	72.99	70.99	
BH05-3	24-Nov-05	1.18	1.27	72.90	72.99	71.72	
BH05-3	1-Dec-05	1.10	1.20	72.90	72.99	71.80	
BH05-3	20-Dec-05	1.06	1.15	72.90	72.99	71.84	
BH05-3	4-Jan-06	1.04	1.14	72.90	72.99	71.85	
BH05-3	30-Jun-06	1.13	1.23	72.90	72.99	71.77	

Table 3: Water Level Monitoring Data **2719-16-001**

Former Elk Falls Pulp Mill, Campbell River, BC

Location	Date	Depth to Water		Elevations (mard)			Comments
		mbtoc	mbgl	Top of Casing	Ground	Ground-water	
MW05-1	3-Nov-05	11.04	10.12	82.06	81.15	71.03	
MW05-1	16-Nov-05	11.44	10.53	82.06	81.15	70.63	
MW05-1	17-Nov-05	11.46	10.55	82.06	81.15	70.61	
MW05-1	24-Nov-05	11.22	10.31	82.06	81.15	70.84	
MW05-1	1-Dec-05	11.18	10.27	82.06	81.15	70.88	
MW05-1	20-Dec-05	11.20	10.29	82.06	81.15	70.87	
MW05-1	4-Jan-06	11.37	10.46	82.06	81.15	70.70	
MW05-1	30-Jun-06	11.48	10.57	82.06	81.15	70.59	
MW05-1	29-Apr-15	3.50	2.59	82.06	81.15	78.56	
MW05-1	30-Jun-15	11.51	10.60	82.06	81.15	70.55	
MW05-1	30-Sep-15	12.61	11.70	82.06	81.15	69.45	
MW05-1	22-Jun-16	6.91	6.00	82.06	81.15	75.15	
MW05-1	29-Sep-16	11.45	10.54	82.06	81.15	70.61	
MW05-1	16-Feb-17	10.97	10.06	82.06	81.15	71.09	
MW05-2	3-Nov-05	4.51	3.67	72.74	71.90	68.23	
MW05-2	16-Nov-05	4.98	4.14	72.74	71.90	67.76	
MW05-2	17-Nov-05	5.05	4.22	72.74	71.90	67.68	
MW05-2	24-Nov-05	4.86	4.03	72.74	71.90	67.87	
MW05-2	1-Dec-05	4.84	4.00	72.74	71.90	67.90	
MW05-2	20-Dec-05	4.79	3.95	72.74	71.90	67.95	
MW05-2	4-Jan-06	4.84	4.01	72.74	71.90	67.89	
MW05-2	30-Jun-06	4.61	3.77	72.74	71.90	68.13	
MW05-2	6-Oct-16	3.74	2.90	72.74	71.90	69.00	
MW05-3	3-Nov-05	1.51	0.55	48.35	47.39	46.84	
MW05-3	16-Nov-05	1.60	0.64	48.35	47.39	46.75	
MW05-3	17-Nov-05	1.63	0.67	48.35	47.39	46.72	
MW05-3	24-Nov-05	1.72	0.76	48.35	47.39	46.63	
MW05-3	1-Dec-05	1.66	0.70	48.35	47.39	46.69	
MW05-3	20-Dec-05	1.62	0.66	48.35	47.39	46.73	
MW05-3	4-Jan-06	1.61	0.65	48.35	47.39	46.74	
MW05-3	30-Jun-06	2.17	1.21	48.35	47.39	46.18	
MW05-3	6-Oct-16	2.20	1.24	48.35	47.39	46.15	
MW05-4	3-Nov-05	1.20	0.36	46.87	46.04	45.67	
MW05-4	16-Nov-05	1.35	0.51	46.87	46.04	45.52	
MW05-4	17-Nov-05	1.37	0.53	46.87	46.04	45.50	
MW05-4	24-Nov-05	1.33	0.50	46.87	46.04	45.54	
MW05-4	1-Dec-05	1.29	0.45	46.87	46.04	45.58	
MW05-4	20-Dec-05	1.28	0.44	46.87	46.04	45.59	
MW05-4	4-Jan-06	1.27	0.44	46.87	46.04	45.59	
MW05-4	30-Jun-06	1.68	0.85	46.87	46.04	45.18	
MW05-4	6-Oct-16	2.17	1.34	46.87	46.04	44.70	
MW05-5	3-Nov-05	19.55	18.68	71.29	70.42	51.74	
MW05-5	16-Nov-05	19.88	19.01	71.29	70.42	51.41	
MW05-5	17-Nov-05	19.88	19.01	71.29	70.42	51.41	
MW05-5	24-Nov-05	19.72	18.85	71.29	70.42	51.57	
MW05-5	1-Dec-05	19.67	18.80	71.29	70.42	51.62	
MW05-5	20-Dec-05	19.70	18.83	71.29	70.42	51.59	
MW05-5	4-Jan-06	19.78	18.91	71.29	70.42	51.51	

Table 3: Water Level Monitoring Data **2719-16-001**

Former Elk Falls Pulp Mill, Campbell River, BC

Location	Date	Depth to Water		Elevations (mard)			Comments
		mbtoc	mbgl	Top of Casing	Ground	Ground-water	
MW05-5	30-Jun-06	19.74	18.87	71.29	70.42	51.54	
MW05-5	6-Oct-16	>15.00	>14.13	71.29	70.42	<56.29	Water level tape too short
MW05-6	16-Nov-05	3.37	3.45	75.03	75.11	71.66	
MW05-6	17-Nov-05	4.15	4.23	75.03	75.11	70.88	
MW05-6	24-Nov-05	6.85	6.93	75.03	75.11	68.17	
MW05-6	1-Dec-05	7.08	7.16	75.03	75.11	67.95	
MW05-6	20-Dec-05	3.04	3.12	75.03	75.11	71.99	
MW05-6	4-Jan-06	2.78	2.86	75.03	75.11	72.24	
MW05-7	20-Dec-05	19.51	18.75	71.08	70.32	51.57	
MW05-7	4-Jan-06	19.60	18.84	71.08	70.32	51.48	
MW05-7	30-Jun-06	19.56	18.80	71.08	70.32	51.52	
MW05-7	6-Oct-16	>15.00	>14.24	71.08	70.32	<56.08	Water level tape too short
MW13-1	29-Apr-15	0.00	-0.87	52.00	51.13	52.00	
MW13-1	29-Sep-16	0.00	-0.87	52.00	51.13	52.00	
MW13-1	16-Feb-17	0.00	-0.87	52.00	51.13	52.00	
MW13-2	29-Apr-15	4.30	3.43	80.00	79.13	75.70	
MW13-2	29-Sep-16	6.25	5.38	80.00	79.13	73.75	
MW13-2	16-Feb-17	5.73	4.86	80.00	79.13	74.27	
M-A1 (PVC)	30-Sep-16	2.27	-	-	-	-	
M-A1 (Steel)	30-Sep-16	2.16	-	-	-	-	
M-A2	30-Sep-16	4.09	-	-	-	-	
M-A3	30-Sep-16	2.55	-	-	-	-	
M-B1 (Steel)	30-Sep-16	1.95	-	-	-	-	
M-B2	30-Sep-16	4.05	-	-	-	-	
M-B3	30-Sep-16	3.85	-	-	-	-	
M-C1 (PVC)	30-Sep-16	0.70	-	-	-	-	
M-C1 (Steel)	30-Sep-16	1.82	-	-	-	-	
M-C1 (Steel)	6-Oct-16	1.20	-	-	-	-	
M-C1 (Steel)	16-Feb-17	0.82	-	-	-	-	
M-C2	30-Sep-16	3.54	-	-	-	-	
M-C3	30-Sep-16	2.25	-	-	-	-	
M-D1 (Steel)	30-Sep-16	1.99	-	-	-	-	
M-D2	30-Sep-16	3.42	-	-	-	-	
M-D2 (PVC)	30-Sep-16	4.06	-	-	-	-	
M-E1	30-Sep-16	2.40	-	-	-	-	
M-E3	30-Sep-16	2.60	-	-	-	-	

Notes:

Corrected Hydraulic Head based on an 0.75

Corrected hydraulic head represents the equivalent hydraulic head correcting for any LNAPL thickness, if presen

Well Vapours represent combustible vapours in well casing, expressed in parts per million by volume (ppmv), un

mbtoc indicates metres below top of well casing

mbgl indicates metres below ground level

mard indicates elevation in metres above relative datum

Table 4: Water Quality Data - General Chemistry

2719-16-001
Former Elk Falls Pulp Mill, Campbell River, BC

				Indicator Parameters							Major Cations								Major Anions								Nitrogen			Metals			
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**pH**	**Conductivity (EC)**	**Salinity**	**Alkalinity, Total (as $CaCO_3$)**	**Alkalinity, PP (as $CaCO_3$)**	**Dissolved Hardness (as $CaCO_3$)**	**Total Hardness (as $CaCO_3$)**	**Dissolved Calcium (Ca)**	**Total Calcium (Ca)**	**Dissolved Magnesium (Mg)**	**Total Magnesium (Mg)**	**Dissolved Sodium (Na)**	**Total Sodium (Na)**	**Dissolved Potassium (K)**	**Total Potassium (K)**	**Chloride (Cl)**	**Fluoride (F)**	**Sulphate (SO_4)**	**Sulphide (S^{2-})**	**Bromide (Br^-)**	**Bicarbonate (HCO_3)**	**Carbonate (CO_3)**	**Hydroxide (OH)**	**Nitrate (as N)**	**Nitrite (as N)**	**Ammonia (as N)**	**Dissolved Iron (Fe)**	**Total Iron (Fe)**	**Dissolved Manganese (Mn)**	**TotalManganese (Mn)**
		Units		-	µS/cm	g/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CSR Guidelines		*DW*		-	-	-	-	-	-	-	-	-	*100 TO*	-	*200 TO*	-	-	-	*250 TO*	*1.5*	*500 TO*	*0.05 TO*	-	-	-	-	*10 N*	*3.2*	-	-	-	-	-
		IW (Irrigation)/LW (Livestock)		-	-	-	-	-	-	-	1000	-	-	-	-	-	-	-	100 Cr	1 L	1000	-	-	-	-	-	100 N	10	-	-	-	-	-
		AW (Marine)		-	-	**20 D2**	-	-	-	-	-	-	-	-	-	-	-	-	**15**	**1000**	**0.02**	-	-	-	-	-	**400 A**	**0.8 Cl**	**20 pH**	-	-	-	-
		AW (Freshwater)		-	-	15 D1	-	-	-	-	-	-	-	-	-	-	-	-	1500	2 H	1000	0.02	-	-	-	-	400 A	0.8 Cl	11.3 pH	-	-	-	-
Water Quality Guidelines (Marine)				7.0-8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1.5	-	-	-	-	-	-	3.7	-	0.53 2	-	-	0.1	0.1
TH-1A	2-Aug-91	TH-1A	9449-1	10.66	2670	-	-	-	-	-	2.35	-	0.14	-	*650*	-	-	39.7	*800*	-	268	***2.9***	-	116	413	-	0.052	-	-	0.75	-	-	0.011
TH-1B	2-Aug-91	TH-1B	9449-2	8.58	336	-	-	-	-	-	11.4	-	2.2	-	69.5	-	-	2.76	78	-	<1.0	<0.05	-	126	3.4	-	0.03	-	-	0.16	-	-	0.015
TH-2A	2-Aug-91	TH-2A	9449-3	8.55	754	-	-	-	-	-	2.15	-	0.63	-	198	-	-	2.76	156	-	49.6	<0.05	-	280	6.7	-	0.035	-	-	1.02	-	-	0.024
TH-2B	2-Aug-91	TH-2B	9449-4	8.69	626	-	-	-	-	-	3.8	-	1.23	-	157	-	-	9.06	152	-	25	***0.65***	-	134	3.4	-	0.026	-	-	1.05	-	-	0.034
TH-3A	2-Aug-91	TH-3A	9449-5	8.84	6150	-	-	-	-	-	17.3	-	12.8	-	*1780*	-	-	44.8	*2250*	-	<1.0	<0.05	-	1080	97.4	-	0.022	-	-	6.17	-	-	0.16
TH-3B	2-Aug-91	TH-3B	9449-6	8.39	1650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TH-3C	2-Aug-91	TH-3C	9449-7	8.5	372	-	-	-	-	-	67	-	11.3	-	27.4	-	-	9.71	65	-	30.8	***0.23***	-	120	3.4	-	0.021	-	-	1.07	-	-	0.22
TH-4A	2-Aug-91	TH-4A	9449-8	8.77	1970	-	-	-	-	-	133	-	2.51	-	190	-	-	3.35	*320*	-	45	***0.22***	-	779	23.5	-	0.048	-	-	0.64	-	-	0.1
TH-4B	2-Aug-91	TH-4B	9449-9	8.47	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TH-4C	2-Aug-91	TH-4C	9449-10	8.19	145	-	-	-	-	-	14.1	-	2.49	-	11.3	-	-	1.94	30	-	<1.0	<0.05	-	61.5	0	-	0.033	-	-	0.25	-	-	0.022
TH-5A	2-Aug-91	TH-5A	9449-11	8.6	11000	-	-	-	-	-	91.8	-	51.7	-	*2190*	-	-	70.1	*3800*	-	<1.0	***0.8***	-	5490	138	-	0.48	-	-	3.8	-	-	0.97
TH-5B	2-Aug-91	TH-5B	9449-12	7.92	180	-	-	-	-	-	17.1	-	4.13	-	16.1	-	-	1.13	38	-	<1.0	<0.05	-	78.6	0	-	0.17	-	-	0.092	-	-	0.017
TH-6A	2-Aug-91	TH-6A	9449-13	9.94	13000	-	-	-	-	-	6.9	-	1.92	-	*3110*	-	-	187	*14100*	-	***2640***	***290***	-	902	1438	-	0.49	-	-	0.69	-	-	0.015
TH-6B	2-Aug-91	TH-6B	9449-14	9.88	20000	-	-	-	-	-	18.5	-	6.3	-	*1040*	-	-	47.1	*18000*	-	***2700***	***168***	-	3070	1370	-	0.41	-	-	3.09	-	-	0.062
MW05-1	25-Nov-05	MW05-1	1099-02	-	-	-	94	-	-	76.8	21.4	-	5.66	-	10.2	-	-	<2.0	11.7	0.096	6.16	-	<0.050	-	-	-	0.0072	0.0018	-	0.055	-	-	0.029
MW05-1	31-Mar-13	MW05-1	-	7.75	396	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05-1	12-Feb-15	MW05-1	LR5782	7.75	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05-1	29-Apr-15	MW05-1	MD5724	8.31	435	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05-1	30-Jun-15	MW05-1	-	8.37	428	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05-1	30-Sep-15	MW05-1	NG8600	8.31	428	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05-1	16-Feb-16	MW05-1	OD3450	8.32	395	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05-1	22-Jun-16	MW05-1	OW9758	8.22	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05-1	29-Sep-16	MW05-1	PQ8764	8.15	418	0.200	-	-	198	296	48.4	69.5	18.8	29.8	14.8	22.1	3.15	4.98	11	-	4.1	-	-	-	-	-	-	-	-	0.0391	25.3	0.0863	0.508
MW05-1	16-Feb-17	MW05-1	QO6865	8.29	398	0.19	-	-	192	288	46.9	71.9	18.2	26.3	15.6	19.3	3.27	5.65	10	-	4.6	-	-	-	-	-	-	-	0.052	0.0653	18.5	0.0751	0.47
MW05-2	25-Nov-05	MW05-2	1099-03	-	-	-	59	-	-	33.9	8.57	-	3.05	-	11.1	-	-	<2.0	9.17	0.036	6.89	-	0.085	-	-	-	0.376	0.0047	-	0.109	-	-	0.173
MW05-2	25-Nov-05	MW05-2 (Dup)	1099-04	-	-	-	59	-	-	33.6	8.52	-	2.98	-	10.9	-	-	<2.0	9.17	0.036	6.92	-	0.081	-	-	-	0.363	0.0030	-	<0.030	-	-	0.156
MW05-3	25-Nov-05	MW05-3	1099-06	-	-	-	92	-	-	56.7	13	-	5.87	-	13.1	-	-	<2.0	10.5	0.108	14.0	-	<0.050	-	-	-	0.258	0.0112	-	0.163	-	-	0.203
MW05-4	25-Nov-05	MW05-4	1099-01	-	-	-	44	-	-	54.0	12.7	-	5.42	-	8.3	-	-	<2.0	10.9	0.041	4.21	-	<0.050	-	-	-	0.815	0.0017	-	0.105	-	-	0.052
MW05-6	25-Nov-05	MW05-6	1099-05	-	-	-	110	-	-	59.1	16.6	-	4.28	-	44.0	-	-	2.2	9.09	0.127	56.6	-	<0.050	-	-	-	<0.0050	0.0015	-	0.907	-	-	0.198
MW05-7	4-Jan-06	MW05-7	1089-01	-	-	-	79	-	-	81.5	21.1	-	7.02	-	13.2	-	-	<2.0	7.75	0.057	8.43	-	<0.050	-	-	-	<0.0050	<0.0010	-	0.206	-	-	0.194
MW13-1	19-Mar-13	MW13-1	-	8.12	235	-	-	-	-	-	-	-	-	-	19.1	-	-	-	11.6	-	28.1	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	30-Jun-13	MW13-1	-	8.07	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	31-Mar-14	MW13-1	-	7.8	184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	30-Sep-14	MW13-1	-	8.0	189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	12-Feb-15	MW13-1	LR5783	8.05	177	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	29-Apr-15	MW13-1	MD5725	8.19	188	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	30-Jun-15	MW13-1	-	8.17	181	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	30-Sep-15	MW13-1	NG8601	8.13	179	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	16-Feb-16	MW13-1	OD3451	8.16	184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	22-Jun-16	MW13-1	OW9759	8.13	187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-1	29-Sep-16	MW13-1	PQ8761	8.16	188	0.090	-	-	69.0	354	18.6	73.7	5.47	41.2	9.83	20.6	2.44	19.4	11	-	7.8	-	-	-	-	-	-	-	-	0.0054	92.8	0.0453	2.08
MW13-1	29-Sep-16	MW13-1 DUP	PQ8762	8.17	188	0.090	-	-	66.4	556	18.4	106	4.97	70.5	10.0	28.0	2.42	33.1	11	-	8.2	-	-	-	-	-	-	-	-	0.0187	158	0.0424	3.58
MW13-1	16-Feb-17	MW13-1	QO6863	8.17	189	0.09	-	-	72.5	109	18.7	25.9	6.27	10.7	10.7	12.1	2.45	5.58	12	-	9.44	-	-	-	-	-	-	-	0.079	<0.0050	10.1	0.0379	0.285
MW13-2	30-Jun-13	MW13-2	-	8.23	278	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-2	31-Mar-14	MW13-2	-	7.8	231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-2	30-Sep-14	MW13-2	-	8.1	238	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-2	12-Feb-15	MW13-2	LR5781	8.13	232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-2	29-Apr-15	MW13-2	MD5723	8.27	238	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-2	30-Jun-15	MW13-2	-	8.25	226	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-2	30-Sep-15	MW13-2	NG8599	8.02	223	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-2	16-Feb-16	MW13-2	OD3449	8.24	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 4: Water Quality Data - General Chemistry

2719-16-001
Former Elk Falls Pulp Mill, Campbell River, BC

				Indicator Parameters							Major Cations								Major Anions								Nitrogen			Metals			
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**pH**	**Conductivity (EC)**	**Salinity**	**Alkalinity, Total (as $CaCO_3$)**	**Alkalinity, PP (as $CaCO_3$)**	**Dissolved Hardness (as $CaCO_3$)**	**Total Hardness (as $CaCO_3$)**	**Dissolved Calcium (Ca)**	**Total Calcium (Ca)**	**Dissolved Magnesium (Mg)**	**Total Magnesium (Mg)**	**Dissolved Sodium (Na)**	**Total Sodium (Na)**	**Dissolved Potassium (K)**	**Total Potassium (K)**	**Chloride (Cl)**	**Fluoride (F)**	**Sulphate (SO_4)**	**Sulphide (S^{2-})**	**Bromide (Br^-)**	**Bicarbonate (HCO_3)**	**Carbonate (CO_3)**	**Hydroxide (OH)**	**Nitrate (as N)**	**Nitrite (as N)**	**Ammonia (as N)**	**Dissolved Iron (Fe)**	**Total Iron (Fe)**	**Dissolved Manganese (Mn)**	**TotalManganese (Mn)**
		Units		-	µS/cm	g/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CSR Guidelines		*DW*		-	-	-	-	-	-	-	-	-	*100 TO*	-	*200 TO*	-	-	-	*250 TO*	*1.5*	*500 TO*	*0.05 TO*	-	-	-	-	*10 N*	*3.2*	-	-	-	-	-
		IW (Irrigation)/LW (Livestock)		-	-	-	-	-	-	-	1000	-	-	-	-	-	-	-	100 Cr	1 L	1000	-	-	-	-	-	100 N	10	-	-	-	-	-
		AW (Marine)		-	-	**20 D2**	-	-	-	-	-	-	-	-	-	-	-	-	**15**	**1000**	**0.02**	-	-	-	-	-	**400 A**	**0.8 Cl**	**20 pH**	-	-	-	-
		AW (Freshwater)		-	-	15 D1	-	-	-	-	-	-	-	-	-	-	-	-	1500	2 H	1000	0.02	-	-	-	-	400 A	0.8 Cl	11.3 pH	-	-	-	-
Water Quality Guidelines (Marine)				7.0-8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1.5	-	-	-	-	-	-	3.7	-	0.53 2	-	-	0.1	0.1
MW13-2	22-Jun-16	MW13-2	OW9757	8.12	228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW13-2	29-Sep-16	MW13-2	PQ8763	8.22	233	0.110	-	-	96.1	1800	23.3	428	9.19	179	9.23	61.3	1.60	32.6	9.2	-	5.7	-	-	-	-	-	-	-	-	0.0304	387	0.017	14.6
MW13-2	16-Feb-17	MW13-2	QO6864	8.25	230	0.11	-	-	97.5	124	22.8	30.1	9.88	11.9	9.02	9.51	1.48	2.2	8.6	-	5.01	-	-	-	-	-	-	-	0.075	<0.0050	6.09	0.0135	0.223
NLLD	29-Nov-05	Leachate	427649-2	-	-	-	3560	1540	-	-	16	-	14	-	*2800*	-	-	195	*1020*	<0.4	***1940***	***43***	-	585	1850	<5	<0.3	<0.3	4.6	<0.1	-	-	<0.05
NLLD	26-Apr-06	Leachate	1065-01	-	-	-	7690	-	-	152	17.2	-	26.4	-	*5040*	-	-	319	*1630*	<2.0	***2370***	***108***	<5.0	-	-	-	<0.50	0.29	-	0.17	-	-	0.032
NLLD	19-Jun-07	Leachate	-	10	23200	-	9770	-	-	-	-	-	-	-	*5320*	-	-	-	*1600*	-	***2600***	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	4-Jan-10	Final Effluent	1001050024	-	-	-	-	-	-	-	14.0	-	5.04	-	121	-	-	7.4	-	-	-	-	-	-	-	-	-	-	-	0.20	-	-	0.019
NLLD	31-Mar-11	-	-	10.10	14150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	15-Aug-11	-	-	10.43	18510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	31-Jan-13	New Landfill Leachate	-	9.9	10300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	2-Oct-13	-	-	9.88	16700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	31-Mar-15	-	-	9.60	6940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	23-Apr-15	New Landfill Leachate	-	9.60	6940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	30-Sep-15	New Landfill Leachate	NG8589	9.69	12500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	24-Feb-16	New Landfill Leachate	OE3055	9.50	5510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLLD	30-Sep-16	NLLD	PQ8765	9.62	11000	6.30	-	-	166	172	14.4	15.2	31.5	32.7	*2710*	2900	167	189	*670*	-	***1100***	-	-	-	-	-	-	-	-	0.07	0.144	0.0563	0.0592
NLLD	16-Feb-17	NLLD	QO6867	9.52	4940	2.69	-	-	211	196	17.7	17.2	40.6	37.2	*1200*	1110	86.9	83.1	160	-	375	-	-	-	-	-	-	-	4.5	0.0833	0.15	0.0507	0.0471
NL-Sump	4-Jan-10	New Landfill	1001050025	-	-	-	-	-	-	-	21.9	-	37.3	-	*4110*	-	-	212	-	-	-	-	-	-	-	-	-	-	-	0.28	-	-	0.14
NLGW	31-May-07	Underdrain	-	7.7	1885	-	1240	-	-	-	-	-	-	-	*331*	-	-	-	71	-	67	-	-	-	-	-	-	-	-	-	-	-	-
NLGW	31-Mar-11	-	-	8.10	445	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLGW	31-Jan-13	Groundwater	-	7.8	527	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLGW	23-Apr-15	Flow	-	8.2	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLGW	24-Feb-16	Under Liner	OE3057	8.40	524	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLGW	6-Oct-16	NLGW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLLD	1-Feb-10	Old Landfill Leachate	1002020038	-	-	-	-	-	-	-	32.1	-	89.9	-	*1840*	-	-	114	-	-	-	-	-	-	-	-	-	-	-	0.10	-	-	0.081
OLLD	31-Mar-11	-	-	8.80	2650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLLD	15-Aug-11	-	-	9.23	3852	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLLD	31-Jan-13	Old Landfill Leachate	-	8.8	2200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLLD	2-Oct-13	-	-	9.11	6790	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLLD	31-Mar-15	-	-	8.84	1430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLLD	23-Apr-15	Old Landfill Leachate	-	8.84	1430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLLD	30-Sep-15	Old Landfill Leachate	NG8588	8.98	7750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLLD	24-Feb-16	Old Landfill Leachate	OE3056	8.65	2480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLWP	3-Aug-90	Leachate	-	10.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.85	-	-	-	0.044
OLWP	31-Mar-11	-	-	9.37	5910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLWP	15-Aug-11	-	-	9.45	10530	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLWP	2-Oct-13	-	-	9.18	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLWP	30-Sep-16	OLWP	PQ8766	8.56	3730	1.99	-	-	455	440	66.5	60.3	70.2	70.3	*722*	717	54.4	54.7	*650*	-	100	-	-	-	-	-	-	-	-	0.446	0.654	0.599	0.663
OLWP	16-Feb-17	OLWP	QO6868	8.97	5410	2.96	-	-	409	376	35.8	36.4	77.6	69.3	*1260*	1110	78.4	76.9	*830*	-	106	-	-	-	-	-	-	-	0.97	0.106	0.203	0.0916	0.0843
M-C1 (Steel)	6-Oct-16	M-C1 (Steel)	PS2353	8.27	5590	3.02	-	-	381	510	34.3	70.3	71.8	81.1	*896*	859	36.4	39.4	*1500*	-	200	-	-	-	-	-	-	-	-	0.0972	27.4	0.0109	0.37
M-C1 (Steel)	16-Feb-17	M-C1	QO6866	8.25	18700	11.2	-	-	2340	2250	166	207	*467*	420	*3650*	3390	125	122	*6800*	-	*781*	-	-	-	-	-	-	-	1.0	0.086	16.9	0.0465	0.286
Tidal Flats	12-Jul-91	Tidal Flats	-	9.68	-	-	-	-	-	687	29.4	-	*146*	-	*12100*	-	-	610	*12100*	*1.95*	***1810***	-	-	3910	3410	0	-	-	-	1.64	-	-	<0.003

Notes:
CSR Guidelines represent - B.C. Reg. 375/96 Environmental Management Act - Contaminated Sites Regulation (including Amendments up to B.C. Reg. 184/2016).
DW - Schedule 6 Generic Numerical Water Standards - Drinking Water.
AW - Schedule 6 Generic Numerical Water Standards - Aquatic Life.
IW - Schedule 6 Generic Numerical Water Standards - Irrigation Water.
LW - Schedule 6 Generic Numerical Water Standards - Livestock Water.
[1] - Human activities should not cause the Cl of marine and estuarine waters to fluctuate by more than 10% of the natural Cl expected at that time and depth.
[2] - Standard based on a salinity of 10 ppt, temperature 8.2°C, pH 8.6.
[A] - Standard may not protect all amphibians; consult director for further advice.

Table 4: Water Quality Data - General Chemistry

2719-16-001

Former Elk Falls Pulp Mill, Campbell River, BC

				Indicator Parameters							Major Cations								Major Anions								Nitrogen			Metals			
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**pH**	**Conductivity (EC)**	**Salinity**	**Alkalinity, Total (as $CaCO_3$)**	**Alkalinity, PP (as $CaCO_3$)**	**Dissolved Hardness (as $CaCO_3$)**	**Total Hardness (as $CaCO_3$)**	**Dissolved Calcium (Ca)**	**Total Calcium (Ca)**	**Dissolved Magnesium (Mg)**	**Total Magnesium (Mg)**	**Dissolved Sodium (Na)**	**Total Sodium (Na)**	**Dissolved Potassium (K)**	**Total Potassium (K)**	**Chloride (Cl)**	**Fluoride (F)**	**Sulphate (SO_4)**	**Sulphide (S^{2-})**	**Bromide (Br^-)**	**Bicarbonate (HCO_3)**	**Carbonate (CO_3)**	**Hydroxide (OH)**	**Nitrate (as N)**	**Nitrite (as N)**	**Ammonia (as N)**	**Dissolved Iron (Fe)**	**Total Iron (Fe)**	**Dissolved Manganese (Mn)**	**TotalManganese (Mn)**
Units				-	µS/cm	g/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CSR Guidelines	*DW*			-	-	-	-	-	-	-	-	-	*100 TO*	-	*200 TO*	-	-	-	*250 TO*	*1.5*	*500 TO*	*0.05 TO*	-	-	-	-	*10 N*	*3.2*	-	-	-	-	-
	IW (Irrigation)/LW (Livestock)			-	-	-	-	-	-	-	1000	-	-	-	-	-	-	-	100 Cr	1 L	1000	-	-	-	-	-	100 N	10	-	-	-	-	-
	AW (Marine)			-	-	**20 D2**	-	-	-	-	-	-	-	-	-	-	-	-	-	**15**	**1000**	**0.02**	-	-	-	-	**400 A**	**0.8 Cl**	**20 pH**	-	-	-	-
	AW (Freshwater)			-	-	15 D1	-	-	-	-	-	-	-	-	-	-	-	-	1500	2 H	1000	0.02	-	-	-	-	400 A	0.8 Cl	11.3 pH	-	-	-	-
Water Quality Guidelines (Marine)				7.0-8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1.5	-	-	-	-	-	-	3.7	-	0.53 2	-	-	0.1	0.1

Cl - Dependent on chloride (6 to less than 8 mg/L).

Cr - Standard to protect all types of crops.

D1 - Standard applies only if minimum 1:10 dilution available in receiving waterbody; freshwater is defined as water having a natural salinity <1.5 g/L.

D2 - Standard applies only if minimum 1:10 dilution available in receiving waterbody; dependent on natural salinity of receiving waterbody (3.5 to less than 13.5 g/L).

H - Dependent on hardness (less than 50 mg/L $CaCO_3$).

L - Standard varies with type of livestock; consult director for further advice.

N - Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

pH - Standard varies with pH (7.5 to less than 8.0), temperature, and/or salinity; 10°C and 10 g/L are assumed; consult director for further advice.

TO - Standard to protect against taste and odour concerns.

Italics - value exceeds CSR DW standard.

Green Text - value exceeds the most stringent standard for the irrigation and livestock pathways.

Bold - value exceeds CSR AW standard for marine and/or estuarine aquatic life.

Yellow highlight - value exceeds CSR AW standard for freshwater aquatic life.

Underline - Approved or working water quality guidelines (MOE; 2017, 2015). Marine guidelines were only considered for locations within 10 m or in the tidal flats (TH Series and M-C1 only).

Table 5: Water Quality Data - Field Readings and Other Parameters **2719-16-001**

Former Elk Falls Pulp Mill, Campbell River, BC

				Field Readings					Other				
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**pH**	**Specific Conductivity**	**Temperature**	**Dissolved Oxygen**	**Eh**	**COD**	**BOD**	**TOC**	**Phenols**	**Tannins & Lignins**
			Units	**-**	**µS/cm**	**°C**	**mg/L**	**mV**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
CSR Guidelines		*DW*		-	-	-	-	-	-	-	-	-	-
		IW (Irrigation)/LW (Livestock)		-	-	-	-	-	-	-	-	-	-
		AW (Marine)		-	-	-	-	-	-	-	-	**0.01**	-
		AW (Freshwater)		-	-	-	-	-	-	-	-	0.01	-
Water Quality Guidelines (Marine)				7.0-8.7	-	±1	-	-	-	-	-	-	-
TH-1A	2-Aug-91	TH-1A	9449-1	11.55	37900	23.4	-	-	98.6	36	-	-	35.8
TH-1B	2-Aug-91	TH-1B	9449-2	9.13	480	18.6	-	-	<25	<10	-	-	0.32
TH-2A	2-Aug-91	TH-2A	9449-3	8.78	1110	17.2	-	-	72.1	<10	-	-	1.49
TH-2B	2-Aug-91	TH-2B	9449-4	9.01	540	19.4	-	-	171	64	-	-	96.7
TH-3A	2-Aug-91	TH-3A	9449-5	9.45	540	15.7	-	-	153	18	-	-	4.63
TH-3B	2-Aug-91	TH-3B	9449-6	9.13	650	15.7	-	-	-	-	-	-	-
TH-3C	2-Aug-91	TH-3C	9449-7	8.71	480	14.5	-	-	90.4	26	-	-	0.55
TH-4A	2-Aug-91	TH-4A	9449-8	7.50	12300	14.8	-	-	333	67	-	-	9.89
TH-4B	2-Aug-91	TH-4B	9449-9	-	-	-	-	-	-	-	-	-	-
TH-4C	2-Aug-91	TH-4C	9449-10	-	-	-	-	-	37.6	18	-	-	<0.10
TH-5A	2-Aug-91	TH-5A	9449-11	7.29	11700	14.0	-	-	1370	42	-	-	233
TH-5B	2-Aug-91	TH-5B	9449-12	7.74	270	11.7	-	-	<25	<10	-	-	<0.10
TH-6A	2-Aug-91	TH-6A	9449-13	9.72	12400	26.2	-	-	555	373	-	-	721
TH-6B	2-Aug-91	TH-6B	9449-14	9.57	8320	19.0	-	-	744	596	-	-	1120
MW05-1	25-Nov-05	MW05-1	1099-02	7.78	190	7.8	4	317	168	-	2.94	<0.0020	0.16
MW05-1	31-Mar-13	MW05-1	-	-	-	-	-	-	30	-	-	-	-
MW05-1	12-Feb-15	MW05-1	LR5782	-	-	-	-	-	329	-	-	-	-
MW05-1	29-Apr-15	MW05-1	MD5724	-	-	-	-	-	18	-	-	-	-
MW05-1	30-Jun-15	MW05-1	-	-	-	-	-	-	63	-	-	-	-
MW05-1	30-Sep-15	MW05-1	NG8600	-	-	-	-	-	158	-	-	-	-
MW05-1	16-Feb-16	MW05-1	OD3450	-	-	-	-	-	48	-	-	-	-
MW05-1	22-Jun-16	MW05-1	OW9758	-	-	-	-	-	53	-	-	-	-
MW05-1	29-Sep-16	MW05-1	PQ8764	7.9	311	10.6	-	-	80	-	-	<0.0010	1.16
MW05-1	16-Feb-17	MW05-1	QO6865	7.07	366	8.3	-	-	48	-	-	0.003	0.23
MW05-2	25-Nov-05	MW05-2	1099-03	6.27	120	9.9	3	378	47	-	7.65	<0.0020	0.86
MW05-2	25-Nov-05	MW05-2 (Dup)	1099-04	6.27	120	9.9	3	378	56	-	7.57	<0.0020	0.80
MW05-3	25-Nov-05	MW05-3	1099-06	7.42	169	9.5	3	367	176	-	4.80	<0.0020	0.56
MW05-4	25-Nov-05	MW05-4	1099-01	7.03	146	8.5	3	345	27	-	0.65	<0.0020	<0.10
MW05-6	25-Nov-05	MW05-6	1099-05	7.21	339	8.8	3	389	79	-	21.9	<0.0020	4.50
MW05-7	4-Jan-06	MW05-7	1089-01	7.11	216	8.4	1	272	40	-	2.50	<0.0020	0.36
MW13-1	19-Mar-13	MW13-1	-	-	-	-	-	-	<20	-	-	-	0.17
MW13-1	30-Jun-13	MW13-1	-	-	-	-	-	-	<10	-	-	-	-
MW13-1	31-Mar-14	MW13-1	-	-	-	-	-	-	-	<6.0	-	-	-
MW13-1	30-Sep-14	MW13-1	-	-	-	-	-	-	-	<6.0	-	-	-
MW13-1	12-Feb-15	MW13-1	LR5783	-	-	-	-	-	<10	-	-	-	-
MW13-1	29-Apr-15	MW13-1	MD5725	-	-	-	-	-	11	-	-	-	-
MW13-1	30-Jun-15	MW13-1	-	-	-	-	-	-	<10	-	-	-	-
MW13-1	30-Sep-15	MW13-1	NG8601	-	-	-	-	-	20	-	-	-	-
MW13-1	16-Feb-16	MW13-1	OD3451	-	-	-	-	-	<10	-	-	-	-
MW13-1	22-Jun-16	MW13-1	OW9759	-	-	-	-	-	18	-	-	-	-
MW13-1	29-Sep-16	MW13-1	PQ8761	8.69	137000	10.9	-	-	112	-	-	<0.0010	1.66
MW13-1	29-Sep-16	MW13-1 DUP	PQ8762	-	-	-	-	-	158	-	-	<0.0010	4.25
MW13-1	16-Feb-17	MW13-1	QO6863	7.51	167	10.0	-	-	28	-	-	<0.0010	1.09
MW13-2	30-Jun-13	MW13-2	-	-	-	-	-	-	458	-	-	-	-
MW13-2	31-Mar-14	MW13-2	-	-	-	-	-	-	-	<6.0	-	-	-
MW13-2	30-Sep-14	MW13-2	-	-	-	-	-	-	-	<6.0	-	-	-
MW13-2	12-Feb-15	MW13-2	LR5781	-	-	-	-	-	432	-	-	-	-
MW13-2	29-Apr-15	MW13-2	MD5723	-	-	-	-	-	34	-	-	-	-
MW13-2	30-Jun-15	MW13-2	-	-	-	-	-	-	267	-	-	-	-
MW13-2	30-Sep-15	MW13-2	NG8599	-	-	-	-	-	129	-	-	-	-
MW13-2	16-Feb-16	MW13-2	OD3449	-	-	-	-	-	111	-	-	-	-
MW13-2	22-Jun-16	MW13-2	OW9757	-	-	-	-	-	71	-	-	-	-
MW13-2	29-Sep-16	MW13-2	PQ8763	8.37	162	10.8	-	-	611	-	-	<0.0010	3.40
MW13-2	16-Feb-17	MW13-2	QO6864	7.27	266	9.1	-	-	52	-	-	<0.0010	0.49
NLLD	29-Nov-05	Leachate	427649-2	10.3	10000	-	-	-	570	-	77	**0.05**	100
NLLD	26-Apr-06	Leachate	1065-01	10.54	20700	15.2	0.3	-159	941	-	103	**8.40**	309
NLLD	19-Jun-07	Leachate	-	-	-	-	-	-	1288	-	-	-	650
NLLD	4-Jan-10	Final Effluent	1001050024	-	-	-	-	-	-	-	-	-	-
NLLD	31-Mar-11	-	-	-	-	-	-	-	544	-	-	-	-
NLLD	15-Aug-11	-	-	-	-	-	-	-	923	-	-	-	-
NLLD	31-Jan-13	New Landfill Leachate	-	-	-	-	-	-	362	-	-	-	-
NLLD	2-Oct-13	-	-	-	-	-	-	-	556	-	-	-	-
NLLD	31-Mar-15	-	-	-	-	-	-	-	149	-	-	-	-
NLLD	23-Apr-15	New Landfill Leachate	-	-	-	-	-	-	149	-	-	-	-
NLLD	30-Sep-15	New Landfill Leachate	NG8589	-	-	-	-	-	301	-	-	-	-
NLLD	24-Feb-16	New Landfill Leachate	OE3055	-	-	-	-	-	87	-	-	-	-
NLLD	30-Sep-16	NLLD	PQ8765	10.15	9520	15.6	-	-	275	-	-	0.0024	99.9
NLLD	16-Feb-17	NLLD	QO6867	9.27	5090	9.7	-	-	82	-	-	0.0025	6.7
NL-Sump	4-Jan-10	New Landfill	1001050025	-	-	-	-	-	-	-	-	-	-
NLGW	31-May-07	Underdrain	-	-	-	-	-	-	28	-	-	-	0.7

Table 5: Water Quality Data - Field Readings and Other Parameters **2719-16-001**

Former Elk Falls Pulp Mill, Campbell River, BC

				Field Readings					Other				
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**pH**	**Specific Conductivity**	**Temperature**	**Dissolved Oxygen**	**Eh**	**COD**	**BOD**	**TOC**	**Phenols**	**Tannins & Lignins**
			Units	**-**	**µS/cm**	**°C**	**mg/L**	**mV**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
CSR Guidelines		*DW*		-	-	-	-	-	-	-	-	-	-
		IW (Irrigation)/LW (Livestock)		-	-	-	-	-	-	-	-	-	-
		AW (Marine)		-	-	-	-	-	-	-	-	**0.01**	-
		AW (Freshwater)		-	-	-	-	-	-	-	-	0.01	-
Water Quality Guidelines (Marine)				7.0-8.7	-	±1	-	-	-	-	-	-	-
NLGW	31-Mar-11	-	-	-	-	-	-	-	38	-	-	-	-
NLGW	31-Jan-13	Groundwater	-	-	-	-	-	-	0	-	-	-	-
NLGW	23-Apr-15	Flow	-	-	-	-	-	-	<10	-	-	-	-
NLGW	24-Feb-16	Under Liner	OE3057	-	-	-	-	-	<10	-	-	-	-
NLGW	6-Oct-16	NLGW	-	6.63	196	16.3	-	-	-	-	-	-	-
OLLD	1-Feb-10	Old Landfill Leachate	1002020038	-	-	-	-	-	-	-	-	-	-
OLLD	31-Mar-11	-	-	-	-	-	-	-	78	-	-	-	-
OLLD	15-Aug-11	-	-	-	-	-	-	-	92	-	-	-	-
OLLD	31-Jan-13	Old Landfill Leachate	-	-	-	-	-	-	131	-	-	-	-
OLLD	2-Oct-13	-	-	-	-	-	-	-	148	-	-	-	-
OLLD	31-Mar-15	-	-	-	-	-	-	-	69	-	-	-	-
OLLD	23-Apr-15	Old Landfill Leachate	-	-	-	-	-	-	69	-	-	-	-
OLLD	30-Sep-15	Old Landfill Leachate	NG8588	-	-	-	-	-	148	-	-	-	-
OLLD	24-Feb-16	Old Landfill Leachate	OE3056	-	-	-	-	-	66	-	-	-	-
OLWP	3-Aug-90	Leachate	-	-	-	-	-	-	-	436	-	**0.2**	-
OLWP	31-Mar-11	-	-	-	-	-	-	-	232	-	-	-	-
OLWP	15-Aug-11	-	-	-	-	-	-	-	264	-	-	-	-
OLWP	2-Oct-13	-	-	-	-	-	-	-	10100	-	-	-	-
OLWP	30-Sep-16	OLWP	PQ8766	8.42	2828	9.4	-	-	178	-	-	0.0040	6.55
OLWP	16-Feb-17	OLWP	QO6868	8.61	5730	10.3	-	-	128	-	-	0.003	13.8
M-C1 (Steel)	6-Oct-16	M-C1 (Steel)	PS2353	8.45	5960	13	-	-	140	-	-	0.0034	2.89
M-C1 (Steel)	16-Feb-17	M-C1	QO6866	7.26	19870	10.4	-	-	346	-	-	0.0037	7.74
Tidal Flats	12-Jul-91	Tidal Flats	-	-	-	-	-	-	-	-	-	-	-

Notes:

CSR Guidelines represent - B.C. Reg. 375/96 Environmental Management Act - Contaminated Sites Regulation (including Amendments up to B.C. Reg. 184/2016).

DW - Schedule 6 Generic Numerical Water Standards - Drinking Water.

AW - Schedule 6 Generic Numerical Water Standards - Aquatic Life.

IW - Schedule 6 Generic Numerical Water Standards - Irrigation Water.

LW - Schedule 6 Generic Numerical Water Standards - Livestock Water.

[1] - Human activities should not cause the Cl of marine and estuarine waters to fluctuate by more than 10% of the natural Cl expected at that time and depth.

[2] - Standard based on a salinity of 10 ppt, temperature 8.2°C, pH 8.6.

[A] - Standard may not protect all amphibians; consult director for further advice.

[Cl] - Dependent on chloride (6 to less than 8 mg/L).

[Cr] - Standard to protect all types of crops.

[D1] - Standard applies only if minimum 1:10 dilution available in receiving waterbody; freshwater is defined as water having a natural salinity <1.5 g/L.

[D2] - Standard applies only if minimum 1:10 dilution available in receiving waterbody; dependent on natural salinity of receiving waterbody (3.5 to less than 13.5 g/L).

[H] - Dependent on hardness (less than 50 mg/L $CaCO_3$).

[L] - Standard varies with type of livestock; consult director for further advice.

[N] - Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

[pH] - Standard varies with pH (7.5 to less than 8.0), temperature, and/or salinity; 10°C and 10 g/L are assumed; consult director for further advice.

[TO] - Standard to protect against taste and odour concerns.

Italics - value exceeds CSR DW standard.

Green Text - value exceeds the most stringent standard for the irrigation and livestock pathways.

Bold - value exceeds CSR AW standard for marine and/or estuarine aquatic life.

Yellow highlight - value exceeds CSR AW standard for freshwater aquatic life.

Underline - Approved or working water quality guidelines (MOE; 2017, 2015). Marine guidelines were only considered for locations within 10 m or in the tidal flats (TH Series and M-C1 only).

Table 6: Water Quality Data - Metals

2719-16-001
Former Elk Falls Pulp Mill, Campbell River, BC

Sample Location	Sample Date	Field Sample ID	Lab ID	Dissolved (D) or Total (T)	Metals: Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Chromium (Cr)	Chromium (Cr^{3+})	Hex. Chromium (Cr^{6+})	Cobalt (Co)	Copper (Cu)	Lead (Pb)	Lithium (Li)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Strontium (Sr)	Sulphur (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
			Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CSR Guidelines		DW			9.5	0.006	0.01	1	-	-	5	0.005	0.05	0.05	0.05	-	1^{TO}	0.01	-	0.001	0.25	-	-	0.01	-	-	-	-	-	-	-	0.02	-	5^{TO}	-
		IW (Irrigation)/LW (Livestock)			5	-	0.025	-	0.1	-	0.5^{C}	0.005	0.005	0.005	0.008	0.05	0.2	0.1	2.5^{Cr}	0.001	0.01^{Cs}	0.2	-	0.02^{Ca}	-	-	-	-	-	-	-	0.01	0.1	2^{pH}	-
		AW (Marine)			-	**0.2**	**0.125**	**5**	**1**	-	**50**	**0.001**	**0.15**	**0.56**	**0.15**	**0.04**	**0.02**	**0.02**	-	**0.001**	**10**	**0.083**	-	**0.54**	-	**0.015**	-	-	**0.003**	-	**1**	**1**	-	**0.1**	-
		AW (Freshwater)			-	0.2	0.05	10	0.053	-	50	0.0003^{H}	0.01	0.09	0.01	0.04	0.02^{H}	0.04^{H}	-	0.001	10	0.25^{H}	-	0.01	-	0.0005^{H}	-	-	0.003	-	1	3	-	0.075^{H}	-
		Water Quality Guidelines (Marine)			-	-	0.0125	-	0.1	-	1.2	0.00012	0.0015	0.056	0.0015	-	≤0.002	≤0.002	-	[1]	-	0.0083	-	0.001	-	0.0015	-	-	-	-	-	0.05	0.01	-
TH-1A	2-Aug-91	TH-1A	9449-1	D	0.39	<0.15	<0.30	0.008	<0.003	1.32	0.81	<0.025	<0.03	-	-	<0.02	**0.041**	<0.08	-	-	0.05	0.026	3.6	-	58.9	<0.03	0.027	-	-	<0.03	0.048	-	0.1	0.061	-
TH-1A	2-Aug-91	TH-1A	9449-1	T	197	**0.3**	<0.03	1	0.012	8.24	1.62	<0.025	0.32	-	-	0.12	0.65	0.11	-	-	0.13	**0.21**	16.2	-	413	**0.093**	0.55	-	<0.03	**9.51**	-	0.74	**0.54**	-
TH-1B	2-Aug-91	TH-1B	9449-2	D	<0.15	<0.15	<0.30	0.005	<0.003	<0.5	0.34	<0.025	<0.03	-	-	<0.02	<0.015	<0.08	-	-	<0.04	<0.025	0.84	-	22.7	<0.03	0.071	-	<0.03	0.008	-	<0.01	<0.015	-
TH-1B	2-Aug-91	TH-1B	9449-2	T	420	**1.05**	0.84	2.23	0.046	11.1	1.64	0.035	1.03	-	-	0.29	1	0.66	-	-	0.28	0.41	48.5	-	272	**0.31**	1.62	-	-	0.22	**52.4**	-	1.85	**0.98**	-
TH-2A	2-Aug-91	TH-2A	9449-3	D	0.9	<0.15	<0.30	0.007	<0.003	<0.5	0.19	<0.025	<0.03	-	-	<0.02	**0.026**	<0.08	-	-	0.056	<0.025	0.71	-	10.9	<0.03	0.018	-	<0.03	0.093	-	0.031	<0.015	-
TH-2A	2-Aug-91	TH-2A	9449-3	T	1310	<0.15	<0.3	**6.16**	0.056	8.02	3.3	0.077	1.27	-	-	0.71	3.35	<0.08	-	-	<0.04	0.95	109	-	215	**0.45**	3.74	-	-	0.49	**53**	-	3.78	2.51	-
TH-2B	2-Aug-91	TH-2B	9449-4	D	0.94	<0.15	<0.30	0.01	<0.003	0.62	0.24	<0.025	<0.03	-	-	<0.02	**0.063**	<0.08	-	-	0.043	<0.025	1.13	-	14.9	<0.03	0.028	-	-	<0.03	<0.006	-	0.052	0.017	-
TH-2B	2-Aug-91	TH-2B	9449-4	T	4550	**6.22**	6.46	**21.5**	<0.003	76.4	10.4	0.45	<0.03	-	-	2.38	12.7	3.33	-	-	1.61	4.21	385	-	539	**0.67**	12.2	-	-	1.08	**33.7**	-	14.2	11	-
TH-3A	2-Aug-91	TH-3A	9449-5	D	5.76	<0.15	<0.30	0.08	<0.003	<0.5	0.74	<0.025	<0.03	-	-	<0.02	**0.028**	<0.08	-	-	0.074	<0.025	3.6	-	13.9	<0.03	0.27	-	-	<0.03	0.32	-	0.053	0.038	-
TH-3A	2-Aug-91	TH-3A	9449-5	T	746	**1.65**	1.46	4.25	0.054	14.7	2.85	0.065	1.66	-	-	0.5	2.72	1.21	-	-	0.55	0.74	46.5	-	153	**0.41**	2.12	-	-	0.36	**55.6**	-	2.48	2.07	-
TH-3C	2-Aug-91	TH-3C	9449-7	D	0.75	<0.15	<0.30	0.027	<0.003	0.66	0.077	<0.025	<0.03	-	-	<0.02	<0.015	<0.08	-	-	<0.04	<0.025	0.78	-	27.7	<0.03	0.24	-	-	<0.03	0.061	-	<0.01	0.015	-
TH-3C	2-Aug-91	TH-3C	9449-7	T	1700	**2.95**	2.69	**8.03**	0.019	11.4	3.89	0.12	3.03	-	-	1.08	5.75	1.83	-	-	0.81	1.39	109	-	211	**0.52**	3.88	-	-	0.43	**156**	-	5.18	3.37	-
TH-4A	2-Aug-91	TH-4A	9449-8	D	0.36	<0.15	<0.30	0.008	<0.003	0.5	0.068	<0.025	0.035	-	-	<0.02	**0.05**	<0.08	-	-	<0.04	<0.025	<0.4	-	9.63	<0.03	0.083	-	-	<0.03	0.068	-	0.041	<0.015	-
TH-4A	2-Aug-91	TH-4A	9449-8	T	350	**0.64**	0.48	1.25	0.03	7.3	0.91	0.069	0.94	-	-	0.22	1.22	0.42	-	-	0.19	0.38	25.8	-	98.1	**0.2**	1	-	-	0.13	**33.2**	-	1.51	**0.82**	-
TH-4C	2-Aug-91	TH-4C	9449-10	D	0.25	<0.15	<0.30	0.006	<0.003	<0.5	0.031	<0.025	<0.03	-	-	<0.02	<0.015	<0.08	-	-	<0.04	<0.025	<0.4	-	15.5	<0.03	0.053	-	-	<0.03	0.018	-	<0.01	<0.015	-
TH-4C	2-Aug-91	TH-4C	9449-10	T	136	<0.15	<0.30	0.86	0.008	11.6	0.33	0.065	0.31	-	-	0.068	0.37	<0.08	-	-	<0.04	**0.11**	7.64	-	255	<0.03	0.51	-	-	<0.03	**11.6**	-	0.41	**0.42**	-
TH-5A	2-Aug-91	TH-5A	9449-11	D	1.77	<0.15	<0.30	0.075	<0.003	0.75	0.59	<0.025	0.046	-	-	<0.02	**0.03**	<0.08	-	-	<0.04	**0.11**	15.5	-	20.2	<0.03	0.66	-	-	<0.03	0.86	-	0.19	0.019	-
TH-5A	2-Aug-91	TH-5A	9449-11	T	91.7	<0.15	<0.30	0.62	<0.003	10	0.34	<0.025	0.085	-	-	0.052	0.27	<0.08	-	-	<0.04	0.066	4.41	-	273	<0.03	0.41	-	-	<0.03	**7.63**	-	0.26	**0.47**	-
TH-5B	2-Aug-91	TH-5B	9449-12	D	0.23	<0.15	<0.30	0.005	<0.003	0.64	0.067	<0.025	<0.03	-	-	<0.02	<0.015	<0.08	-	-	<0.04	<0.025	<0.4	-	17.2	<0.03	0.056	-	-	<0.03	0.01	-	<0.01	<0.015	-
TH-5B	2-Aug-91	TH-5B	9449-12	T	892	**1.95**	1.77	3.2	0.06	18	2.81	<0.025	2.45	-	-	0.6	2.71	1.5	-	-	0.61	1.15	120	-	102	**0.45**	3.33	-	-	0.46	**80.2**	-	3.45	2.2	-
TH-6A	2-Aug-91	TH-6A	9449-13	D	0.35	**0.23**	0.42	0.006	<0.003	0.87	1.98	<0.025	0.11	-	-	<0.02	**0.029**	<0.08	-	-	<0.04	**0.14**	43.3	-	37.8	<0.03	0.12	-	-	<0.03	0.88	-	0.34	0.054	-
TH-6A	2-Aug-91	TH-6A	9449-13	T	643	**1.47**	1.88	1.36	0.06	14.5	3.96	<0.025	**1.97**	-	-	0.56	2.79	1.01	-	-	0.49	1.09	91.8	-	36.8	**0.38**	1.3	-	-	0.22	**73.1**	-	3.24	**1.66**	-
TH-6B	2-Aug-91	TH-6B	9449-14	D	2.04	0.16	<0.30	0.035	<0.003	0.91	0.43	<0.025	0.095	-	-	<0.02	**0.039**	<0.08	-	-	<0.04	**0.12**	21	-	15	**0.035**	0.17	-	-	<0.03	0.72	-	0.21	0.045	-
TH-6B	2-Aug-91	TH-6B	9449-14	T	188	**0.37**	0.45	0.93	0.017	5.6	0.96	<0.025	0.56	-	-	0.14	0.58	0.19	-	-	0.11	0.33	35.5	-	238	**0.12**	0.786	-	-	<0.03	**18.7**	-	0.87	**0.56**	-
MW05-1	25-Nov-05	MW05-1	1099-02	D	0.070	<0.00050	<0.0010	<0.020	<0.0050	<0.20	<0.10	<0.000050	0.00172	-	-	0.00160	<0.0010	<0.0010	<0.050	<0.00020	<0.0020	<0.0050	<0.30	0.0013	4.62	<0.000050	0.0796	-	<0.00020	<0.030	<0.050	0.00071	<0.030	<0.0050	-
MW05-1	29-Sep-16	MW05-1	PQ8764	D	0.0117	<0.00050	0.00088	0.0110	<0.00010	<0.0010	<0.050	<0.000010	<0.0010	-	-	<0.00050	0.00082	<0.00020	<0.0050	<0.000010	<0.0010	0.0023	-	0.00015	6.79	<0.000020	0.232	<3.0	<0.000050	<0.0050	<0.0050	0.00143	0.0228	<0.0050	<0.00050
MW05-1	29-Sep-16	MW05-1	PQ8764	T	40.6	<0.00050	0.00246	0.155	0.00042	<0.0010	<0.050	0.000202	0.0255	-	-	0.0125	**0.0922**	0.0135	0.0061	<0.000010	<0.0010	0.0207	-	0.00063	49.7	0.000032	0.440	<3.0	0.000072	<0.0050	**2.28**	0.00215	0.122	0.0482	0.00217
MW05-1	16-Feb-17	MW05-1	QO6865	D	0.0167	<0.00050	0.00076	0.0105	<0.00010	<0.0010	<0.050	<0.000010	<0.0010	-	-	<0.00020	0.0004	<0.00020	<0.0020	<0.000010	<0.0010	<0.0010	-	0.00012	6.97	<0.000020	0.226	<3.0	<0.000010	<0.0050	<0.0050	0.00135	0.0144	<0.0050	<0.00050
MW05-1	16-Feb-17	MW05-1	QO6865	T	31.3	<0.00050	0.00169	0.177	0.00035	<0.0010	<0.050	0.000240	0.0204	-	-	0.012	**0.153**	0.0118	0.005	<0.000010	<0.0010	0.019	-	<0.00010	40.7	0.000048	0.356	<3.0	0.000091	<0.0050	0.285	0.0023	0.0666	0.0472	<0.00050
MW05-2	25-Nov-05	MW05-2	1099-03	D	0.285	0.00078	<0.0010	<0.020	<0.0050	<0.20	<0.10	<0.000050	<0.00050	-	-	0.0118	<0.0010	<0.0010	<0.050	<0.00020	<0.0010	<0.0050	<0.30	<0.0010	9.49	<0.000050	0.0544	-	<0.00020	<0.030	<0.050	<0.00020	<0.030	<0.0050	-
MW05-2	25-Nov-05	MW05-2 (Dup)	1099-04	D	0.031	<0.00050	<0.0010	<0.020	<0.0050	<0.20	<0.10	<0.000050	<0.00050	-	-	0.00138	<0.0010	<0.0010	<0.050	<0.00020	<0.0010	<0.0050	<0.30	<0.0010	9.00	<0.000050	0.0542	-	<0.00020	<0.030	<0.050	<0.00020	<0.030	<0.0050	-
MW05-3	25-Nov-05	MW05-3	1099-06	D	0.205	<0.00050	<0.0010	<0.020	<0.0050	<0.20	<0.10	<0.000050	<0.00050	-	-	0.0134	0.0028	<0.0010	<0.050	<0.00020	0.0097	<0.0050	<0.30	<0.0010	7.68	<0.000050	0.0450	-	<0.00020	<0.030	<0.050	<0.00020	<0.030	<0.0050	-
MW05-4	25-Nov-05	MW05-4	1099-01	D	0.108	<0.00050	<0.0010	<0.020	<0.0050	<0.20	<0.10	<0.000050	<0.00050	-	-	0.00057	0.0012	<0.0010	<0.050	<0.00020	<0.0010	<0.0050	<0.30	<0.0010	9.98	<0.000050	0.0491	-	<0.00020	<0.030	0.061	<0.00020	<0.030	0.0056	-
MW05-6	25-Nov-05	MW05-6	1099-05	D	0.905	0.00058	<0.0010	0.043	<0.0050	<0.20	<0.10	0.000106	0.00114	-	-	0.00175	0.0113	<0.0010	<0.050	<0.00020	0.0233	<0.0050	<0.30	<0.0010	5.91	<0.000050	0.118	-	<0.00020	<0.030	0.061	<0.00020	<0.030	0.0056	-
MW05-7	4-Jan-06	MW05-7	1089-01	D	0.090	<0.00050	<0.0010	0.026	<0.0050	<0.20	<0.10	<0.000050	<0.00050	-	-	0.00137	<0.0010	<0.0010	<0.050	<0.00020	<0.0010	<0.0050	<0.30	<0.0010	9.18	<0.000050	0.07	-	<0.00020	<0.030	<0.050	0.00035	<0.030	<0.0050	-
MW13-1	29-Sep-16	MW13-1	PQ8761	D	0.0208	<0.00050	0.00138	0.0091	<0.00010	<0.0010	<0.050	<0.000010	<0.0010	-	-	<0.00050	0.00027	<0.00020	<0.0050	<0.000010	0.0012	<0.0010	-	<0.00010	8.63	<0.000020	0.0955	<3.0	<0.000050	<0.0050	<0.0050	0.00098	<0.0050	<0.0050	<0.00050
MW13-1	29-Sep-16	MW13-1 DUP	PQ8762	D	0.0341	<0.00050	0.00146	0.0096	<0.00010	<0.0010	<0.050	<0.000010	<0.0010	-	-	<0.00050	0.00094	<0.00020	<0.0050	<0.000010	0.0014	0.0015	-	<0.00010	8.54	<0.000020	0.0931	<3.0	<0.000050	<0.0050	<0.0050	0.00092	<0.0050	<0.0050	<0.00050
MW13-1	29-Sep-16	MW13-1	PQ8761	T	103	<0.0020	0.0102	0.998	0.00107	<0.0040	<0.20	0.000986	0.0685	-	-	**0.0549**	**0.213**	0.0140	0.051	<0.000010	<0.0040	0.0595	-	0.00047	102	0.000120	0.541	<12	0.00073	<0.020	**4.99**	0.00745	0.215	**0.240**	<0.0020
MW13-1	29-Sep-16	MW13-1 DUP	PQ8762	T	171	<0.0020	0.0154	1.73	0.00183	<0.0040	<0.20	**0.00186**	0.117	-	-	**0.0989**	**0.400**	**0.0233**	0.091	<0.000010	<0.0040	**0.104**	-	0.00070	133	0.000253	0.813	<12	0.00131	<0.020	**8.15**	0.0124	0.355	**0.423**	0.0021
MW13-1	16-Feb-17	MW13-1	QO6863	D	0.012	<0.00050	0.00133	0.0069	<0.00010	<0.0010	<0.050	<0.000010	<0.0010	-	-	<0.00020	<0.00020	<0.00020	<0.0020	<0.000010	0.0011	<0.0010	-	<0.00010	8.33	<0.000020	0.0927	<3.0	<0.000010	<0.0050	<0.0050	0.00078	<0.0050	<0.0050	<0.00050
MW13-1	16-Feb-17	MW13-1	QO6863	T	11.7	<0.00050	0.00195	0.132	0.00013	<0.0010	<0.050	0.000117	0.0073	-	-	0.00727	**0.0309**	0.0016	0.0056	<0.000010	<0.0010	0.0074	-	<0.00010	22.9	0.000029	0.137	<3.0	0.000118	<0.0050	0.557	0.00139	0.0238	0.0291	<0.00050
MW13-2	29-Sep-16	MW13-2	PQ8763	D	0.0399	<0.00050	0.00296	0.0086	<0.00010	<0.0010	<0.050	<0.000010	<0.0010	-	-	<0.00050	0.00123	0.00023	<0.0050	<0.000010	0.0054	0.0028	-	<0.00010	10.7	<0.000020	0.0924	<3.0	<0.000050	<0.0050	<0.0050	0.00056	<0.0050	<0.0050	<0.00050
MW13-2	29-Sep-16	MW13-2	PQ8763	T	504	<0.0020	0.0146	4.69	0.00662	<0.0040	<0.20	**0.00393**	**0.753**	-	-	**0.347**	**1.92**	**0.123**	0.124	<0.000010	0.0044	**0.466**	-	0.00102	229	0.000619	2.73	<12	0.00130	<0.020	**4.26**	0.0148	0.597	**1.01**	0.0047
MW13-2	16-Feb-17	MW13-2	QO6864	D	0.0068	<0.00050	0.00073	0.0079	<0.00010	<0.0010	<0.050	<0.000010	<0.0010	-	-	<0.00020	0.00088	<0.00020	<0.0020	<0.000010	<0.0010	<0.0010	-	<0.00010	10.2	<0.000020	0.0863	<3.0	<0.000010	<0.0050	<0.0050	0.00013	<0.0050	<0.0050	<0.00050
MW13-2	16-Feb-17	MW13-2	QO6864	T	9.01	<0.00050	0.00104	0.0667	<0.00010	<0.0010	<0.050	0.000095	0.0086	-	-	0.00519	**0.0236**	0.00587	<0.0020	<0.000010	<0.0010	0.007	-	0.00016	19.7	0.000022	0.113	<3.0	0.000038	<0.0050	0.263	0.00041	0.0134	0.0172	<0.00050
NLLD	29-Nov-05	Leachate	427649-2	D	<0.05	0.025	0.101	0.01	<0.001	<0.005	3.96	<0.00010	0.012	-	-	0.002	0.01	<0.001	0.01	-	0.31	0.040	-	0.003	36.0	<0.001	0.12	711	<0.0005	<0.01	0.121	<0.005	0.627	0.01	-
NLLD	26-Apr-06	Leachate	1065-01	D	0.85	0.051	**0.132**	<0.10	<0.050	<1.0	6.43	**0.00097**	<0.050	<0.050	<0.050	<0.015	<0.050	<0.025	<0.25	<0.00010	0.383	**0.103**	20.1	<0.050	59.4	<0.0010	0.101	-	<0.010	<0.15	0.182	<0.010	0.77	<0.25	-
NLLD	26-Apr-06	Leachate	1065-01	T	1.71	0.057	**0.132**	<0.10	<0.050	<1.0	6.80	**0.00137**	<0.050	<0.050	<0.050	<0.015	<0.050	<0.025	<0.25	0.00021	0.396	**0.097**	21.3	<0.050	63.3	<0.0010	0.100	-	<0.010	<0.15	0.196	<0.010	0.82	<0.25	-
NLLD	4-Jan-10	Final Effluent	1001050024	D	0.11	<0.05	<0.03	0.005	<0.003	-	0.22	<0.01	<0.01	-	-	<0.02	<0.02	<0.03	-	-	<0.02	<0.02	0.6	-	4.64	<0.01	0.039	-	-	<0.03	0.010	-	0.02	**0.22**	<0.02
NLLD	30-Sep-16	NLLD	PQ8765	D	0.404	0.0027	0.0186	0.0089	<0.00040	<0.0040	6.91	<0.000040	0.0096	-	-	<0.0020	<0.00080	<0.00080	<0.020	<0.000010	0.0228	0.0251	-	0.00060	35.8	<0.000080	0.0930	393	<0.00020	<0.020	0.057	0.00452	0.309	<0.020	0.0056
NLLD	30-Sep-16	NLLD	PQ8765	T	0.435	0.0269	0.105	0.0089	<0.00020	<0.0020	6.82	0.000024	0.0155	-	-	0.0011	0.0029	<0.00040	<0.010	<0.000010	0.187	0.0570	-	0.00062	36.9	<0.000040	0.102	398	<0.00010	<0.010	0.153	0.00552	0.366	<0.010	0.0056
NLLD	16-Feb-17	NLLD	QO6867	D	0.31	0.00479	0.0201	0.0058	<0.00010	<0.0010	4.02	0.000014	0.0039	-	-	0.00031	0.00023	<0.00020	0.0093	<0.000020	0.0417	0.0156	-	0.00026	21.4	<0.000020	0.0895	147	<0.000010	<0.0050	0.0243	0.0028	0.111	0.0057	0.00187
NLLD	16-Feb-17	NLLD	QO6867	T	0.315	0.00397	0.0269	0.0062	<0.00010	<0.0010	3.40	0.000015	0.0039	-	-	0.00035	<0.00050	<0.00020	0.0078	0.000082	0.035	0.0185	-	0.00020	20.5	<0.000020	0.0892	137	<0.000010	<0.0050	0.03	0.00231	0.108	<0.0050	0.00181
NL-Sump	4-Jan-10	New Landfill	1001050025	D	0.54	<0.05	0.11	0.007	<0.003	-	6.17	<0.01	0.01	-	-	<0.02	<0.02	<0.03	-	-	0.26	0.07	16.0	-	62.3	<0.01	0.10	-	-	<0.03	0.11	-	0.61	0.008	<0.02
OLLD	1-Feb-10	Old Landfill Leachate	1002020038	D	0.10	<0.05	<0.03	0.007	<0.003	-	2.42	<0.01	0.04	-	-	<0.02	<0.02	<0.03	-	-	<0.02	0.08	7.5	-	7.56	<0.01	0.44	-	-	<0.03	0.36	-	0.14	<0.005	<0.02
OLWP	3-Aug-90	Leachate	-	D	0.1	0.0056	0.11	0.012	-	-	2.3	<0.0007	0.019	-	-	<0.0006	**0.04**	0.0029	-	-	0.016	**0.097**	-	<0.021	-	-	-	-	-	<0.0005	-	-	-	0.026	-
OLWP	3-Aug-90	Leachate	-	T	1	**0.3**	**0.61**	0.038	-	-	10	**0.0018**	0.13	-	-	0.001	**0.13**	0.0043	-	**0.00143**	0.28	**0.31**	-	<0.011	-	-	-	-	-	0.0063	-	-	-	0.014	-
OLWP	30-Sep-16	OLWP	PQ8766	D	0.0353	0.00054	0.00454	0.0185	<0.00010	<0.0010	1.16	<0.000010	0.0044	-	-	<0.00050	0.00053	<0.00020	0.0134	<0.000010	0.0055	0.0142	-	<0.00010	11.7	<0.000020	0.478	34.9	<0.000050	<0.0050	0.0431	0.00100	0.0369	0.0202	0.00158
OLWP	30-Sep-16	OLWP	PQ8766	T	0.0862	0.00072	0.00483	0.0211	<0.00010	<0.0010	1.18	0.000012	0.0075	-	-	<0.00050	0.00149	<0.00020	0.0136	<0.000010	0.0070	0.0165	-	<0.00010	12.0	<0.000020	0.500	36.1	<0.000050	<0.0050	0.0699	0.00109	0.0402	<0.0050	0.00128

Table 6: Water Quality Data - Metals

2719-16-001
Former Elk Falls Pulp Mill, Campbell River, BC

Sample Location	Sample Date	Field Sample ID	Lab ID	Dissolved (D) or Total (T)	Metals																														
					Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Chromium (Cr)	Chromium (Cr^{3+})	Hex. Chromium (Cr^{6+})	Cobalt (Co)	Copper (Cu)	Lead (Pb)	Lithium (Li)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Strontium (Sr)	Sulphur (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
		Units			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CSR Guidelines		*DW*			*9.5*	*0.006*	*0.01*	*1*	-	-	*5*	*0.005*	*0.05*	*0.05*	*0.05*	-	*1 TO*	*0.01*	-	*0.001*	*0.25*	-	-	*0.01*	-	-	-	-	-	-	-	*0.02*	-	*5 TO*	-
		IW (Irrigation)/LW (Livestock)			5	-	0.025	-	0.1	-	0.5 C	0.005	0.005	0.005	0.008	0.05	0.2	0.1	2.5 Cr	0.001	0.01 Cs	0.2	-	0.02 Ca	-	-	-	-	-	-	-	0.01	0.1	2 pH	-
		AW (Marine)			-	**0.2**	**0.125**	**5**	**1**	-	**50**	**0.001**	**0.15**	**0.56**	**0.15**	**0.04**	**0.02**	**0.02**	-	**0.001**	**10**	**0.083**	-	**0.54**	-	**0.015**	-	-	**0.003**	-	**1**	**1**	-	**0.1**	-
		AW (Freshwater)			-	0.2	0.05	10	0.053	-	50	0.0003 H	0.01	0.09	0.01	0.04	0.02 H	0.04 H	-	0.001	10	0.25 H	-	0.01	-	0.0005 H	-	-	0.003	-	1	3	-	0.075 H	-
Water Quality Guidelines (Marine)					-	-	0.0125	-	0.1	-	1.2	0.00012	0.0015	0.056	0.0015	-	≤0.002	≤0.002	-	1	-	0.0083	-	0.001	-	0.0015	-	-	-	-	-	-	0.05	0.01	-
OLWP	16-Feb-17	OLWP	QO6868	D	0.045	<0.00050	0.004	0.0051	<0.00010	<0.0010	1.98	<0.000010	0.0112	-	-	0.00049	0.00024	<0.00020	0.0124	<0.000020	0.0013	0.0324	-	0.00017	11.8	<0.000020	0.429	39.7	<0.000010	<0.0050	0.122	0.00084	0.0641	<0.0050	0.00286
OLWP	16-Feb-17	OLWP	QO6868	T	0.0871	<0.00050	0.00402	0.0049	<0.00010	<0.0010	1.62	<0.000010	0.0112	-	-	0.00043	<0.00050	0.00041	0.0115	<0.000020	<0.0010	0.0375	-	0.00015	11.8	<0.000020	0.393	36.7	<0.000010	<0.0050	0.12	0.00075	0.0764	<0.0050	0.00248
M-C1 (Steel)	6-Oct-16	M-C1	PS2353	D	0.0477	<0.00050	0.00063	0.0101	<0.00010	<0.0010	1.04	<0.000010	<0.0010	-	-	<0.00050	0.00024	<0.00020	0.0167	<0.000010	0.0021	0.0033	-	<0.00010	7.60	<0.000020	0.540	69.3	<0.000050	<0.0050	<0.0050	0.00013	<0.0050	<0.0050	<0.00050
M-C1 (Steel)	6-Oct-16	M-C1	PS2353	T	*18.2*	<0.00050	0.00516	0.0879	0.00020	<0.0010	1.01	0.000971	*0.134*	-	-	0.0127	**0.0750**	0.00368	0.0309	<0.000010	0.0184	**0.0843**	-	0.00038	34.0	0.000065	0.735	71.5	0.000110	<0.0050	**1.61**	0.00067	0.0805	0.0763	0.00312
M-C1 (Steel)	16-Feb-17	M-C1	QO6866	D	0.041	<0.0020	0.00058	0.0706	<0.00040	<0.0040	1.42	<0.000040	<0.0040	-	-	<0.00080	<0.00080	<0.00080	0.0433	<0.000020	<0.0040	<0.0040	-	<0.00040	8.21	<0.000080	3.43	292	<0.000040	<0.020	<0.020	<0.00040	<0.020	<0.020	<0.0020
M-C1 (Steel)	16-Feb-17	M-C1	QO6866	T	*10.4*	<0.0010	0.00205	0.12	<0.00020	<0.0020	1.21	0.000299	0.0439	-	-	0.00814	**0.0505**	0.00347	0.0471	0.000112	0.0027	0.0318	-	<0.00020	20.6	0.000075	3.39	296	0.000095	<0.010	0.561	0.00059	0.057	0.065	0.0011
Tidal Flats	12-Jul-91	Tidal Flats	-	D	0.42	<0.15	<0.15	0.003	<0.003	<0.05	*10.8*	<0.025	*0.088*	-	-	<0.02	**0.032**	<0.08	-	-	0.13	**0.28**	60.9	-	36.4	<0.03	0.69	-	-	<0.03	0.83	-	1.05	**0.26**	-

Notes:
CSR Guidelines represent - B.C. Reg. 375/96 Environmental Management Act - Contaminated Sites Regulation (including Amendments up to B.C. Reg. 184/2016).
DW - Schedule 6 Generic Numerical Water Standards - Drinking Water.
AW - Schedule 6 Generic Numerical Water Standards - Aquatic Life.
IW - Schedule 6 Generic Numerical Water Standards - Irrigation Water.
LW - Schedule 6 Generic Numerical Water Standards - Livestock Water.
[1] - MeHg concentration data unavailable for the site
[C] - Standard varies depending on crop.
[Ca] - Standard for continuous applications on crops
[Cr] - Standard to protect all types of crops.
[Cs] - Standard varies with crop, soil drainage, and Mo:Cu ratio; consult director for further advice
[H] - Dependent on hardness.
[pH] - Standard varies with soil pH (6.0 to less than 7.0).
[TO] - Standard to protect against taste and odour concerns.
Results with standards or guidelines less than detection limits are not annotated as exceedances here.
Italics - value exceeds CSR DW standard.
Green Text - value exceeds the most stringent standard for the irrigation and livestock pathways.
Bold - value exceeds CSR AW standard for marine and/or estuarine aquatic life
Yellow highlight - value exceeds CSR AW standard for freshwater aquatic life.
Underline - Approved or working water quality guidelines (MOE; 2017, 2015). Marine guidelines were only considered for locations within 10 m or in the tidal flats (TH Series and M-C1 only).

Table 7: Water Quality Data - Polycyclic Aromatic Hydrocarbons

2719-16-001
Former Elk Falls Pulp Mill, Campbell River, BC

				Carcinogenic								Non-Carcinogenic											Other		
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**Benzo(a)anthracene**	**Benzo(b+j)fluoranthene**	**Benzo(k)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(a)pyrene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Indeno(1,2,3-cd)pyrene**	**Acenaphthene**	**Acenaphthylene**	**Acridine**	**Anthracene**	**Fluoranthene**	**Fluorene**	**2-Methylnapthalene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Quinoline**	**Low Molecular Weight PAHs**	**High Molecular Weight PAHs**	**Total PAH**
			Units	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
CSR Guidelines		*DW*		-	-	-	-	*0.00001*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		IW (Irrigation)/LW (Livestock)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		AW (Marine)		**0.001**	-	-	-	**0.0001**	**0.001**	-	-	**0.06**	-	**0.0005**	**0.001**	**0.002**	**0.12**	-	**0.01**	**0.003**	**0.0002**	**0.034**	-	-	-
		AW (Freshwater)		0.001	-	-	-	0.0001	0.001	-	-	0.06	-	0.0005	0.001	0.002	0.12	-	0.01	0.003	0.0002	0.034	-	-	-
Water Quality Guidelines (Marine)				-	-	-	-	0.00001	0.0001	-	-	0.006	-	-	-	-	0.012	0.001	0.001	-	-	-	-	-	-
MW05-1	29-Sep-16	MW05-1	PQ8764	<0.000010	<0.000050	<0.000050	<0.000050	<0.0000090	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	<0.000020	<0.00024	<0.00024	<0.000050	<0.00024
MW05-1	16-Feb-17	MW05-1	QO6865	<0.000010	<0.000030	<0.000050	<0.000050	<0.0000050	<0.000050	<0.0000030	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	0.000056	<0.000050	<0.00010	<0.00010	<0.000050	0.000038	<0.000020	<0.00010	0.000094	<0.00010
MW13-1	29-Sep-16	MW13-1	PQ8761	<0.000010	<0.000050	<0.000050	<0.000050	<0.0000090	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	<0.000020	<0.00024	<0.00024	<0.000050	<0.00024
MW13-1	29-Sep-16	MW13-1 DUP	PQ8762	<0.000010	<0.000050	<0.000050	<0.000050	<0.0000090	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	<0.000020	<0.00024	<0.00024	<0.000050	<0.00024
MW13-1	16-Feb-17	MW13-1	QO6863	<0.000010	<0.000030	<0.000050	<0.000050	<0.0000050	<0.000050	<0.0000030	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	<0.000020	<0.000020	<0.00010	<0.000050	<0.00010
MW13-2	29-Sep-16	MW13-2	PQ8763	<0.000010	<0.000050	<0.000050	<0.000050	<0.0000090	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	0.000021	<0.00024	<0.00024	<0.000050	<0.00024
MW13-2	16-Feb-17	MW13-2	QO6864	<0.000010	<0.000030	<0.000050	<0.000050	<0.0000050	<0.000050	<0.0000030	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	<0.000020	<0.000020	<0.00010	<0.000050	<0.00010
NLLD	4-Jan-10	Final Effluent	1001050024	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0001	<0.0001	<0.00005	<0.00001	<0.00004	<0.00005	-	<0.0003	<0.00005	<0.00002	<0.0005	<0.00024	<0.00005	<0.00024
NLLD	30-Sep-16	NLLD	PQ8765	<0.000010	<0.000050	<0.000050	<0.000050	<0.0000090	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	<0.000020	<0.00024	<0.00024	<0.000050	<0.00024
NLLD	16-Feb-17	NLLD	QO6867	<0.000010	<0.000030	<0.000050	<0.000050	<0.0000050	<0.000050	<0.0000030	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	<0.000020	<0.000020	<0.00010	<0.000050	<0.00010
NL-Sump	4-Jan-10	New Landfill	1001050025	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0001	<0.0001	<0.00005	<0.00001	<0.00004	<0.00005	-	<0.0003	<0.00005	<0.00002	<0.0005	<0.00024	<0.00005	<0.00024
OLLD	1-Feb-10	Old Landfill Leachate	1002020038	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0001	<0.0001	<0.00005	<0.00001	<0.00004	<0.00005	-	<0.0003	<0.00005	<0.00002	<0.0005	<0.00024	<0.00005	<0.00024
OLWP	30-Sep-16	OLWP	PQ8766	<0.000010	<0.000050	<0.000050	<0.000050	<0.0000090	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	<0.00010	<0.000050	<0.000020	<0.00024	<0.00024	<0.000050	<0.00024
OLWP	16-Feb-17	OLWP	QO6868	<0.000010	<0.000030	<0.000050	<0.000050	<0.0000050	<0.000050	<0.0000030	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000020	<0.000050	<0.00010	0.00019	<0.000050	<0.000020	<0.000020	0.00019	<0.000050	0.00019
M-C1 (Steel)	6-Oct-16	M-C1	PS2353	0.000013	<0.000050	<0.000050	<0.000050	<0.0000090	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	0.000044	<0.000050	<0.00010	<0.00010	<0.000050	0.000030	<0.00024	<0.00024	0.000087	<0.00024
M-C1 (Steel)	16-Feb-17	M-C1	QO6866	0.000022	<0.000030	<0.000050	<0.000050	*0.000019*	<0.000050	<0.0000030	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	0.000091	<0.000050	<0.00010	<0.00010	<0.000050	0.000064	<0.000020	<0.00010	0.00019	0.00019

Notes:
CSR Guidelines represent - B.C. Reg. 375/96 Environmental Management Act - Contaminated Sites Regulation (including Amendments up to B.C. Reg. 184/2016).
DW - Schedule 6 Generic Numerical Water Standards - Drinking Water.
AW - Schedule 6 Generic Numerical Water Standards - Aquatic Life.
IW - Schedule 6 Generic Numerical Water Standards - Irrigation Water.
LW - Schedule 6 Generic Numerical Water Standards - Livestock Water.
Italics - value exceeds CSR DW standard.
Green Text - value exceeds the most stringent standard for the irrigation and livestock pathways.
Bold - value exceeds CSR AW standard for marine and/or estuarine aquatic life.
Yellow highlight - value exceeds CSR AW standard for freshwater aquatic life.
Underline - Approved or working water quality guidelines (MOE; 2017, 2015). Marine guidelines were only considered for locations within 10 m or in the tidal flats (TH Series and M-C1 only).

Table 8: Water Quality Data - Polychlorinated Biphenyls

2719-16-001

Former Elk Falls Pulp Mill, Campbell River, BC

				Polychlorinated Biphenyls									
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**Aroclor 1016**	**Aroclor 1221**	**Aroclor 1232**	**Aroclor 1242**	**Aroclor 1248**	**Aroclor 1254**	**Aroclor 1260**	**Aroclor 1262**	**Aroclor 1268**	**Total Aroclors**
		Units		**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
CSR Guidelines		*DW*		-	-	-	-	-	-	-	-	-	-
		IW (Irrigation)/LW (Livestock)		-	-	-	-	-	-	-	-	-	-
		AW (Marine)		-	-	-	-	-	-	-	-	-	-
		AW (Freshwater)		-	-	-	-	-	-	-	-	-	-
Water Quality Guidelines (Marine)				-	-	-	-	-	-	-	-	-	-
MW05-1	29-Sep-16	MW05-1	PQ8764	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
MW05-1	16-Feb-17	MW05-1	QO6865	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
MW13-1	29-Sep-16	MW13-1	PQ8761	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
MW13-1	29-Sep-16	MW13-1 DUP	PQ8762	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
MW13-1	16-Feb-17	MW13-1	QO6863	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
MW13-2	29-Sep-16	MW13-2	PQ8763	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
MW13-2	16-Feb-17	MW13-2	QO6864	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
NLLD	30-Sep-16	NLLD	PQ8765	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NLLD	16-Feb-17	NLLD	QO6867	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
OLWP	30-Sep-16	OLWP	PQ8766	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
OLWP	16-Feb-17	OLWP	QO6868	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
M-C1 (Steel)	6-Oct-16	M-C1	PS2353	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
M-C1 (Steel)	16-Feb-17	M-C1	QO6866	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Notes:

CSR Guidelines represent - B.C. Reg. 375/96 Environmental Management Act - Contaminated Sites Regulation (including Amendments up to B.C. Reg. 184/2016).

DW - Schedule 6 Generic Numerical Water Standards - Drinking Water.

AW - Schedule 6 Generic Numerical Water Standards - Aquatic Life.

IW - Schedule 6 Generic Numerical Water Standards - Irrigation Water.

LW - Schedule 6 Generic Numerical Water Standards - Livestock Water.

Italics - value exceeds CSR DW standard.

Green Text - value exceeds the most stringent standard for the irrigation and livestock pathways.

Bold - value exceeds CSR AW standard for marine and/or estuarine aquatic life.

Yellow highlight - value exceeds CSR AW standard for freshwater aquatic life.

Underline - Approved or working water quality guidelines (MOE; 2017, 2015). Marine guidelines were only considered for locations within 10 m or in the tidal flats (TH Series and M-C1 only).

Table 9: Water Quality Data - Hydrocarbons

2719-16-001

Former Elk Falls Pulp Mill, Campbell River, BC

				Hydrocarbons											
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**Benzene**	**Toluene**	**Ethylbenzene**	**m & p-Xylene**	**o-Xylene**	**Xylenes**	**Styrene**	**VH C6-C10**	**VPH (C6-C10 - BTEX)**	**LEPH (C10-C19 - PAH)**	**HEPH (C19-C3 - PAH)**	**Methyl-tert-butylether (MTBE)**
		Units		**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
CSR Guidelines		*DW*		*0.005*	*0.024* [TO]	*0.0024* [TO]	-	-	*0.3* [TO]	-	*15*	-	-	-	*0.015*
		IW (Irrigation)/LW (Livestock)		-	-	-	-	-	-	-	15	-	-	-	11
		AW (Marine)		**1**	**3.3**	**2.5**	-	-	-	**0.72**	**15**	**1.5**	**0.5**	-	**4.4**
		AW (Freshwater)		4	0.39	2	-	-	-	0.72	15	1.5	0.5	-	34
Water Quality Guidelines (Marine)				0.11	-	0.25	-	-	-	-	-	-	-	-	0.44
MW05-1	29-Sep-16	MW05-1	PQ8764	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
MW05-1	16-Feb-17	MW05-1	QO6865	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
MW13-1	29-Sep-16	MW13-1	PQ8761	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
MW13-1	29-Sep-16	MW13-1 DUP	PQ8762	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
MW13-1	16-Feb-17	MW13-1	QO6863	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
MW13-2	29-Sep-16	MW13-2	PQ8763	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
MW13-2	16-Feb-17	MW13-2	QO6864	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
NLLD	30-Sep-16	NLLD	PQ8765	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
NLLD	16-Feb-17	NLLD	QO6867	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
OLWP	30-Sep-16	OLWP	PQ8766	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
OLWP	16-Feb-17	OLWP	QO6868	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040
M-C1 (Steel)	6-Oct-16	M-C1	PS2353	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	0.34	<0.0040
M-C1 (Steel)	16-Feb-17	M-C1	QO6866	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.3	<0.3	<0.20	<0.20	<0.0040

Notes:

CSR Guidelines represent - B.C. Reg. 375/96 Environmental Management Act - Contaminated Sites Regulation (including Amendments up to B.C. Reg. 184/2016).

DW - Schedule 6 Generic Numerical Water Standards - Drinking Water.

AW - Schedule 6 Generic Numerical Water Standards - Aquatic Life.

IW - Schedule 6 Generic Numerical Water Standards - Irrigation Water.

LW - Schedule 6 Generic Numerical Water Standards - Livestock Water.

[TO] - Standard to protect against taste and odour concerns.

Italics - value exceeds CSR DW standard.

Green Text - value exceeds the most stringent standard for the irrigation and livestock pathways.

Bold - value exceeds CSR AW standard for marine and/or estuarine aquatic life.

Yellow highlight - value exceeds CSR AW standard for freshwater aquatic life.

Underline - Approved or working water quality guidelines (MOE; 2017, 2015). Marine guidelines were only considered for locations within 10 m or in the tidal flats (TH Series and M-C1 only).

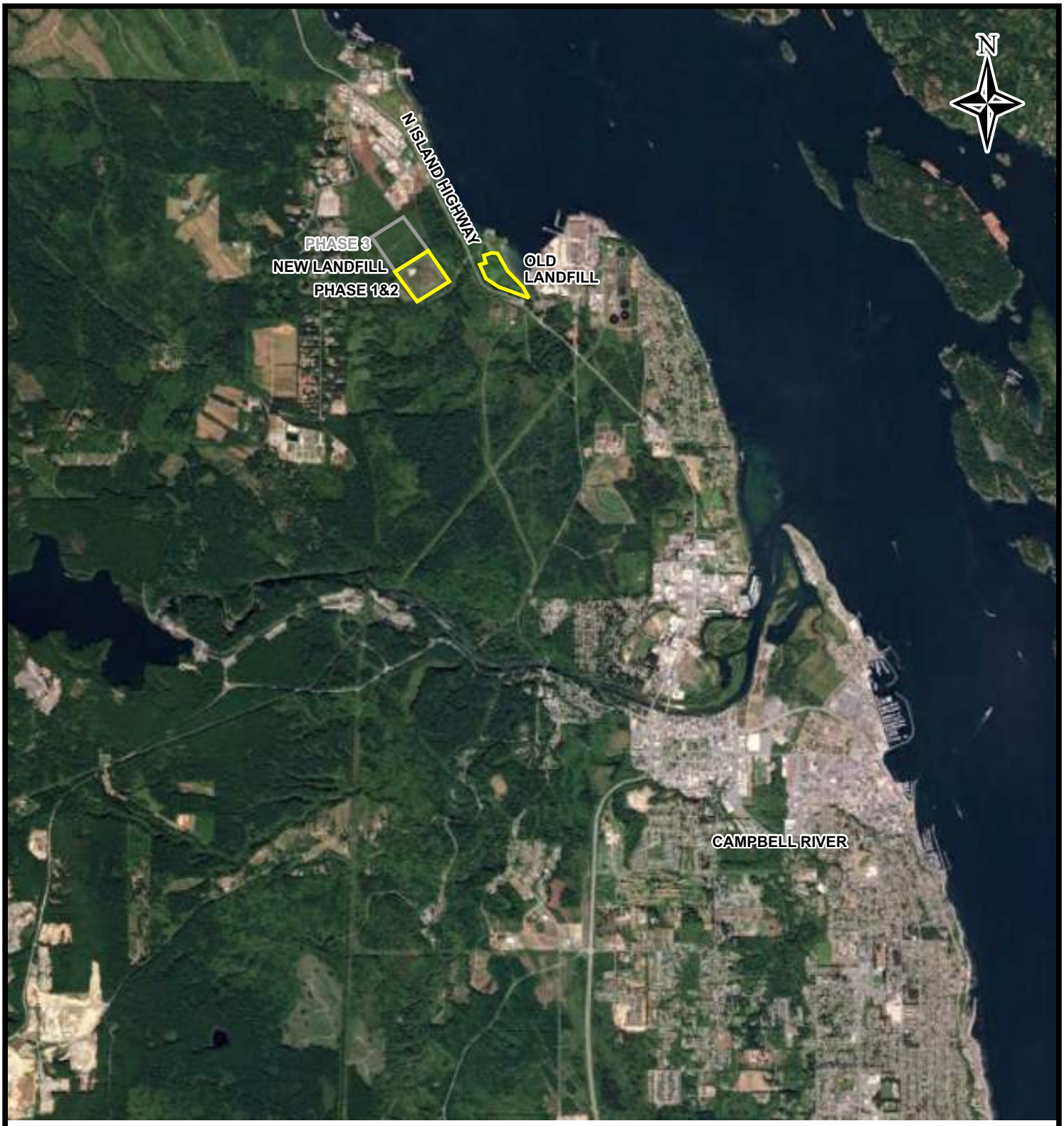
Table 10: Water Quality Data - Resins and Fatty Acids

2719-16-001
Former Elk Falls Pulp Mill, Campbell River, BC

				Resins and Fatty Acids																	
Sample Location	**Sample Date**	**Field Sample ID**	**Lab ID**	**Palmitoleic Acid**	**Palmitic Acid**	**Linoleic Acid**	**Linolenic Acid**	**Oleic Acid**	**Stearic Acid**	**9,10-Dichlorostearic Acid**	**Total Fatty Acids**	**Pimaric Acid**	**Sandaracopimaric Acid**	**Isopimaric Acid**	**Palustric Acid**	**Levopimaric Acid**	**Dehydroabietic Acid**	**Abietic Acid**	**Neoabietic Acid**	**14-Chlorodehydroabietic Acid**	**12-Chlorodehydroabietic Acid**	**Total Resin Acids**
		Units		**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
CSR Guidelines		*DW*		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		IW (Irrigation)/LW (Livestock)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		AW (Marine)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		AW (Freshwater)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Quality Guidelines (Marine)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05-1	29-Sep-16	MW05-1	PQ8764	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
MW05-1	16-Feb-17	MW05-1	QO6865	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
MW13-1	29-Sep-16	MW13-1	PQ8761	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
MW13-1	29-Sep-16	MW13-1 DUP	PQ8762	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
MW13-1	16-Feb-17	MW13-1	QO6863	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
MW13-2	29-Sep-16	MW13-2	PQ8763	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
MW13-2	16-Feb-17	MW13-2	QO6864	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
NLLD	30-Sep-16	NLLD	PQ8765	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	0.2	0.005	<0.003	<0.003	<0.003	0.21
NLLD	16-Feb-17	NLLD	QO6867	<0.003	0.032	<0.003	<0.003	<0.003	<0.03	<0.003	0.032	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
OLWP	30-Sep-16	OLWP	PQ8766	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
OLWP	16-Feb-17	OLWP	QO6868	0.0035	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
M-C1 (Steel)	6-Oct-16	M-C1	PS2353	<0.003	<0.03	<0.003	<0.003	<0.003	<0.03	<0.003	<0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005
M-C1 (Steel)	16-Feb-17	M-C1	QO6866	0.045	<0.03	0.0071	<0.003	0.0039	<0.03	<0.003	0.056	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.005

Notes:
CSR Guidelines represent - B.C. Reg. 375/96 Environmental Management Act - Contaminated Sites Regulation (including Amendments up to B.C. Reg. 184/2016).
DW - Schedule 6 Generic Numerical Water Standards - Drinking Water.
AW - Schedule 6 Generic Numerical Water Standards - Aquatic Life.
IW - Schedule 6 Generic Numerical Water Standards - Irrigation Water.
LW - Schedule 6 Generic Numerical Water Standards - Livestock Water.
Italics - value exceeds CSR DW standard.
Green Text - value exceeds the most stringent standard for the irrigation and livestock pathways.
Bold - value exceeds CSR AW standard for marine and/or estuarine aquatic life.
Yellow highlight - value exceeds CSR AW standard for freshwater aquatic life.
Underline - Approved or working water quality guidelines (MOE; 2017, 2015). Marine guidelines were only considered for locations within 10 m or in the tidal flats (TH Series and M-C1 only).

FIGURES



REFERENCE: Google Earth, 2017

SCALE = 1 : 50 000

0 m 1000 m 2000 m

LEGEND:

APPROXIMATE SITE LOCATION

PROJECT

Environmental Monitoring Program
Former Elk Falls Pulp Mill
Campbell River, BC

TITLE

LOCATION PLAN

Waterline

PREPARED BY:	Waterline Resources Inc.
PROJECT:	2719-16-001
COMPILED BY:	CGD
DATE ISSUED:	March 2017
REVISED:	–

FIGURE 1

Date	29-Sep-16	16-Feb-17
Na	9.83	10.0	10.7
Cl	11	11	12
SO_4	7.8	8.2	9.44
B	<0.050	<0.050	<0.050

Date	06-Oct-16	16-Feb-17
Na	*896*	*3650*
Cl	*1500*	*6800*
SO_4	200	*781*
B	1.04	1.01	1.42	1.21

Date	29-Sep-16	16-Feb-17
Na	14.8	15.6
Cl	11	10
SO_4	4.1	4.6
B	<0.050	<0.050

Date	29-Sep-16	16-Feb-17
Na	9.23	9.02
Cl	9.2	8.6
SO_4	5.7	5.01
B	<0.050	<0.050

Date	29-Sep-16	16-Feb-17
Na	*722*	*1260*
Cl	*650*	*830*
SO_4	100	106
B	1.16	1.98

Date	29-Sep-16	16-Feb-17
Na	*2710*	*1200*
Cl	*670*	160
SO_4	***1100***	*375*
B	*6.91*	4.02

REFERENCE: Google Earth, 2016

NOTE: TH SERIES WELLS, NESTED WELL ANNOTATIONS (e.g. "A" AND "B") ARE NOT PRESENTED HERE.

SCALE: 0 m 100 m 200 m

LEGEND:

- LANDFILL BOUNDARY
- WELLPOINT SYSTEM
- MONITORING WELL LOCATION
- ABANDONED/DESTROYED MONITORING WELL LOCATION
- 46.15 GROUNDWATER ELEVATION (m; SEPTEMBER 29, 2016 AND OCTOBER 6, 2016)
- * NOT USED IN INTERPRETATION
- 70.0 INTERPRETED GROUNDWATER EQUIPOTENTIAL (m)
- INTERPRETED LATERAL GROUNDWATER FLOW DIRECTION

GROUNDWATER CONCENTRATION (mg/L)

Na	SODIUM	*ITALIC*	EXCEEDS SCHEDULE 6 GENERIC NUMERICAL WATER STANDARDS - DRINKING WATER
Cl	CHLORIDE	GREEN	EXCEEDS SCHEDULE 6 GENERIC NUMERICAL WATER STANDARDS - IRRIGATION AND LIVESTOCK WATER
SO_4	SULPHATE	**BOLD**	EXCEEDS SCHEDULE 6 GENERIC NUMERICAL WATER STANDARDS - AQUATIC LIFE (MARINE)
B	BORON		EXCEEDS SCHEDULE 6 GENERIC NUMERICAL WATER STANDARDS - AQUATIC LIFE (FRESHWATER)
		UNDERLINED	EXCEEDS WATER QUALITY GUIDELINES (MARINE)

PROJECT

Environmental Monitoring Program
Former Elk Falls Pulp Mill
Campbell River, BC

TITLE

SITE SUMMARY

Waterline

PREPARED BY: Waterline Resources Inc.
PROJECT: 2719-16-001
COMPILED BY: CGD
DATE ISSUED: March 2017
REVISED: –

FIGURE 2

APPENDIX A

Standard Methods

Standard Methods
Monitoring Well - Monitoring, Water Sampling, and Hydraulic Response Testing

1.0 MONITORING

All monitoring activities were initiated in areas of lesser contamination and finished in areas of greater contamination, based on available data. Monitoring activities involved:

- Measuring the combustible vapour concentration in the well casing as soon as the well cap was removed using a combustible vapour meter with the methane response turned off;
- For wells in which non-aqueous phase liquids (NAPL) were historically present, or wells with elevated combustible vapour concentrations, an electronic interface probe was used to measure the depth to fluid levels (NAPL or water); and
- For all other wells, the depth to water was measured using an electronic water level meter.

All depth measurements were taken from the highest point on the well casing, unless otherwise marked. If no water was encountered (e.g. dry or frozen), the total well depth was measured with the water level tape, accounting for the length between the water level sensor and the bottom of the probe. If a well was suspected of being damaged, and material such as clay or bentonite was observed on the probe, it was recorded. All non-dedicated equipment such as water level meters were washed with distilled water and wiped with clean paper towels between wells. Nitrile gloves were worn for all monitoring activities.

2.0 PURGING AND SAMPLING

To ensure that representative groundwater samples were collected, the wells were purged of at least three casing volumes of standing water or, for slowly recovering wells, the wells were dried at least once. Monitoring wells were typically sampled immediately after purging once a sufficient volume of water had recovered or, when this was not possible, within 24 hours following purging. A no purge sampling method may have been employed if:

- It was the established method for monitoring at the site;
- NAPL, film, emulsion or sheen was observed;
- The purge water was impacted such that it could cause an adverse effect if improperly disposed, and appropriate waste water handling or disposal facilities were not present at the site; and/or
- Low permeability conditions existed that would limit water level recovery such that a sufficient sample volume would not be obtainable within 24 hours of purging.

All purging and sampling of monitoring wells was completed with dedicated bailers or Waterra™ tubing and foot valves. When manual purging was not practical, mechanical purging methods were employed (e.g. Waterra™ Power Pack II). Clean nylon string was used for all bailers. Disposable nitrile gloves were worn during all purging and sampling activities and were changed between wells.

At the time of sample collection, field parameters were measured and may have included: pH, electrical conductivity (EC), temperature, oxidation reduction potential (Eh, or ORP), and/or dissolved oxygen (DO) concentration using appropriate meters. Temperature, ORP, and DO measurements may reflect the influence of physical purging activities or ambient conditions and should be considered as qualitative values.

All groundwater samples were collected directly from the sampling equipment into laboratory supplied bottles, appropriate for the required analyses. If NAPL was present at a well that was proposed to be sampled, this well was not sampled for hydrocarbon or organic parameters related to the NAPL. All samples were appropriately filtered and/or preserved in accordance with the analytical requirements. If applicable, the laboratory bottles for volatile organic analyses were filled to ensure that no headspace was present. Samples were placed in coolers and maintained in cool but not freezing conditions for storage and shipment to the project laboratory under standard chain-of-custody procedures. Care was taken to ensure that particularly impacted samples or particularly sensitive samples (e.g., domestic water supplies) were isolated from other samples to reduce chances for cross contamination.

Field quality assurance/quality control (QA/QC) samples were collected at a general rate of one QA/QC sample (blind field duplicate, field blank, trip blank, etc.) for every ten groundwater samples unless otherwise specified.

3.0 HYDRAULIC RESPONSE TESTING

Hydraulic response tests (if applicable) were conducted by removing or adding a known volume from existing water column in the well and recording water level response with time using an electronic water level tape or an automatic water level recorder. Water level recovery data were interpreted using Aqtesolv™ software and applying the Bouwer and Rice (1976) method of analysis or another similar method[1].

Rev.	Date	Description	Authored/ Reviewed by	Approved by
0	Sept. 13, 2012		Brent Lennox	Jan Michaelian/Eric Pringle
1	Feb. 11, 2014			Eric Pringle

[1] Bouwer, H., and R.C. Rice, 1976. A Slug Test Method for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Water Resources Research, Vol. 12, No. 3, pp. 423-428.

APPENDIX B

Laboratory Analytical Report

Your Project #: B686268
Your C.O.C. #: VB686268-QUEV-01-01

Attention:
(SUBCONT) CUSTOMER SERVICE EBC

MAXXAM ANALYTICS
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2016/10/07
Report #: R2201005
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B668660
Received: 2016/10/04, 08:20

Sample Matrix: WATER
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary Reference
Resin and Fatty Acids*	5	2016/10/05	2016/10/06	STL SOP-00152	MA414-Aci-g-r-1.0R3m
Resin and Fatty Acids*	1	2016/10/05	2016/10/07	STL SOP-00152	MA414-Aci-g-r-1.0R3m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

* Maxxam is accredited as per the MDDELCC program.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Lauriane Bernard, Project Manager
Email: LBernard@maxxam.ca
Phone# (514)448-9001

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B668660
Report Date: 2016/10/07

MAXXAM ANALYTICS
Client Project #: B686268
Sampler Initials: DP

RESIN AND FATTY ACIDS BY GCMS (WATER)

Maxxam ID		DB6915	DB6916	DB6917	DB6918		
Sampling Date		2016/09/29 13:00	2016/09/29 13:00	2016/09/29 14:40	2016/09/29 16:00		
COC Number		VB686268-QUEV-01-01	VB686268-QUEV-01-01	VB686268-QUEV-01-01	VB686268-QUEV-01-01		
	Units	PQ8761-MW13-1	PQ8762-MW13-1 DUP	PQ8763-MW13-2	PQ8764-MW05-1	RDL	QC Batch
Palmitoleic acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Palmitic acid	ug/L	<30	<30	<30	<30	30	1673263
Linoleic acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Linolenic acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Oleic acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Stearic acid	ug/L	<30	<30	<30	<30	30	1673263
9,10-Dichlorostearic acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Total Fatty Acids	ug/L	<30	<30	<30	<30	30	1673263
Pimaric acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Sandaracopimaric acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Isopimaric acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Palustric acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Levopimaric acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Dehydroabietic acid	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	1673263
Abietic acid	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	1673263
Neoabietic acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
14-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
12-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	1673263
Total Resin Acids	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	1673263
Surrogate Recovery (%)							
O-Methylpodocarpic acid	%	100	103	101	109	N/A	1673263

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

2016/10/07 16:30

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B668660
Report Date: 2016/10/07

MAXXAM ANALYTICS
Client Project #: B686268
Sampler Initials: DP

RESIN AND FATTY ACIDS BY GCMS (WATER)

Maxxam ID		DB6919	DB6920		
Sampling Date		2016/09/30 09:30	2016/09/30 10:20		
COC Number		VB686268-QUEV-01-01	VB686268-QUEV-01-01		
	Units	**PQ8765-NLLD**	**PQ8766-OLWP**	**RDL**	**QC Batch**
Palmitoleic acid	ug/L	<3.0	<3.0	3.0	1673263
Palmitic acid	ug/L	<30	<30	30	1673263
Linoleic acid	ug/L	<3.0	<3.0	3.0	1673263
Linolenic acid	ug/L	<3.0	<3.0	3.0	1673263
Oleic acid	ug/L	<3.0	<3.0	3.0	1673263
Stearic acid	ug/L	<30	<30	30	1673263
9,10-Dichlorostearic acid	ug/L	<3.0	<3.0	3.0	1673263
Total Fatty Acids	ug/L	<30	<30	30	1673263
Pimaric acid	ug/L	<3.0	<3.0	3.0	1673263
Sandaracopimaric acid	ug/L	<3.0	<3.0	3.0	1673263
Isopimaric acid	ug/L	<3.0	<3.0	3.0	1673263
Palustric acid	ug/L	<3.0	<3.0	3.0	1673263
Levopimaric acid	ug/L	<3.0	<3.0	3.0	1673263
Dehydroabietic acid	ug/L	200	<5.0	5.0	1673263
Abietic acid	ug/L	5.0	<5.0	5.0	1673263
Neoabietic acid	ug/L	<3.0	<3.0	3.0	1673263
14-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	3.0	1673263
12-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	3.0	1673263
Total Resin Acids	ug/L	210	<5.0	5.0	1673263
Surrogate Recovery (%)					
O-Methylpodocarpic acid	%	112	113	N/A	1673263

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

2016/10/07 16:30

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B668660
Report Date: 2016/10/07

MAXXAM ANALYTICS
Client Project #: B686268
Sampler Initials: DP

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD

RESIN AND FATTY ACIDS BY GCMS (WATER)

Please note that the results have not been corrected for QC recoveries (spiked blank and method blank) nor for the surrogates.

Un-rounded results are used in the totals "Total Resin Acids" and "Total Fatty Acids" calculation. These totals results are then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Due to the presence of sediments, samples "DB6915", "DB6916", "DB6917" and 'DB6918" were decanted before analysis.

Results relate only to the items tested.

2016/10/07 16:30

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B668660
Report Date: 2016/10/07

MAXXAM ANALYTICS
Client Project #: B686268
Sampler Initials: DP

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
1673263	CB5	Spiked Blank	O-Methylpodocarpic acid	2016/10/06		106	%	60 - 130
			Palmitoleic acid	2016/10/06		83	%	60 - 130
			Palmitic acid	2016/10/06		117	%	60 - 130
			Linoleic acid	2016/10/06		51 (1)	%	60 - 130
			Linolenic acid	2016/10/06		70	%	60 - 130
			Oleic acid	2016/10/06		81	%	60 - 130
			Stearic acid	2016/10/06		107	%	60 - 130
			9,10-Dichlorostearic acid	2016/10/06		82	%	60 - 130
			Pimaric acid	2016/10/06		88	%	60 - 130
			Sandaracopimaric acid	2016/10/06		105	%	60 - 130
			Isopimaric acid	2016/10/06		97	%	60 - 130
			Palustric acid	2016/10/06		90	%	60 - 130
			Levopimaric acid	2016/10/06		68	%	60 - 130
			Dehydroabietic acid	2016/10/06		96	%	60 - 130
			Abietic acid	2016/10/06		151 (1)	%	60 - 130
			Neoabietic acid	2016/10/06		92	%	60 - 130
			14-Chlorodehydroabietic acid	2016/10/06		104	%	60 - 130
			12-Chlorodehydroabietic acid	2016/10/06		108	%	60 - 130
1673263	CB5	Spiked Blank DUP	O-Methylpodocarpic acid	2016/10/06		109	%	60 - 130
			Palmitoleic acid	2016/10/06		81	%	60 - 130
			Palmitic acid	2016/10/06		111	%	60 - 130
			Linoleic acid	2016/10/06		51 (1)	%	60 - 130
			Linolenic acid	2016/10/06		70	%	60 - 130
			Oleic acid	2016/10/06		82	%	60 - 130
			Stearic acid	2016/10/06		102	%	60 - 130
			9,10-Dichlorostearic acid	2016/10/06		83	%	60 - 130
			Pimaric acid	2016/10/06		89	%	60 - 130
			Sandaracopimaric acid	2016/10/06		108	%	60 - 130
			Isopimaric acid	2016/10/06		99	%	60 - 130
			Palustric acid	2016/10/06		96	%	60 - 130
			Levopimaric acid	2016/10/06		73	%	60 - 130
			Dehydroabietic acid	2016/10/06		97	%	60 - 130
			Abietic acid	2016/10/06		142 (1)	%	60 - 130
			Neoabietic acid	2016/10/06		97	%	60 - 130
			14-Chlorodehydroabietic acid	2016/10/06		106	%	60 - 130
			12-Chlorodehydroabietic acid	2016/10/06		110	%	60 - 130
1673263	CB5	Method Blank	O-Methylpodocarpic acid	2016/10/06		102	%	60 - 130
			Palmitoleic acid	2016/10/06	<3.0		ug/L	
			Palmitic acid	2016/10/06	<30		ug/L	
			Linoleic acid	2016/10/06	<3.0		ug/L	
			Linolenic acid	2016/10/06	<3.0		ug/L	
			Oleic acid	2016/10/06	<3.0		ug/L	
			Stearic acid	2016/10/06	<30		ug/L	
			9,10-Dichlorostearic acid	2016/10/06	<3.0		ug/L	
			Total Fatty Acids	2016/10/06	<30		ug/L	
			Pimaric acid	2016/10/06	<3.0		ug/L	
			Sandaracopimaric acid	2016/10/06	<3.0		ug/L	
			Isopimaric acid	2016/10/06	<3.0		ug/L	
			Palustric acid	2016/10/06	<3.0		ug/L	
			Levopimaric acid	2016/10/06	<3.0		ug/L	
			Dehydroabietic acid	2016/10/06	<5.0		ug/L	
			Abietic acid	2016/10/06	<5.0		ug/L	

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B668660
Report Date: 2016/10/07

MAXXAM ANALYTICS
Client Project #: B686268
Sampler Initials: DP

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Neoabietic acid	2016/10/06	<3.0		ug/L	
			14-Chlorodehydroabietic acid	2016/10/06	<3.0		ug/L	
			12-Chlorodehydroabietic acid	2016/10/06	<3.0		ug/L	
			Total Resin Acids	2016/10/06	<5.0		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

2016/10/07 16:30

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

FUNDAMENTAL LABORATORY ACCEPTANCE GUIDELINE

Invoice To:
MAXXAM ANALYTICS
BURNABY
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5
Client Contact:
(SUBCONT) CUSTOMER SERVICE EBC

Maxxam Job #:	B668660
Date Received:	2016/10/04
Your C.O.C. #:	VB686268-QUEV-01-01
Your Project #:	B686268
Maxxam Project Manager:	Lauriane Bernard
Quote #	B20512

No discrepancies noted.

Report Comments

Received Date:	**2016/10/04**	**Time:**	**08:20**	**By:**	
Inspected Date:		**Time:**		**By:**	
FLAG Created Date:		**Time:**		**By:**	

2016/10/07 16:30

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B668660
Report Date: 2016/10/07

MAXXAM ANALYTICS
Client Project #: B686268
Sampler Initials: DP

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Caroline Bougie, B.Sc. Chemist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam
A Bureau Veritas Group Company

Sent to: Maxxam Montreal
889 Montee de Liesse
Ville St-Laurent, QC, H4T 1P5
Tel: (514) 448-9001

MAXXAM INTERLAB CHAIN OF CUSTODY RECORD

COC # VB686268-QUEV-01-01

REPORT INFORMATION	
Company:	Maxxam
Address:	4606 Canada Way, Burnaby, British Columbia, V5G 1K5
Contact Name:	Veronica De Guzman
Email:	VDeGuzman@maxxam.ca, customerservicebc@maxxamanalytics.com
Phone:	
Maxxam Project #:	B686268
Client Invoice To:	WATERLINE RESOURCES INC. (5950)
Client Report To:	WATERLINE RESOURCES INC. (5950)

Incl. on Report? Yes / No

ANALYSIS REQUESTED

Job Barcode Label

B668660_COC

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	RFA Water Subcontract	ADDITIONAL SAMPLE INFORMATION
1	PQ8761-MW13-1	WATER	2016/09/29	13:00	DP	1	X	PART 01'S
2	PQ8762-MW13-1 DUP	WATER	2016/09/29	13:00	DP	1	X	
3	PQ8763-MW13-2	WATER	2016/09/29	14:40	DP	1	X	
4	PQ8764-MW05-1	WATER	2016/09/29	16:00	DP	1	X	
5	PQ8765-NLLD	WATER	2016/09/30	09:30	DP	1	X	
6	PQ8766-OLWP	WATER	2016/09/30	10:20	DP	1	X	
7								
8								
9								
10								

SITE LOCATION:

SITE #:

PROJECT #:
2719-16-001

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Maxxam immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
Excel Export (csv) (A004)

TURNAROUND TIME
☐ Rush Required
2016/10/11
Date Required
Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓					
Custody Seal Intact	✓					
Cooling Media Present	✓					
				6	6	7

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RECEIVING LAB USE ONLY
Maxxam Job #

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. REBECCA HYDE	2016/10/03	14:30	1. B. BORCEA	2016-10-04	8:20		
2.			2.				

Your Project #: 2719-16-001
Your C.O.C. #: 506875-01-01

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M8

Report Date: 2016/10/12
Report #: R2280634
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B686268
Received: 2016/10/01, 10:05

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS	6	2016/10/07	2016/10/07	BBY8SOP-00010/11/12	EPA 8260c R3 m
Chloride by Automated Colourimetry (1)	4	N/A	2016/10/06	AB SOP-00020	SM 22-4500-Cl G m
Chloride by Automated Colourimetry (1)	2	N/A	2016/10/07	AB SOP-00020	SM 22-4500-Cl G m
COD by Colorimeter	1	2016/10/05	2016/10/06	BBY6SOP-00024	SM 22 5220 D m
COD by Colorimeter	5	2016/10/06	2016/10/06	BBY6SOP-00024	SM 22 5220 D m
Conductance - water	6	N/A	2016/10/03	BBY6SOP-00026	SM 22 2510 B m
Hardness Total (calculated as CaCO3)	4	N/A	2016/10/04	BBY WI-00033	Auto Calc
Hardness Total (calculated as CaCO3)	2	N/A	2016/10/06	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	5	N/A	2016/10/06	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	1	N/A	2016/10/12	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAF	6	N/A	2016/10/06	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total) by CVAF	6	2016/10/07	2016/10/07	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	6	2016/10/07	2016/10/07	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	5	N/A	2016/10/06	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2016/10/12	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	2	N/A	2016/10/05	BBY7SOP-00002	EPA 6020B R2 m
Elements by CRC ICPMS (dissolved)	4	N/A	2016/10/06	BBY7SOP-00002	EPA 6020B R2 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	4	2016/10/01	2016/10/04	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	2	2016/10/01	2016/10/06	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	4	2016/10/03	2016/10/04	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by CRC ICPMS (total)	2	2016/10/03	2016/10/05	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
PAH in Water by GC/MS (SIM)	5	2016/10/07	2016/10/08	BBY8SOP-00021	EPA 8270d R4 m
PAH in Water by GC/MS (SIM)	1	2016/10/07	2016/10/09	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	6	N/A	2016/10/11	BBY WI-00033	Auto Calc
Polychlorinated Biphenyls (1)	6	2016/10/05	2016/10/05	CAL SOP-00149	EPA 8082A R1 m
Filter and HNO3 Preserve for Metals	4	N/A	2016/10/05	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	2	N/A	2016/10/06	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (3)	6	N/A	2016/10/03	BBY6SOP-00026	SM 22 4500-H+ B m
Phenols (4-AAP)	1	N/A	2016/10/06	BBY6SOP-00008	SM 22 5530 D m

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: 2719-16-001
Your C.O.C. #: 506875-01-01

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M8

Report Date: 2016/10/12
Report #: R2280634
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B686268
Received: 2016/10/01, 10:05

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Phenols (4-AAP)	5	N/A	2016/10/11	BBY6SOP-00008	SM 22 5530 D m
Salinity by Conductivity Method	6	2016/10/03	2016/10/03	BBY6SOP-00026	SM 22 2520 B m
Sulphate by Automated Colourimetry (1)	4	N/A	2016/10/06	AB SOP-00018	SM 22 4500-SO4 E m
Sulphate by Automated Colourimetry (1)	2	N/A	2016/10/07	AB SOP-00018	SM 22 4500-SO4 E m
EPH less PAH in Water by GC/FID	6	N/A	2016/10/11	BBY WI-00033	Auto Calc
Tannin & Lignin (Total)	6	N/A	2016/10/04	BBY6SOP-00023	SM-5550B m
Volatile HC-BTEX	6	N/A	2016/10/11	BBY WI-00033	Auto Calc
RFA Water Subcontract (2)	6	2016/10/11	2016/10/11		

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Calgary Environmental
(2) This test was performed by Maxxam Montreal (From Burnaby)
(3) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Veronica De Guzman, Project Manager
Email: VDeGuzman@maxxam.ca
Phone# (604) 734 7276

==========

This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		PQ8761		PQ8762	PQ8763		PQ8764		
Sampling Date		2016/09/29 13:00		2016/09/29 13:00	2016/09/29 14:40		2016/09/29 16:00		
COC Number		506875-01-01		506875-01-01	506875-01-01		506875-01-01		
	UNITS	MW13-1	QC Batch	MW13-1 DUP	MW13-2	QC Batch	MW05-1	RDL	QC Batch
Parameter									
Subcontract Parameter	N/A	ATTACHED	8428811	ATTACHED	ATTACHED	8428811	ATTACHED	N/A	8428811
Calculated Parameters									
Filter and HNO3 Preservation	N/A	FIELD	ONSITE	FIELD	FIELD	ONSITE	FIELD	N/A	ONSITE
Demand Parameters									
Chemical Oxygen Demand	mg/L	112	8423683	158	611	8423684	80	10	8423684
Anions									
Dissolved Sulphate (SO4)	mg/L	7.8	8425289	8.2	5.7	8425289	4.1	1.0	8425254
Dissolved Chloride (Cl)	mg/L	11	8425265	11	9.2	8425265	11	1.0	8425251
MISCELLANEOUS									
Tannins and Lignins	mg/L	1.66	8420923	4.25	3.40	8420923	1.16	0.10	8420923
Misc. Organics									
Phenols	mg/L	<0.0010	8424853	<0.0010	<0.0010	8429030	<0.0010	0.0010	8429030

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		PQ8765		PQ8766		
Sampling Date		2016/09/30 09:30		2016/09/30 10:20		
COC Number		506875-01-01		506875-01-01		
	UNITS	NLLD	RDL	OLWP	RDL	QC Batch
Parameter						
Subcontract Parameter	N/A	ATTACHED	N/A	ATTACHED	N/A	8428811
Calculated Parameters						
Filter and HNO3 Preservation	N/A	FIELD	N/A	FIELD	N/A	ONSITE
Demand Parameters						
Chemical Oxygen Demand	mg/L	275	10	178	10	8423684
Anions						
Dissolved Sulphate (SO4)	mg/L	1100 (1)	10	100	1.0	8425978
Dissolved Chloride (Cl)	mg/L	670 (1)	10	650 (2)	5.0	8425971
MISCELLANEOUS						
Tannins and Lignins	mg/L	99.9 (2)	1.0	6.55	0.10	8420923
Misc. Organics						
Phenols	mg/L	0.0024	0.0010	0.0040	0.0010	8429030

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		PQ8761	PQ8762	PQ8763	PQ8764		PQ8765		
Sampling Date		2016/09/29 13:00	2016/09/29 13:00	2016/09/29 14:40	2016/09/29 16:00		2016/09/30 09:30		
COC Number		506875-01-01	506875-01-01	506875-01-01	506875-01-01		506875-01-01		
	UNITS	MW13-1	MW13-1 DUP	MW13-2	MW05-1	RDL	NLLD	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Aroclor 1221	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Aroclor 1232	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Aroclor 1242	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Aroclor 1248	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Aroclor 1254	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Aroclor 1260	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Aroclor 1262	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Aroclor 1268	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Total Aroclors	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8422265
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	92	90	97	94		101		8422265
RDL = Reportable Detection Limit									

Maxxam ID		PQ8766		
Sampling Date		2016/09/30 10:20		
COC Number		506875-01-01		
	UNITS	OLWP	RDL	QC Batch
Polychlorinated Biphenyls				
Aroclor 1016	mg/L	<0.000050	0.000050	8422265
Aroclor 1221	mg/L	<0.000050	0.000050	8422265
Aroclor 1232	mg/L	<0.000050	0.000050	8422265
Aroclor 1242	mg/L	<0.000050	0.000050	8422265
Aroclor 1248	mg/L	<0.000050	0.000050	8422265
Aroclor 1254	mg/L	<0.000050	0.000050	8422265
Aroclor 1260	mg/L	<0.000050	0.000050	8422265
Aroclor 1262	mg/L	<0.000050	0.000050	8422265
Aroclor 1268	mg/L	<0.000050	0.000050	8422265
Total Aroclors	mg/L	<0.000050	0.000050	8422265
Surrogate Recovery (%)				
NONACHLOROBIPHENYL (sur.)	%	93		8422265
RDL = Reportable Detection Limit				

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR BTEX/VPH IN WATER (WATER)

Maxxam ID		PQ8761	PQ8762	PQ8763	PQ8764	PQ8765	PQ8766		
Sampling Date		2016/09/29 13:00	2016/09/29 13:00	2016/09/29 14:40	2016/09/29 16:00	2016/09/30 09:30	2016/09/30 10:20		
COC Number		506875-01-01	506875-01-01	506875-01-01	506875-01-01	506875-01-01	506875-01-01		
	UNITS	MW13-1	MW13-1 DUP	MW13-2	MW05-1	NLLD	OLWP	RDL	QC Batch
Volatiles									
VPH (VH6 to 10 - BTEX)	ug/L	<300	<300	<300	<300	<300	<300	300	8418508
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	4.0	8426465
Benzene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8426465
Toluene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8426465
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8426465
m & p-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8426465
o-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8426465
Styrene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8426465
Xylenes (Total)	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8426465
VH C6-C10	ug/L	<300	<300	<300	<300	<300	<300	300	8426465
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	109	108	107	108	108	109		8426465
4-Bromofluorobenzene (sur.)	%	97	97	97	95	97	96		8426465
D4-1,2-Dichloroethane (sur.)	%	91	91	91	93	94	94		8426465

RDL = Reportable Detection Limit

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		PQ8761	PQ8762	PQ8763	PQ8764	PQ8765	PQ8766		
Sampling Date		2016/09/29 13:00	2016/09/29 13:00	2016/09/29 14:40	2016/09/29 16:00	2016/09/30 09:30	2016/09/30 10:20		
COC Number		506875-01-01	506875-01-01	506875-01-01	506875-01-01	506875-01-01	506875-01-01		
	UNITS	MW13-1	MW13-1 DUP	MW13-2	MW05-1	NLLD	OLWP	RDL	QC Batch
Polycyclic Aromatics									
Low Molecular Weight PAH`s	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	0.24	8418523
High Molecular Weight PAH`s	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8418523
Total PAH	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	0.24	8418523
Naphthalene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8426201
2-Methylnaphthalene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8426201
Quinoline	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	0.24	8426201
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Phenanthrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8426201
Acridine	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Fluoranthene	ug/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8426201
Pyrene	ug/L	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	0.020	8426201
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8426201
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	0.0090	8426201
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8426201
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8418524
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8418524
Ext. Pet. Hydrocarbon									
EPH (C10-C19)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8426206
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8426206
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	97	97	97	108	93	95		8426206
D10-ANTHRACENE (sur.)	%	88	85	87	92	90	83		8426201
D8-ACENAPHTHYLENE (sur.)	%	97	94	96	101	97	91		8426201
RDL = Reportable Detection Limit									

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		PQ8761	PQ8762	PQ8763	PQ8764	PQ8765	PQ8766		
Sampling Date		2016/09/29 13:00	2016/09/29 13:00	2016/09/29 14:40	2016/09/29 16:00	2016/09/30 09:30	2016/09/30 10:20		
COC Number		506875-01-01	506875-01-01	506875-01-01	506875-01-01	506875-01-01	506875-01-01		
	UNITS	**MW13-1**	**MW13-1 DUP**	**MW13-2**	**MW05-1**	**NLLD**	**OLWP**	**RDL**	**QC Batch**
D8-NAPHTHALENE (sur.)	%	67	62	64	67	66	59		8426201
D9-Acridine	%	76	73	71	79	79	72		8426201
TERPHENYL-D14 (sur.)	%	77	75	79	81	83	76		8426201
RDL = Reportable Detection Limit									

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PQ8761		PQ8762		PQ8763		
Sampling Date		2016/09/29 13:00		2016/09/29 13:00		2016/09/29 14:40		
COC Number		506875-01-01		506875-01-01		506875-01-01		
	UNITS	MW13-1	QC Batch	MW13-1 DUP	QC Batch	MW13-2	RDL	QC Batch
Misc. Inorganics								
Dissolved Hardness (CaCO3)	mg/L	69.0	8418488	66.4	8418488	96.1	0.50	8418488
Elements								
Dissolved Mercury (Hg)	ug/L	<0.010	8424743	<0.010	8424743	<0.010	0.010	8424743
Dissolved Metals by ICPMS								
Dissolved Aluminum (Al)	mg/L	0.0208	8421658	0.0341	8421236	0.0399	0.0030	8421658
Dissolved Antimony (Sb)	mg/L	<0.00050	8421658	<0.00050	8421236	<0.00050	0.00050	8421658
Dissolved Arsenic (As)	mg/L	0.00138	8421658	0.00146	8421236	0.00296	0.00010	8421658
Dissolved Barium (Ba)	mg/L	0.0091	8421658	0.0096	8421236	0.0086	0.0010	8421658
Dissolved Beryllium (Be)	mg/L	<0.00010	8421658	<0.00010	8421236	<0.00010	0.00010	8421658
Dissolved Bismuth (Bi)	mg/L	<0.0010	8421658	<0.0010	8421236	<0.0010	0.0010	8421658
Dissolved Boron (B)	mg/L	<0.050	8421658	<0.050	8421236	<0.050	0.050	8421658
Dissolved Cadmium (Cd)	mg/L	<0.000010	8421658	<0.000010	8421236	<0.000010	0.000010	8421658
Dissolved Chromium (Cr)	mg/L	<0.0010	8421658	<0.0010	8421236	<0.0010	0.0010	8421658
Dissolved Cobalt (Co)	mg/L	<0.00050	8421658	<0.00050	8421236	<0.00050	0.00050	8421658
Dissolved Copper (Cu)	mg/L	0.00027	8421658	0.00094	8421236	0.00123	0.00020	8421658
Dissolved Iron (Fe)	mg/L	0.0054	8421658	0.0187	8421236	0.0304	0.0050	8421658
Dissolved Lead (Pb)	mg/L	<0.00020	8421658	<0.00020	8421236	0.00023	0.00020	8421658
Dissolved Lithium (Li)	mg/L	<0.0050	8421658	<0.0050	8421236	<0.0050	0.0050	8421658
Dissolved Manganese (Mn)	mg/L	0.0453	8421658	0.0424	8421236	0.0170	0.0010	8421658
Dissolved Molybdenum (Mo)	mg/L	0.0012	8421658	0.0014	8421236	0.0054	0.0010	8429771
Dissolved Nickel (Ni)	mg/L	<0.0010	8421658	0.0015	8421236	0.0028	0.0010	8421658
Dissolved Selenium (Se)	mg/L	<0.00010	8421658	<0.00010	8421236	<0.00010	0.00010	8421658
Dissolved Silicon (Si)	mg/L	8.63	8421658	8.54	8421236	10.7	0.10	8421658
Dissolved Silver (Ag)	mg/L	<0.000020	8421658	<0.000020	8421236	<0.000020	0.000020	8421658
Dissolved Strontium (Sr)	mg/L	0.0955	8421658	0.0931	8421236	0.0924	0.0010	8421658
Dissolved Thallium (Tl)	mg/L	<0.000050	8421658	<0.000050	8421236	<0.000050	0.000050	8421658
Dissolved Tin (Sn)	mg/L	<0.0050	8421658	<0.0050	8421236	<0.0050	0.0050	8421658
Dissolved Titanium (Ti)	mg/L	<0.0050	8421658	<0.0050	8421236	<0.0050	0.0050	8421658
Dissolved Uranium (U)	mg/L	0.00098	8421658	0.00092	8421236	0.00056	0.00010	8421658
Dissolved Vanadium (V)	mg/L	<0.0050	8421658	<0.0050	8421236	<0.0050	0.0050	8421658
Dissolved Zinc (Zn)	mg/L	<0.0050	8421658	<0.0050	8421236	<0.0050	0.0050	8421658
Dissolved Zirconium (Zr)	mg/L	<0.00050	8421658	<0.00050	8421236	<0.00050	0.00050	8421658
RDL = Reportable Detection Limit								

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PQ8761		PQ8762		PQ8763		
Sampling Date		2016/09/29 13:00		2016/09/29 13:00		2016/09/29 14:40		
COC Number		506875-01-01		506875-01-01		506875-01-01		
	UNITS	**MW13-1**	**QC Batch**	**MW13-1 DUP**	**QC Batch**	**MW13-2**	**RDL**	**QC Batch**
Dissolved Calcium (Ca)	mg/L	18.6	8418504	18.4	8418504	23.3	0.050	8418504
Dissolved Magnesium (Mg)	mg/L	5.47	8418504	4.97	8418504	9.19	0.050	8418504
Dissolved Potassium (K)	mg/L	2.44	8418504	2.42	8418504	1.60	0.050	8418504
Dissolved Sodium (Na)	mg/L	9.83	8418504	10.0	8418504	9.23	0.050	8418504
Dissolved Sulphur (S)	mg/L	<3.0	8418504	<3.0	8418504	<3.0	3.0	8418504
RDL = Reportable Detection Limit								

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PQ8764			PQ8765			PQ8766		
Sampling Date		2016/09/29 16:00			2016/09/30 09:30			2016/09/30 10:20		
COC Number		506875-01-01			506875-01-01			506875-01-01		
	UNITS	MW05-1	RDL	QC Batch	NLLD	RDL	QC Batch	OLWP	RDL	QC Batch
Misc. Inorganics										
Dissolved Hardness (CaCO3)	mg/L	198	0.50	8418488	166	0.50	8418488	455	0.50	8428513
Elements										
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	8424743	<0.010	0.010	8424743	<0.010	0.010	8424743
Dissolved Metals by ICPMS										
Dissolved Aluminum (Al)	mg/L	0.0117	0.0030	8421236	0.404	0.012	8421658	0.0353	0.0030	8421658
Dissolved Antimony (Sb)	mg/L	<0.00050	0.00050	8421236	0.0027	0.0020	8421658	0.00054	0.00050	8421658
Dissolved Arsenic (As)	mg/L	0.00088	0.00010	8421236	0.0186	0.00040	8421658	0.00454	0.00010	8421658
Dissolved Barium (Ba)	mg/L	0.0110	0.0010	8421236	0.0089	0.0040	8421658	0.0185	0.0010	8421658
Dissolved Beryllium (Be)	mg/L	<0.00010	0.00010	8421236	<0.00040	0.00040	8421658	<0.00010	0.00010	8421658
Dissolved Bismuth (Bi)	mg/L	<0.0010	0.0010	8421236	<0.0040	0.0040	8421658	<0.0010	0.0010	8421658
Dissolved Boron (B)	mg/L	<0.050	0.050	8421236	6.91	0.20	8421658	1.16	0.050	8421658
Dissolved Cadmium (Cd)	mg/L	<0.000010	0.000010	8421236	<0.000040	0.000040	8421658	<0.000010	0.000010	8421658
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	8421236	0.0096	0.0040	8421658	0.0044	0.0010	8421658
Dissolved Cobalt (Co)	mg/L	<0.00050	0.00050	8421236	<0.0020	0.0020	8421658	<0.00050	0.00050	8421658
Dissolved Copper (Cu)	mg/L	0.00082	0.00020	8421236	<0.00080	0.00080	8421658	0.00053	0.00020	8421658
Dissolved Iron (Fe)	mg/L	0.0391	0.0050	8421236	0.070	0.020	8421658	0.446	0.0050	8421658
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	8421236	<0.00080	0.00080	8421658	<0.00020	0.00020	8421658
Dissolved Lithium (Li)	mg/L	<0.0050	0.0050	8421236	<0.020	0.020	8421658	0.0134	0.0050	8421658
Dissolved Manganese (Mn)	mg/L	0.0863	0.0010	8421236	0.0563	0.0040	8421658	0.599	0.0010	8421658
Dissolved Molybdenum (Mo)	mg/L	<0.0010	0.0010	8421236	0.0228	0.0040	8421658	0.0055	0.0010	8421658
Dissolved Nickel (Ni)	mg/L	0.0023	0.0010	8421236	0.0251	0.0040	8421658	0.0142	0.0010	8421658
Dissolved Selenium (Se)	mg/L	0.00015	0.00010	8421236	0.00060	0.00040	8421658	<0.00010	0.00010	8421658
Dissolved Silicon (Si)	mg/L	6.79	0.10	8421236	35.8	0.40	8421658	11.7	0.10	8421658
Dissolved Silver (Ag)	mg/L	<0.000020	0.000020	8421236	<0.000080	0.000080	8421658	<0.000020	0.000020	8421658
Dissolved Strontium (Sr)	mg/L	0.232	0.0010	8421236	0.0930	0.0040	8421658	0.478	0.0010	8421658
Dissolved Thallium (Tl)	mg/L	<0.000050	0.000050	8421236	<0.00020	0.00020	8421658	<0.000050	0.000050	8421658
Dissolved Tin (Sn)	mg/L	<0.0050	0.0050	8421236	<0.020	0.020	8421658	<0.0050	0.0050	8421658
Dissolved Titanium (Ti)	mg/L	<0.0050	0.0050	8421236	0.057	0.020	8421658	0.0431	0.0050	8421658
Dissolved Uranium (U)	mg/L	0.00143	0.00010	8421236	0.00452	0.00040	8421658	0.00100	0.00010	8421658
Dissolved Vanadium (V)	mg/L	0.0228	0.0050	8421236	0.309	0.020	8421658	0.0369	0.0050	8421658
Dissolved Zinc (Zn)	mg/L	<0.0050	0.0050	8421236	<0.020	0.020	8421658	0.0202	0.0050	8421658
Dissolved Zirconium (Zr)	mg/L	<0.00050	0.00050	8421236	0.0056	0.0020	8421658	0.00158	0.00050	8421658
RDL = Reportable Detection Limit										

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PQ8764			PQ8765			PQ8766		
Sampling Date		2016/09/29 16:00			2016/09/30 09:30			2016/09/30 10:20		
COC Number		506875-01-01			506875-01-01			506875-01-01		
	UNITS	MW05-1	RDL	QC Batch	NLLD	RDL	QC Batch	OLWP	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	48.4	0.050	8418504	14.4	0.20	8418504	66.5	0.050	8428515
Dissolved Magnesium (Mg)	mg/L	18.8	0.050	8418504	31.5	0.20	8418504	70.2	0.050	8428515
Dissolved Potassium (K)	mg/L	3.15	0.050	8418504	167	0.20	8418504	54.4	0.050	8428515
Dissolved Sodium (Na)	mg/L	14.8	0.050	8418504	2710	0.20	8418504	722	0.050	8428515
Dissolved Sulphur (S)	mg/L	<3.0	3.0	8418504	393	12	8418504	34.9	3.0	8428515
RDL = Reportable Detection Limit										

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PQ8761	PQ8762	PQ8763		PQ8764		
Sampling Date		2016/09/29 13:00	2016/09/29 13:00	2016/09/29 14:40		2016/09/29 16:00		
COC Number		506875-01-01	506875-01-01	506875-01-01		506875-01-01		
	UNITS	MW13-1	MW13-1 DUP	MW13-2	RDL	MW05-1	RDL	QC Batch
Calculated Parameters								
Total Hardness (CaCO3)	mg/L	354	556	1800	0.50	296	0.50	8418568
Elements								
Total Mercury (Hg)	ug/L	<0.010	<0.010	<0.010	0.010	<0.010	0.010	8425717
Total Metals by ICPMS								
Total Aluminum (Al)	mg/L	103	171	504	0.012	40.6	0.0030	8420238
Total Antimony (Sb)	mg/L	<0.0020	<0.0020	<0.0020	0.0020	<0.00050	0.00050	8420238
Total Arsenic (As)	mg/L	0.0102	0.0154	0.0146	0.00040	0.00246	0.00010	8420238
Total Barium (Ba)	mg/L	0.998	1.73	4.69	0.0040	0.155	0.0010	8420238
Total Beryllium (Be)	mg/L	0.00107	0.00183	0.00662	0.00040	0.00042	0.00010	8420238
Total Bismuth (Bi)	mg/L	<0.0040	<0.0040	<0.0040	0.0040	<0.0010	0.0010	8420238
Total Boron (B)	mg/L	<0.20	<0.20	<0.20	0.20	<0.050	0.050	8420238
Total Cadmium (Cd)	mg/L	0.000986	0.00186	0.00393	0.000040	0.000202	0.000010	8420238
Total Chromium (Cr)	mg/L	0.0685	0.117	0.753	0.0040	0.0255	0.0010	8420238
Total Cobalt (Co)	mg/L	0.0549	0.0989	0.347	0.0020	0.0125	0.00050	8420238
Total Copper (Cu)	mg/L	0.213	0.400	1.92	0.0020	0.0922	0.00050	8420238
Total Iron (Fe)	mg/L	92.8	158	387	0.040	25.3	0.010	8420238
Total Lead (Pb)	mg/L	0.0140	0.0233	0.123	0.00080	0.0135	0.00020	8420238
Total Lithium (Li)	mg/L	0.051	0.091	0.124	0.020	0.0061	0.0050	8420238
Total Manganese (Mn)	mg/L	2.08	3.58	14.6	0.0040	0.508	0.0010	8420238
Total Molybdenum (Mo)	mg/L	<0.0040	<0.0040	0.0044	0.0040	<0.0010	0.0010	8420238
Total Nickel (Ni)	mg/L	0.0595	0.104	0.466	0.0040	0.0207	0.0010	8420238
Total Selenium (Se)	mg/L	0.00047	0.00070	0.00102	0.00040	0.00063	0.00010	8420238
Total Silicon (Si)	mg/L	102	133	229	0.40	49.7	0.10	8420238
Total Silver (Ag)	mg/L	0.000120	0.000253	0.000619	0.000080	0.000032	0.000020	8420238
Total Strontium (Sr)	mg/L	0.541	0.813	2.73	0.0040	0.440	0.0010	8420238
Total Thallium (Tl)	mg/L	0.00073	0.00131	0.00130	0.00020	0.000072	0.000050	8420238
Total Tin (Sn)	mg/L	<0.020	<0.020	<0.020	0.020	<0.0050	0.0050	8420238
Total Titanium (Ti)	mg/L	4.99	8.15	4.26	0.020	2.28	0.0050	8420238
Total Uranium (U)	mg/L	0.00745	0.0124	0.0148	0.00040	0.00215	0.00010	8420238
Total Vanadium (V)	mg/L	0.215	0.355	0.597	0.020	0.122	0.0050	8420238
Total Zinc (Zn)	mg/L	0.240	0.423	1.01	0.020	0.0482	0.0050	8420238
Total Zirconium (Zr)	mg/L	<0.0020	0.0021	0.0047	0.0020	0.00217	0.00050	8420238
RDL = Reportable Detection Limit								

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PQ8761	PQ8762	PQ8763		PQ8764		
Sampling Date		2016/09/29 13:00	2016/09/29 13:00	2016/09/29 14:40		2016/09/29 16:00		
COC Number		506875-01-01	506875-01-01	506875-01-01		506875-01-01		
	UNITS	**MW13-1**	**MW13-1 DUP**	**MW13-2**	**RDL**	**MW05-1**	**RDL**	**QC Batch**
Total Calcium (Ca)	mg/L	73.7	106	428	0.20	69.5	0.050	8418569
Total Magnesium (Mg)	mg/L	41.2	70.5	179	0.20	29.8	0.050	8418569
Total Potassium (K)	mg/L	19.4	33.1	32.6	0.20	4.98	0.050	8418569
Total Sodium (Na)	mg/L	20.6	28.0	61.3	0.20	22.1	0.050	8418569
Total Sulphur (S)	mg/L	<12	<12	<12	12	<3.0	3.0	8418569
RDL = Reportable Detection Limit								

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PQ8765		PQ8766		
Sampling Date		2016/09/30 09:30		2016/09/30 10:20		
COC Number		506875-01-01		506875-01-01		
	UNITS	NLLD	RDL	OLWP	RDL	QC Batch
Calculated Parameters						
Total Hardness (CaCO3)	mg/L	172	0.50	440	0.50	8418568
Elements						
Total Mercury (Hg)	ug/L	<0.010	0.010	<0.010	0.010	8425717
Total Metals by ICPMS						
Total Aluminum (Al)	mg/L	0.435	0.0060	0.0862	0.0030	8421657
Total Antimony (Sb)	mg/L	0.0269	0.0010	0.00072	0.00050	8421657
Total Arsenic (As)	mg/L	0.105	0.00020	0.00483	0.00010	8421657
Total Barium (Ba)	mg/L	0.0089	0.0020	0.0211	0.0010	8421657
Total Beryllium (Be)	mg/L	<0.00020	0.00020	<0.00010	0.00010	8421657
Total Bismuth (Bi)	mg/L	<0.0020	0.0020	<0.0010	0.0010	8421657
Total Boron (B)	mg/L	6.82	0.10	1.18	0.050	8421657
Total Cadmium (Cd)	mg/L	0.000024	0.000020	0.000012	0.000010	8421657
Total Chromium (Cr)	mg/L	0.0155	0.0020	0.0075	0.0010	8421657
Total Cobalt (Co)	mg/L	0.0011	0.0010	<0.00050	0.00050	8421657
Total Copper (Cu)	mg/L	0.0029	0.0010	0.00149	0.00050	8421657
Total Iron (Fe)	mg/L	0.144	0.020	0.654	0.010	8421657
Total Lead (Pb)	mg/L	<0.00040	0.00040	<0.00020	0.00020	8421657
Total Lithium (Li)	mg/L	<0.010	0.010	0.0136	0.0050	8421657
Total Manganese (Mn)	mg/L	0.0592	0.0020	0.663	0.0010	8421657
Total Molybdenum (Mo)	mg/L	0.187	0.0020	0.0070	0.0010	8421657
Total Nickel (Ni)	mg/L	0.0570	0.0020	0.0165	0.0010	8421657
Total Selenium (Se)	mg/L	0.00062	0.00020	<0.00010	0.00010	8421657
Total Silicon (Si)	mg/L	36.9	0.20	12.0	0.10	8421657
Total Silver (Ag)	mg/L	<0.000040	0.000040	<0.000020	0.000020	8421657
Total Strontium (Sr)	mg/L	0.102	0.0020	0.500	0.0010	8421657
Total Thallium (Tl)	mg/L	<0.00010	0.00010	<0.000050	0.000050	8421657
Total Tin (Sn)	mg/L	<0.010	0.010	<0.0050	0.0050	8421657
Total Titanium (Ti)	mg/L	0.153	0.010	0.0699	0.0050	8421657
Total Uranium (U)	mg/L	0.00552	0.00020	0.00109	0.00010	8421657
Total Vanadium (V)	mg/L	0.366	0.010	0.0402	0.0050	8421657
Total Zinc (Zn)	mg/L	<0.010	0.010	<0.0050	0.0050	8421657
Total Zirconium (Zr)	mg/L	0.0056	0.0010	0.00128	0.00050	8421657
RDL = Reportable Detection Limit						

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PQ8765		PQ8766		
Sampling Date		2016/09/30 09:30		2016/09/30 10:20		
COC Number		506875-01-01		506875-01-01		
	UNITS	**NLLD**	**RDL**	**OLWP**	**RDL**	**QC Batch**
Total Calcium (Ca)	mg/L	15.2	0.10	60.3	0.050	8418569
Total Magnesium (Mg)	mg/L	32.7	0.10	70.3	0.050	8418569
Total Potassium (K)	mg/L	189	0.10	54.7	0.050	8418569
Total Sodium (Na)	mg/L	2900	0.10	717	0.050	8418569
Total Sulphur (S)	mg/L	398	6.0	36.1	3.0	8418569
RDL = Reportable Detection Limit						

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

SALINITY 4 PACKAGE FOR WATER (WATER)

Maxxam ID		PQ8761	PQ8762	PQ8763	PQ8764	PQ8764	PQ8765		
Sampling Date		2016/09/29 13:00	2016/09/29 13:00	2016/09/29 14:40	2016/09/29 16:00	2016/09/29 16:00	2016/09/30 09:30		
COC Number		506875-01-01	506875-01-01	506875-01-01	506875-01-01	506875-01-01	506875-01-01		
	UNITS	MW13-1	MW13-1 DUP	MW13-2	MW05-1	MW05-1 Lab-Dup	NLLD	RDL	QC Batch
Misc. Inorganics									
Salinity	g/L	0.090	0.090	0.110	0.200	0.200	6.30	0.010	8420104
Physical Properties									
Conductivity	uS/cm	188	188	233	418	418	11000	1.0	8420102
pH	pH	8.16	8.17	8.22	8.15	8.21	9.62		8420101

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		PQ8766		
Sampling Date		2016/09/30 10:20		
COC Number		506875-01-01		
	UNITS	OLWP	RDL	QC Batch
Misc. Inorganics				
Salinity	g/L	1.99	0.010	8420104
Physical Properties				
Conductivity	uS/cm	3730	1.0	8420102
pH	pH	8.56		8420101

RDL = Reportable Detection Limit

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

GENERAL COMMENTS

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER) Comments

Sample PQ8763-02 Polychlorinated Biphenyls: Sample required decanting due to presence of sediment.
Sample PQ8765-02 Polychlorinated Biphenyls: Detection limits raised due to matrix interference.

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER) Comments

Sample PQ8765-09 Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference.

CSR TOTAL METALS IN WATER WITH CV HG (WATER) Comments

Sample PQ8761-07 Elements by CRC ICPMS (total): RDL raised due to sample matrix interference.
Sample PQ8762-07 Elements by CRC ICPMS (total): RDL raised due to sample matrix interference.
Sample PQ8763-07 Elements by CRC ICPMS (total): RDL raised due to sample matrix interference.
Sample PQ8765-07 Elements by CRC ICPMS (total): RDL raised due to sample matrix interference.

Sample PQ8763, Elements by CRC ICPMS (dissolved): Test repeated.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

QUALITY ASSURANCE REPORT

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8422265	NONACHLOROBIPHENYL (sur.)	2016/10/05			94	30 - 130	85	%		
8426201	D10-ANTHRACENE (sur.)	2016/10/07	105	60 - 130	101	60 - 130	89	%		
8426201	D8-ACENAPHTHYLENE (sur.)	2016/10/07	101	50 - 130	102	50 - 130	95	%		
8426201	D8-NAPHTHALENE (sur.)	2016/10/07	95	50 - 130	92	50 - 130	64	%		
8426201	D9-Acridine	2016/10/07	61	50 - 130	94	50 - 130	78	%		
8426201	TERPHENYL-D14 (sur.)	2016/10/07	105	60 - 130	99	60 - 130	81	%		
8426206	O-TERPHENYL (sur.)	2016/10/07	98	50 - 130	100	50 - 130	98	%		
8426465	1,4-Difluorobenzene (sur.)	2016/10/07	107	70 - 130	108	70 - 130	109	%		
8426465	4-Bromofluorobenzene (sur.)	2016/10/07	98	70 - 130	96	70 - 130	96	%		
8426465	D4-1,2-Dichloroethane (sur.)	2016/10/07	90	70 - 130	99	70 - 130	92	%		
8420101	pH	2016/10/03			101	97 - 103			0.73	N/A
8420102	Conductivity	2016/10/03			98	80 - 120	<1.0	uS/cm	0	20
8420104	Salinity	2016/10/03					<0.010	g/L	0	25
8420238	Total Aluminum (Al)	2016/10/04	NC	80 - 120	114	80 - 120	<0.0030	mg/L	18	20
8420238	Total Antimony (Sb)	2016/10/04	109	80 - 120	103	80 - 120	<0.00050	mg/L	NC	20
8420238	Total Arsenic (As)	2016/10/04	110	80 - 120	109	80 - 120	<0.00010	mg/L	6.6	20
8420238	Total Barium (Ba)	2016/10/04	NC	80 - 120	102	80 - 120	<0.0010	mg/L	0.23	20
8420238	Total Beryllium (Be)	2016/10/04	112	80 - 120	108	80 - 120	<0.00010	mg/L	NC	20
8420238	Total Bismuth (Bi)	2016/10/04	103	80 - 120	103	80 - 120	<0.0010	mg/L	NC	20
8420238	Total Boron (B)	2016/10/04	116	80 - 120	101	80 - 120	<0.050	mg/L	NC	20
8420238	Total Cadmium (Cd)	2016/10/04	108	80 - 120	109	80 - 120	<0.000010	mg/L	NC	20
8420238	Total Chromium (Cr)	2016/10/04	104	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20
8420238	Total Cobalt (Co)	2016/10/04	98	80 - 120	97	80 - 120	<0.00050	mg/L	NC	20
8420238	Total Copper (Cu)	2016/10/04	100	80 - 120	104	80 - 120	<0.00050	mg/L	NC	20
8420238	Total Iron (Fe)	2016/10/04	NC	80 - 120	100	80 - 120	<0.010	mg/L	0.22	20
8420238	Total Lead (Pb)	2016/10/04	101	80 - 120	100	80 - 120	<0.00020	mg/L	NC	20
8420238	Total Lithium (Li)	2016/10/04	NC	80 - 120	103	80 - 120	<0.0050	mg/L	NC	20
8420238	Total Manganese (Mn)	2016/10/04	NC	80 - 120	102	80 - 120	<0.0010	mg/L	1.3	20
8420238	Total Molybdenum (Mo)	2016/10/04	106	80 - 120	101	80 - 120	<0.0010	mg/L	NC	20
8420238	Total Nickel (Ni)	2016/10/04	103	80 - 120	103	80 - 120	<0.0010	mg/L	NC	20
8420238	Total Selenium (Se)	2016/10/04	110	80 - 120	117	80 - 120	<0.00010	mg/L	NC	20

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8420238	Total Silicon (Si)	2016/10/04					<0.10	mg/L	7.1	20
8420238	Total Silver (Ag)	2016/10/04	84	80 - 120	85	80 - 120	<0.000020	mg/L	NC	20
8420238	Total Strontium (Sr)	2016/10/04	NC	80 - 120	101	80 - 120	<0.0010	mg/L	3.0	20
8420238	Total Thallium (Tl)	2016/10/04	85	80 - 120	85	80 - 120	<0.000050	mg/L	NC	20
8420238	Total Tin (Sn)	2016/10/04	101	80 - 120	99	80 - 120	<0.0050	mg/L	NC	20
8420238	Total Titanium (Ti)	2016/10/04	NC	80 - 120	90	80 - 120	<0.0050	mg/L	NC	20
8420238	Total Uranium (U)	2016/10/04	101	80 - 120	97	80 - 120	<0.00010	mg/L	NC	20
8420238	Total Vanadium (V)	2016/10/04	103	80 - 120	103	80 - 120	<0.0050	mg/L	NC	20
8420238	Total Zinc (Zn)	2016/10/04	NC	80 - 120	117	80 - 120	<0.0050	mg/L	NC	20
8420238	Total Zirconium (Zr)	2016/10/04					<0.00050	mg/L	NC	20
8420923	Tannins and Lignins	2016/10/04	57 (1)	80 - 120	100	80 - 120	<0.10	mg/L	NC	20
8421236	Dissolved Aluminum (Al)	2016/10/05	104	80 - 120	109	80 - 120	<0.0030	mg/L		
8421236	Dissolved Antimony (Sb)	2016/10/05	99	80 - 120	102	80 - 120	<0.00050	mg/L		
8421236	Dissolved Arsenic (As)	2016/10/05	102	80 - 120	101	80 - 120	<0.00010	mg/L	NC	20
8421236	Dissolved Barium (Ba)	2016/10/05	100	80 - 120	101	80 - 120	<0.0010	mg/L		
8421236	Dissolved Beryllium (Be)	2016/10/05	102	80 - 120	102	80 - 120	<0.00010	mg/L		
8421236	Dissolved Bismuth (Bi)	2016/10/05	98	80 - 120	99	80 - 120	<0.0010	mg/L		
8421236	Dissolved Boron (B)	2016/10/05	99	80 - 120	109	80 - 120	<0.050	mg/L		
8421236	Dissolved Cadmium (Cd)	2016/10/05	99	80 - 120	102	80 - 120	<0.000010	mg/L		
8421236	Dissolved Chromium (Cr)	2016/10/05	97	80 - 120	96	80 - 120	<0.0010	mg/L		
8421236	Dissolved Cobalt (Co)	2016/10/05	95	80 - 120	93	80 - 120	<0.00050	mg/L		
8421236	Dissolved Copper (Cu)	2016/10/05	95	80 - 120	93	80 - 120	<0.00020	mg/L		
8421236	Dissolved Iron (Fe)	2016/10/05	107	80 - 120	109	80 - 120	<0.0050	mg/L		
8421236	Dissolved Lead (Pb)	2016/10/05	96	80 - 120	101	80 - 120	<0.00020	mg/L		
8421236	Dissolved Lithium (Li)	2016/10/05	102	80 - 120	100	80 - 120	<0.0050	mg/L		
8421236	Dissolved Manganese (Mn)	2016/10/05	102	80 - 120	97	80 - 120	<0.0010	mg/L		
8421236	Dissolved Molybdenum (Mo)	2016/10/05	98	80 - 120	100	80 - 120	<0.0010	mg/L		
8421236	Dissolved Nickel (Ni)	2016/10/05	98	80 - 120	97	80 - 120	<0.0010	mg/L		
8421236	Dissolved Selenium (Se)	2016/10/05	108	80 - 120	109	80 - 120	<0.00010	mg/L		
8421236	Dissolved Silicon (Si)	2016/10/05					<0.10	mg/L		
8421236	Dissolved Silver (Ag)	2016/10/05	85	80 - 120	83	80 - 120	<0.000020	mg/L		

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8421236	Dissolved Strontium (Sr)	2016/10/05	98	80 - 120	94	80 - 120	<0.0010	mg/L		
8421236	Dissolved Thallium (Tl)	2016/10/05	85	80 - 120	94	80 - 120	<0.000050	mg/L		
8421236	Dissolved Tin (Sn)	2016/10/05	99	80 - 120	106	80 - 120	<0.0050	mg/L		
8421236	Dissolved Titanium (Ti)	2016/10/05	112	80 - 120	85	80 - 120	<0.0050	mg/L		
8421236	Dissolved Uranium (U)	2016/10/05	102	80 - 120	99	80 - 120	<0.00010	mg/L		
8421236	Dissolved Vanadium (V)	2016/10/05	97	80 - 120	96	80 - 120	<0.0050	mg/L		
8421236	Dissolved Zinc (Zn)	2016/10/05	103	80 - 120	107	80 - 120	<0.0050	mg/L		
8421236	Dissolved Zirconium (Zr)	2016/10/05					<0.00050	mg/L		
8421657	Total Aluminum (Al)	2016/10/05	111	80 - 120	116	80 - 120	<0.0030	mg/L	NC	20
8421657	Total Antimony (Sb)	2016/10/05	101	80 - 120	107	80 - 120	<0.00050	mg/L	NC	20
8421657	Total Arsenic (As)	2016/10/05	109	80 - 120	113	80 - 120	<0.00010	mg/L	5.7	20
8421657	Total Barium (Ba)	2016/10/05	NC	80 - 120	104	80 - 120	<0.0010	mg/L	1.5	20
8421657	Total Beryllium (Be)	2016/10/05	105	80 - 120	108	80 - 120	<0.00010	mg/L	NC	20
8421657	Total Bismuth (Bi)	2016/10/05	96	80 - 120	102	80 - 120	<0.0010	mg/L	NC	20
8421657	Total Boron (B)	2016/10/05	105	80 - 120	108	80 - 120	<0.050	mg/L	NC	20
8421657	Total Cadmium (Cd)	2016/10/05	101	80 - 120	109	80 - 120	<0.000010	mg/L	NC	20
8421657	Total Chromium (Cr)	2016/10/05	98	80 - 120	101	80 - 120	<0.0010	mg/L	NC	20
8421657	Total Cobalt (Co)	2016/10/05	94	80 - 120	99	80 - 120	<0.00050	mg/L	NC	20
8421657	Total Copper (Cu)	2016/10/05	96	80 - 120	108	80 - 120	<0.00050	mg/L	NC	20
8421657	Total Iron (Fe)	2016/10/05	NC	80 - 120	105	80 - 120	<0.010	mg/L	1.0	20
8421657	Total Lead (Pb)	2016/10/05	97	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8421657	Total Lithium (Li)	2016/10/05	NC	80 - 120	105	80 - 120	<0.0050	mg/L	2.8	20
8421657	Total Manganese (Mn)	2016/10/05	NC	80 - 120	99	80 - 120	<0.0010	mg/L	1.8	20
8421657	Total Molybdenum (Mo)	2016/10/05	102	80 - 120	107	80 - 120	<0.0010	mg/L	NC	20
8421657	Total Nickel (Ni)	2016/10/05	100	80 - 120	106	80 - 120	<0.0010	mg/L	NC	20
8421657	Total Selenium (Se)	2016/10/05	104	80 - 120	119	80 - 120	<0.00010	mg/L	NC	20
8421657	Total Silicon (Si)	2016/10/05					<0.10	mg/L	6.1	20
8421657	Total Silver (Ag)	2016/10/05	100	80 - 120	92	80 - 120	<0.000020	mg/L	NC	20
8421657	Total Strontium (Sr)	2016/10/05	NC	80 - 120	97	80 - 120	<0.0010	mg/L	3.3	20
8421657	Total Thallium (Tl)	2016/10/05	80	80 - 120	89	80 - 120	<0.000050	mg/L	NC	20
8421657	Total Tin (Sn)	2016/10/05	99	80 - 120	104	80 - 120	<0.0050	mg/L	NC	20

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8421657	Total Titanium (Ti)	2016/10/05	88	80 - 120	94	80 - 120	<0.0050	mg/L	NC	20
8421657	Total Uranium (U)	2016/10/05	102	80 - 120	99	80 - 120	<0.00010	mg/L	NC	20
8421657	Total Vanadium (V)	2016/10/05	101	80 - 120	106	80 - 120	<0.0050	mg/L	NC	20
8421657	Total Zinc (Zn)	2016/10/05	102	80 - 120	115	80 - 120	<0.0050	mg/L	NC	20
8421657	Total Zirconium (Zr)	2016/10/05					<0.00050	mg/L	NC	20
8421658	Dissolved Aluminum (Al)	2016/10/06	102	80 - 120	104	80 - 120	<0.0030	mg/L	NC	20
8421658	Dissolved Antimony (Sb)	2016/10/06	99	80 - 120	99	80 - 120	<0.00050	mg/L	NC	20
8421658	Dissolved Arsenic (As)	2016/10/06	98	80 - 120	98	80 - 120	<0.00010	mg/L	1.5	20
8421658	Dissolved Barium (Ba)	2016/10/06	NC	80 - 120	98	80 - 120	<0.0010	mg/L	0.026	20
8421658	Dissolved Beryllium (Be)	2016/10/06	100	80 - 120	99	80 - 120	<0.00010	mg/L	NC	20
8421658	Dissolved Bismuth (Bi)	2016/10/06	95	80 - 120	98	80 - 120	<0.0010	mg/L	NC	20
8421658	Dissolved Boron (B)	2016/10/06	97	80 - 120	96	80 - 120	<0.050	mg/L	NC	20
8421658	Dissolved Cadmium (Cd)	2016/10/06	96	80 - 120	97	80 - 120	<0.000010	mg/L	NC	20
8421658	Dissolved Chromium (Cr)	2016/10/06	93	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20
8421658	Dissolved Cobalt (Co)	2016/10/06	89	80 - 120	95	80 - 120	<0.00050	mg/L	NC	20
8421658	Dissolved Copper (Cu)	2016/10/06	91	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8421658	Dissolved Iron (Fe)	2016/10/06	99	80 - 120	103	80 - 120	<0.0050	mg/L	NC	20
8421658	Dissolved Lead (Pb)	2016/10/06	98	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8421658	Dissolved Lithium (Li)	2016/10/06	96	80 - 120	98	80 - 120	<0.0050	mg/L	NC	20
8421658	Dissolved Manganese (Mn)	2016/10/06	NC	80 - 120	97	80 - 120	<0.0010	mg/L	1.9	20
8421658	Dissolved Molybdenum (Mo)	2016/10/06	NC	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20
8421658	Dissolved Nickel (Ni)	2016/10/06	91	80 - 120	98	80 - 120	<0.0010	mg/L	NC	20
8421658	Dissolved Selenium (Se)	2016/10/06	101	80 - 120	101	80 - 120	<0.00010	mg/L	NC	20
8421658	Dissolved Silicon (Si)	2016/10/06					<0.10	mg/L	2.4	20
8421658	Dissolved Silver (Ag)	2016/10/06	87	80 - 120	90	80 - 120	<0.000020	mg/L	NC	20
8421658	Dissolved Strontium (Sr)	2016/10/06	NC	80 - 120	92	80 - 120	<0.0010	mg/L	2.1	20
8421658	Dissolved Thallium (Tl)	2016/10/06	83	80 - 120	106	80 - 120	<0.000050	mg/L	NC	20
8421658	Dissolved Tin (Sn)	2016/10/06	99	80 - 120	100	80 - 120	<0.0050	mg/L	NC	20
8421658	Dissolved Titanium (Ti)	2016/10/06	94	80 - 120	90	80 - 120	<0.0050	mg/L	NC	20
8421658	Dissolved Uranium (U)	2016/10/06	101	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8421658	Dissolved Vanadium (V)	2016/10/06	93	80 - 120	96	80 - 120	<0.0050	mg/L	NC	20

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8421658	Dissolved Zinc (Zn)	2016/10/06	96	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
8421658	Dissolved Zirconium (Zr)	2016/10/06					<0.00050	mg/L	NC	20
8422265	Aroclor 1016	2016/10/05					<0.000050	mg/L		
8422265	Aroclor 1221	2016/10/05					<0.000050	mg/L		
8422265	Aroclor 1232	2016/10/05					<0.000050	mg/L		
8422265	Aroclor 1242	2016/10/05					<0.000050	mg/L		
8422265	Aroclor 1248	2016/10/05					<0.000050	mg/L		
8422265	Aroclor 1254	2016/10/05					<0.000050	mg/L		
8422265	Aroclor 1260	2016/10/05			113	30 - 130	<0.000050	mg/L		
8422265	Aroclor 1262	2016/10/05					<0.000050	mg/L		
8422265	Aroclor 1268	2016/10/05					<0.000050	mg/L		
8422265	Total Aroclors	2016/10/05					<0.000050	mg/L		
8423683	Chemical Oxygen Demand	2016/10/06	NC	80 - 120	102	80 - 120	<10	mg/L	8.6	20
8423684	Chemical Oxygen Demand	2016/10/06	NC	80 - 120	103	80 - 120	<10	mg/L	2.0	20
8424743	Dissolved Mercury (Hg)	2016/10/06	89	80 - 120	88	80 - 120	<0.010	ug/L	NC	20
8424853	Phenols	2016/10/06	103	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20
8425251	Dissolved Chloride (Cl)	2016/10/06	NC	80 - 120	107	80 - 120	<1.0	mg/L	0.071	20
8425254	Dissolved Sulphate (SO4)	2016/10/06	NC	80 - 120	104	80 - 120	<1.0	mg/L	0.53	20
8425265	Dissolved Chloride (Cl)	2016/10/06	108	80 - 120	106	80 - 120	<1.0	mg/L	NC	20
8425289	Dissolved Sulphate (SO4)	2016/10/06	112	80 - 120	102	80 - 120	<1.0	mg/L	NC	20
8425717	Total Mercury (Hg)	2016/10/07	95	80 - 120	103	80 - 120	<0.010	ug/L	NC	20
8425971	Dissolved Chloride (Cl)	2016/10/07	NC	80 - 120	104	80 - 120	1.4, RDL=1.0	mg/L	1.8	20
8425978	Dissolved Sulphate (SO4)	2016/10/07	NC	80 - 120	100	80 - 120	<1.0	mg/L	1.7	20
8426201	2-Methylnaphthalene	2016/10/09	NC	50 - 130	83	50 - 130	<0.10	ug/L	2.3	40
8426201	Acenaphthene	2016/10/09	109	50 - 130	90	50 - 130	<0.050	ug/L	NC	40
8426201	Acenaphthylene	2016/10/09	98	50 - 130	89	50 - 130	<0.050	ug/L	NC	40
8426201	Acridine	2016/10/09	90	50 - 130	87	50 - 130	<0.050	ug/L	NC	40
8426201	Anthracene	2016/10/09	101	60 - 130	93	60 - 130	<0.010	ug/L	NC	40
8426201	Benzo(a)anthracene	2016/10/09	102	60 - 130	95	60 - 130	<0.010	ug/L	NC	40
8426201	Benzo(a)pyrene	2016/10/09	100	60 - 130	95	60 - 130	<0.0090	ug/L	NC	40
8426201	Benzo(b&j)fluoranthene	2016/10/09	101	60 - 130	95	60 - 130	<0.050	ug/L	NC	40

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8426201	Benzo(g,h,i)perylene	2016/10/09	98	60 - 130	93	60 - 130	<0.050	ug/L	NC	40
8426201	Benzo(k)fluoranthene	2016/10/09	105	60 - 130	97	60 - 130	<0.050	ug/L	NC	40
8426201	Chrysene	2016/10/09	102	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
8426201	Dibenz(a,h)anthracene	2016/10/09	99	60 - 130	94	60 - 130	<0.050	ug/L	NC	40
8426201	Fluoranthene	2016/10/09	99	60 - 130	95	60 - 130	<0.020	ug/L	NC	40
8426201	Fluorene	2016/10/09	127	50 - 130	92	50 - 130	<0.050	ug/L	NC	40
8426201	Indeno(1,2,3-cd)pyrene	2016/10/09	99	60 - 130	94	60 - 130	<0.050	ug/L	NC	40
8426201	Naphthalene	2016/10/09	NC	50 - 130	85	50 - 130	<0.10	ug/L	4.3	40
8426201	Phenanthrene	2016/10/09	128	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
8426201	Pyrene	2016/10/09	99	60 - 130	95	60 - 130	<0.020	ug/L	NC	40
8426201	Quinoline	2016/10/09	111	50 - 130	98	50 - 130	<0.24	ug/L	NC	40
8426206	EPH (C10-C19)	2016/10/07	103	50 - 130	97	50 - 130	<0.20	mg/L	4.8	30
8426206	EPH (C19-C32)	2016/10/07	90	50 - 130	93	50 - 130	<0.20	mg/L	NC	30
8426465	Benzene	2016/10/07	85	70 - 130	82	70 - 130	<0.40	ug/L	4.4	30
8426465	Ethylbenzene	2016/10/07	92	70 - 130	89	70 - 130	<0.40	ug/L	NC	30
8426465	m & p-Xylene	2016/10/07	91	70 - 130	87	70 - 130	<0.40	ug/L	NC	30
8426465	Methyl-tert-butylether (MTBE)	2016/10/07	83	70 - 130	76	70 - 130	<4.0	ug/L	NC	30
8426465	o-Xylene	2016/10/07	85	70 - 130	82	70 - 130	<0.40	ug/L	NC	30
8426465	Styrene	2016/10/07	93	70 - 130	89	70 - 130	<0.40	ug/L	NC	30
8426465	Toluene	2016/10/07	85	70 - 130	82	70 - 130	<0.40	ug/L	NC	30
8426465	VH C6-C10	2016/10/07			99	N/A	<300	ug/L	NC	30
8426465	Xylenes (Total)	2016/10/07					<0.40	ug/L	NC	30
8429030	Phenols	2016/10/11	99	80 - 120	102	80 - 120	<0.0010	mg/L	NC	20

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8429771	Dissolved Molybdenum (Mo)	2016/10/12	103	80 - 120	100	80 - 120	<0.0010	mg/L		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

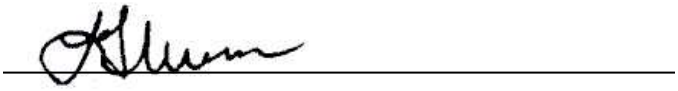
Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B686268
Report Date: 2016/10/12

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Sampler Initials: DP

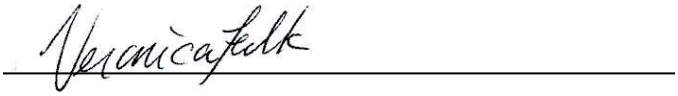
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Lisa Thum, C.E.T., QP, Manager, Inorganics

Rob Reinert, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-free:800-563-6266 Fax:(604) 731 2386 www.maxxam.ca

Page 1 of 1

B686268_COC

C#506875-01-01

INVOICE TO:		Report Information		Project Information			
Company Name	#5950 WATERLINE RESOURCES INC.	Company Name		Quotation #	B51832	Work Order #:	506875
Contact Name	Accounts Payable	Contact Name	DALTON PAJAK	P.O. #			
Address	UNIT D 2301 MCCULLOUGH RD. Nanaimo BC V9S 4M8	Address		Project #	2719-16-001		
Phone	(250) 585-0802 Fax:	Phone	(250) 585-0802 x Fax:	Project Name		Project Manager	Veronica De Guzman
Email	info@waterlineresources.com	Email	dpajak@waterlineresources.com; blennox@waterlinere	Site #			
				Sampled By	D. Pajak		

Regulatory Criteria:
- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other

Special Instructions: analysis - see Quote B51832

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: (will be applied if Rush TAT is not specified): X
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY ☐ 2 Day ☐ 3 Day ☐ Date Required: ☐
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	BTEX/VPH	LEPH/HEPH with PAH	TOTAL PHENOLS	PCB	DISSOLVED METALS + HG	TOTAL METALS + HG	COD	TANNINS + LIGNINS	RFA	DETAILED SALINITY	# of Bottles	Comments
1		MW13-1	29-Sept-16	1300	gw	Y	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14	
2		MW13-1 DUP	29-Sept-16	1300	gw	Y	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	14	
3		MW13-2	29-Sept-16	1440	gw	Y	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	14	
4		MW05-1	29-Sept-16	1600	gw	Y	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	14	
5		NLLD	30-Sept-16	930	gw	Y	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	14	New landfill leachate collection ditch
6		OLWP	30-Sept-16	1020	gw	Y	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	14	Old landfill leachate pump station.
7																		
8																		
9																		
10																		

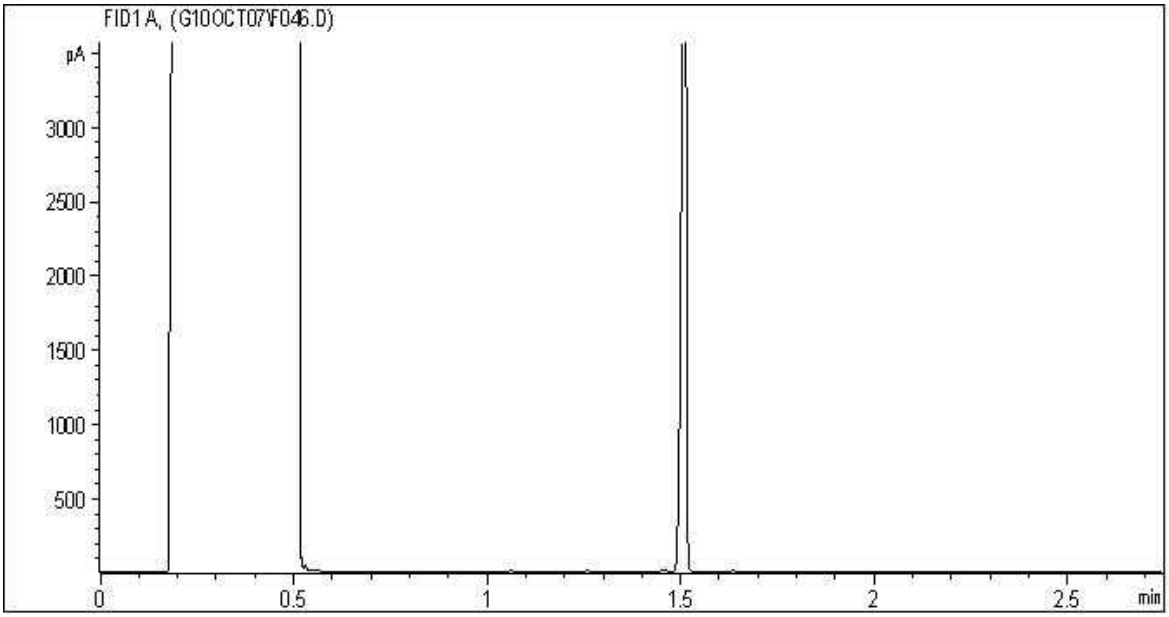
* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Dalton Pajak	16/09/30	1630	Ron Hague	2016/10/01	09:04 PM / 10:05	2016/10/01	☐	6.6, 7 / 6.5, 6 / 6.6, 6	☐ Yes ☐ No N/A

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

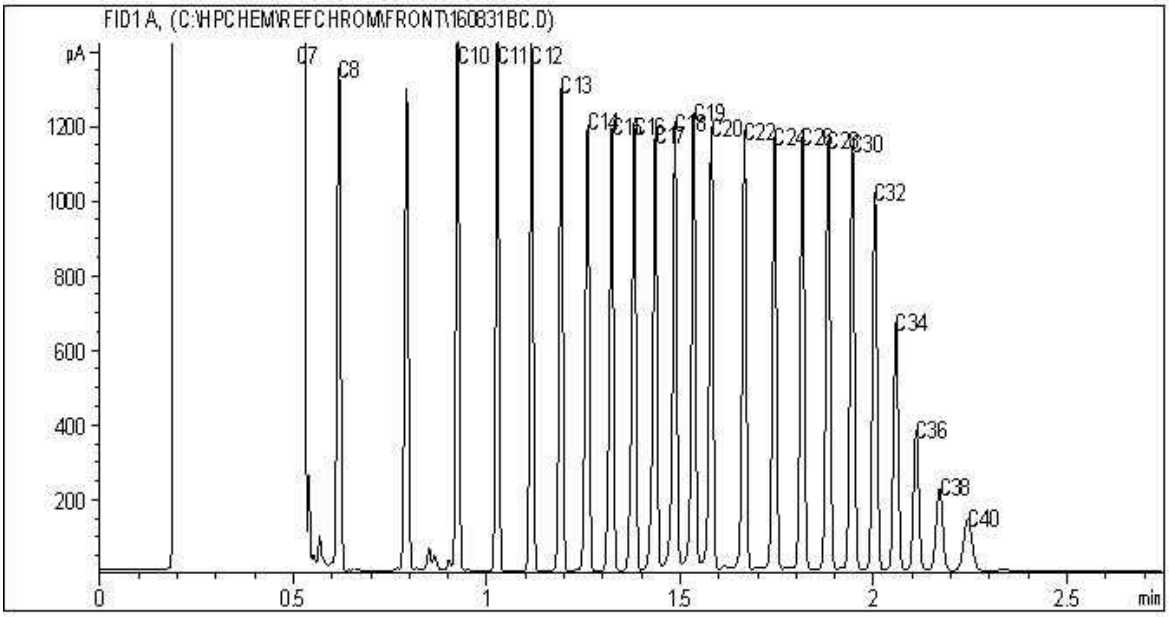
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

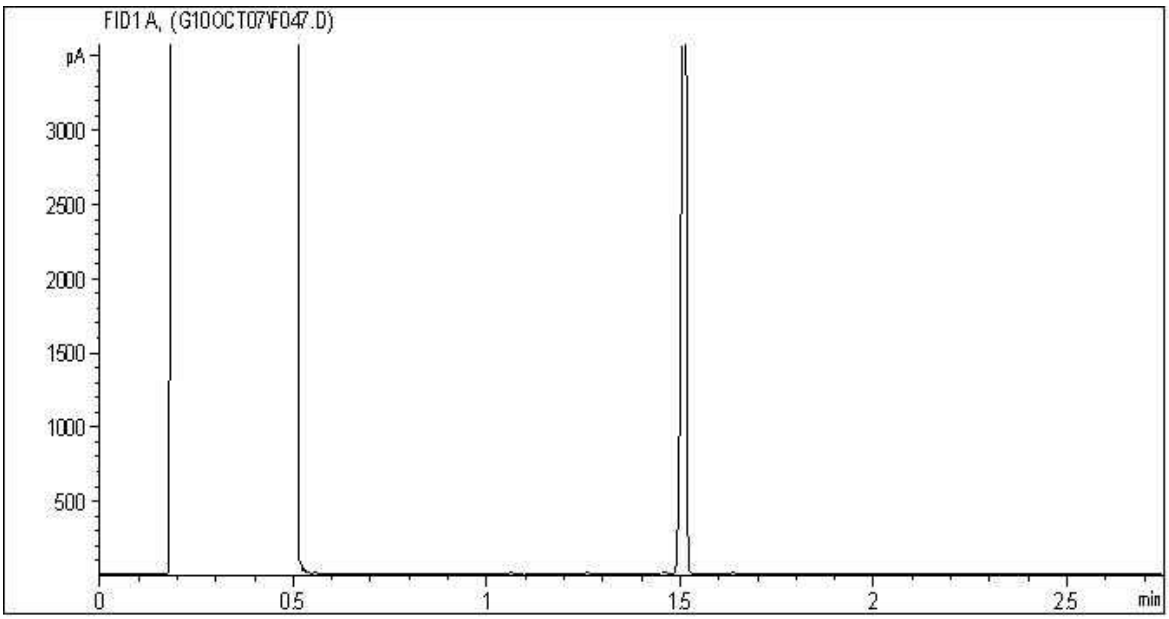


TYPICAL PRODUCT CARBON NUMBER RANGES

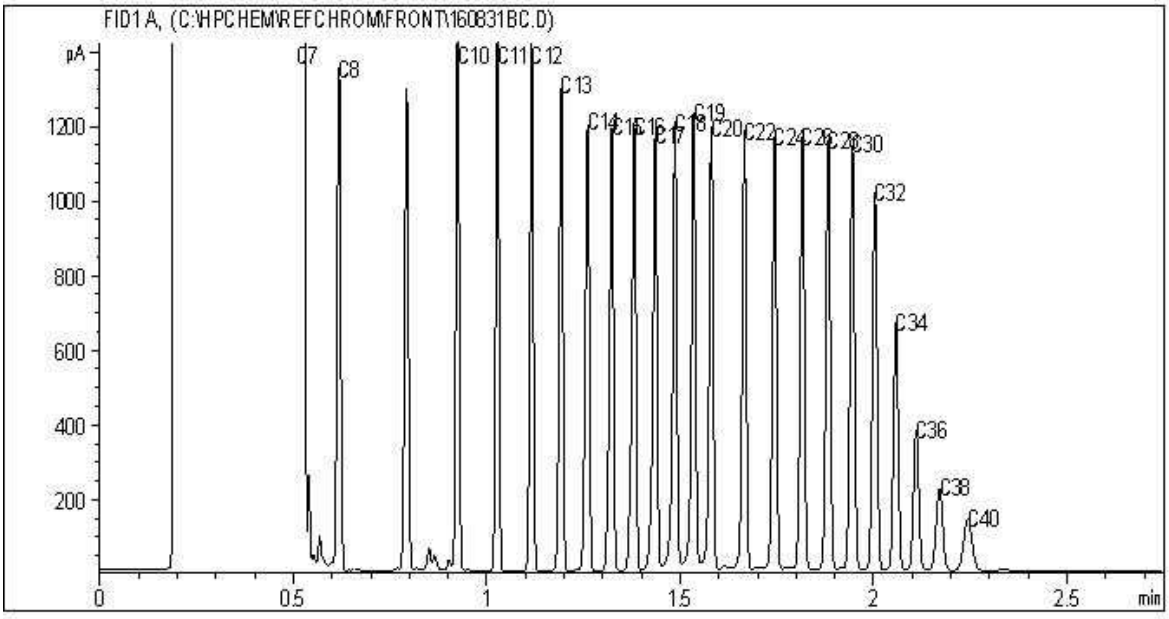
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

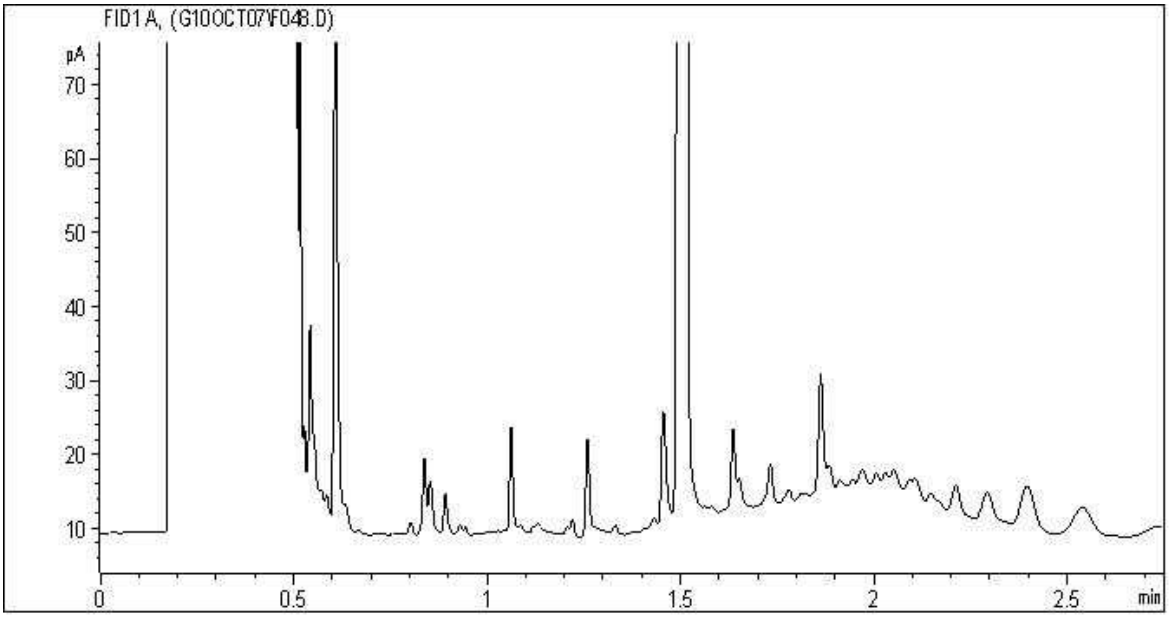


TYPICAL PRODUCT CARBON NUMBER RANGES

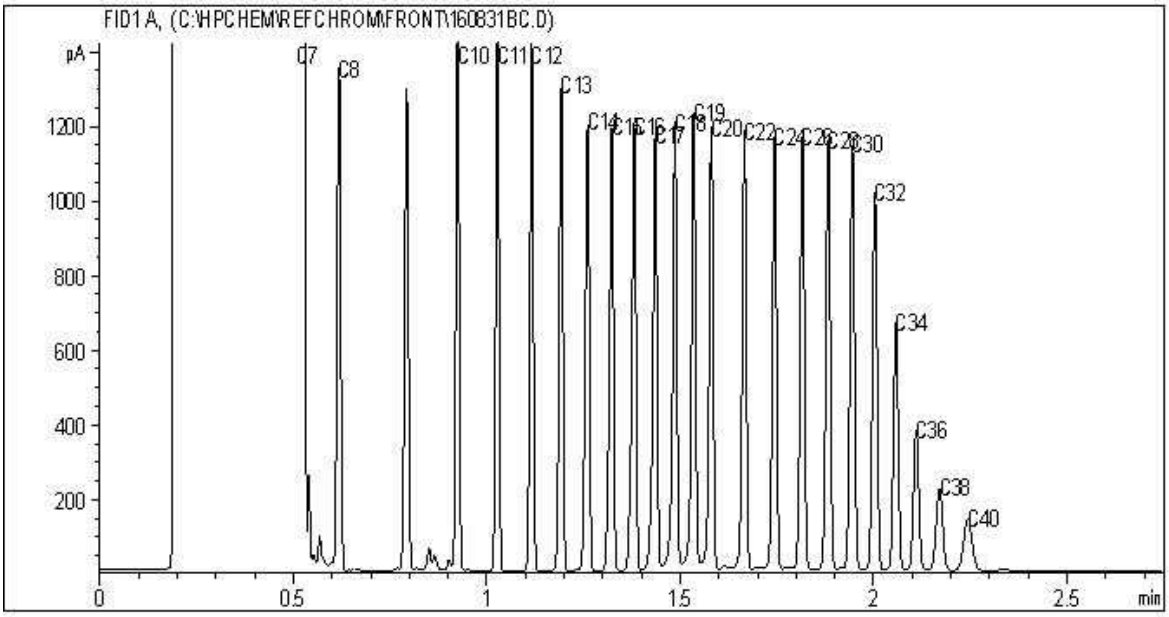
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

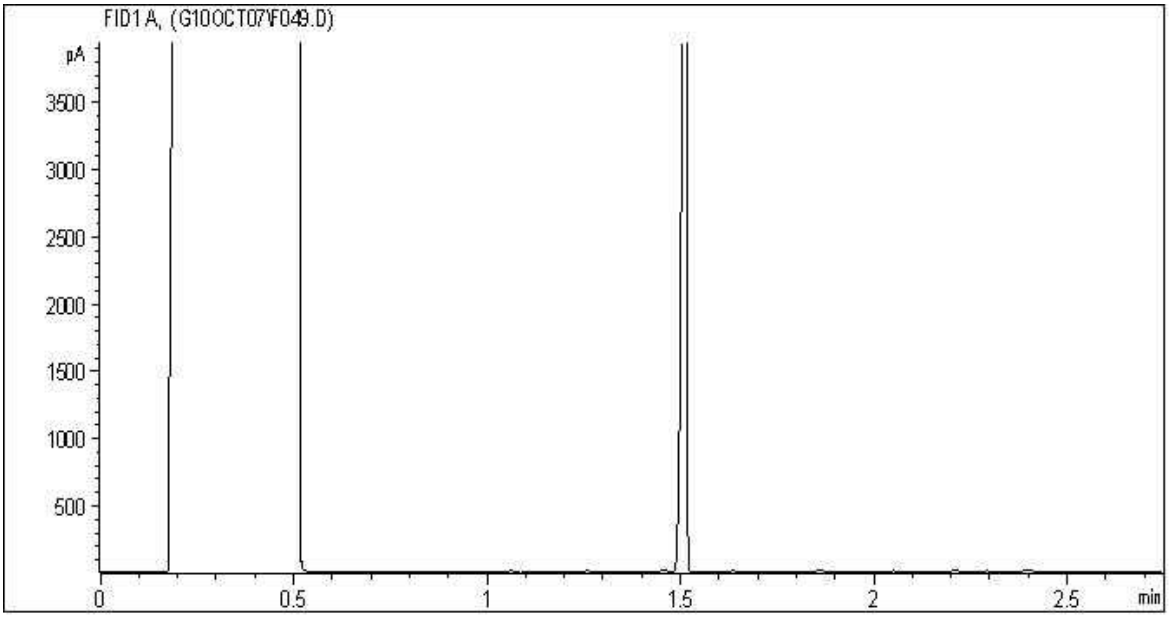


TYPICAL PRODUCT CARBON NUMBER RANGES

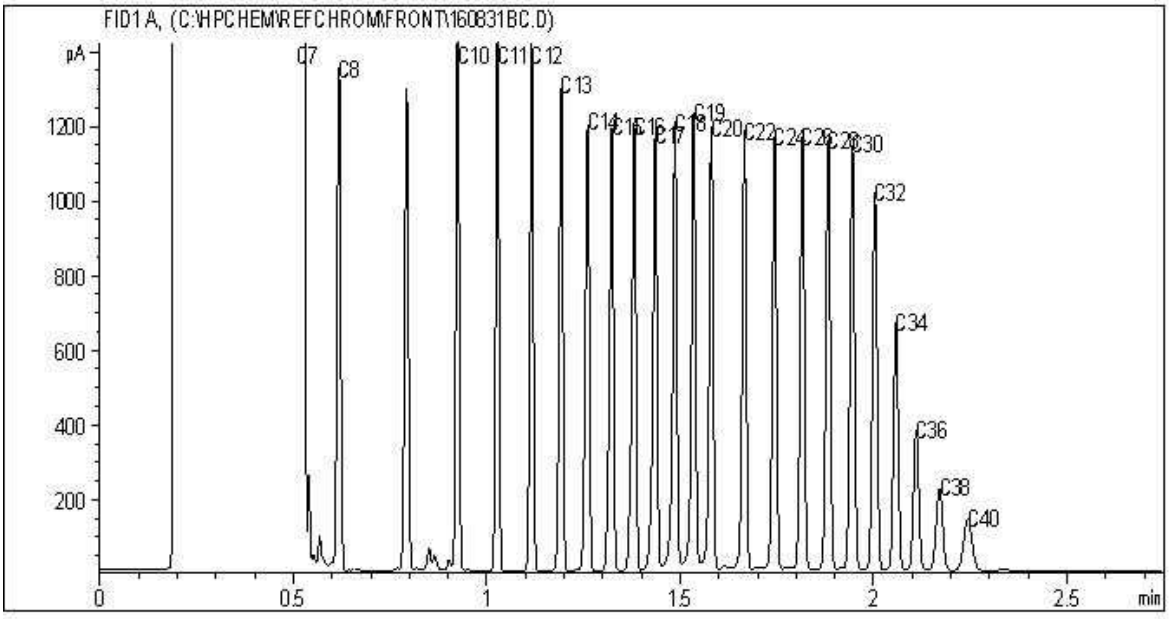
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

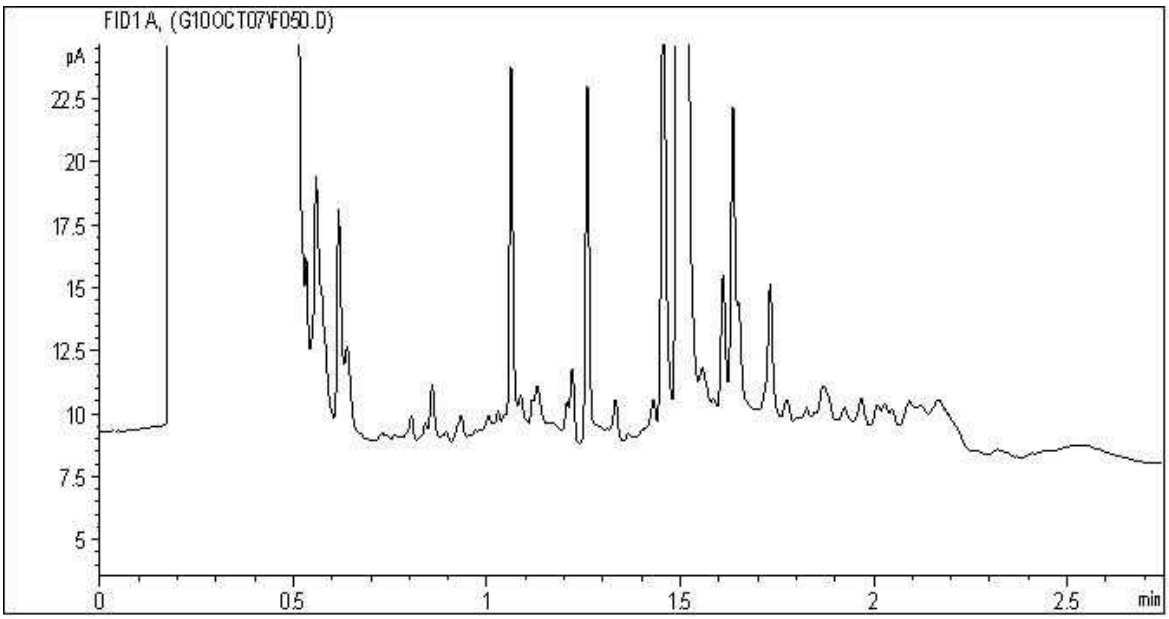


TYPICAL PRODUCT CARBON NUMBER RANGES

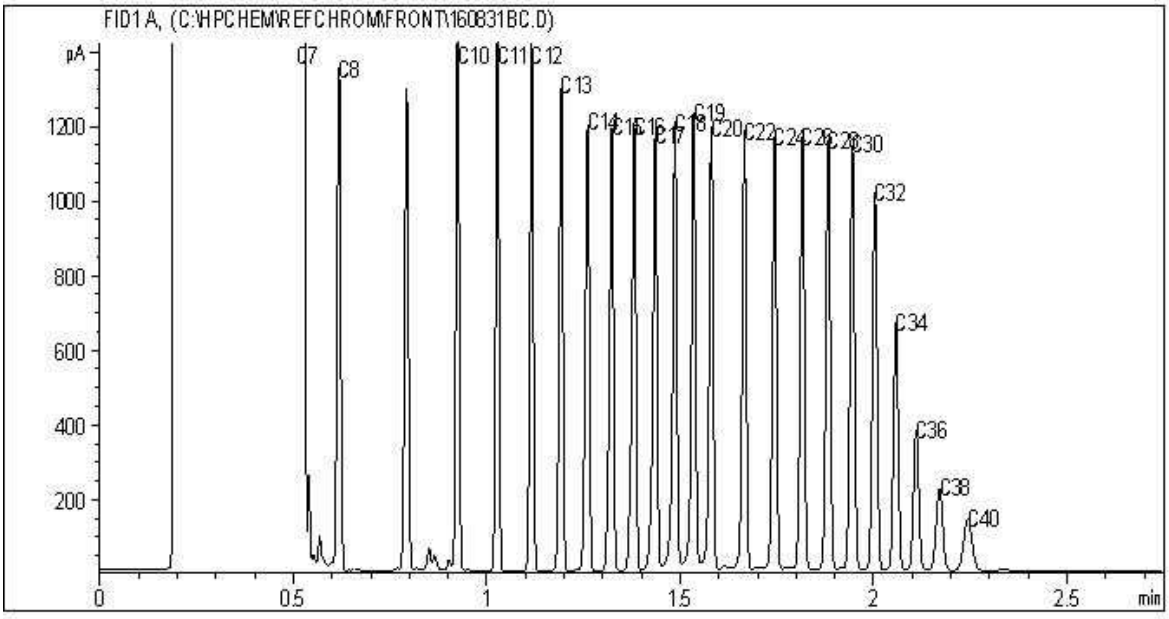
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

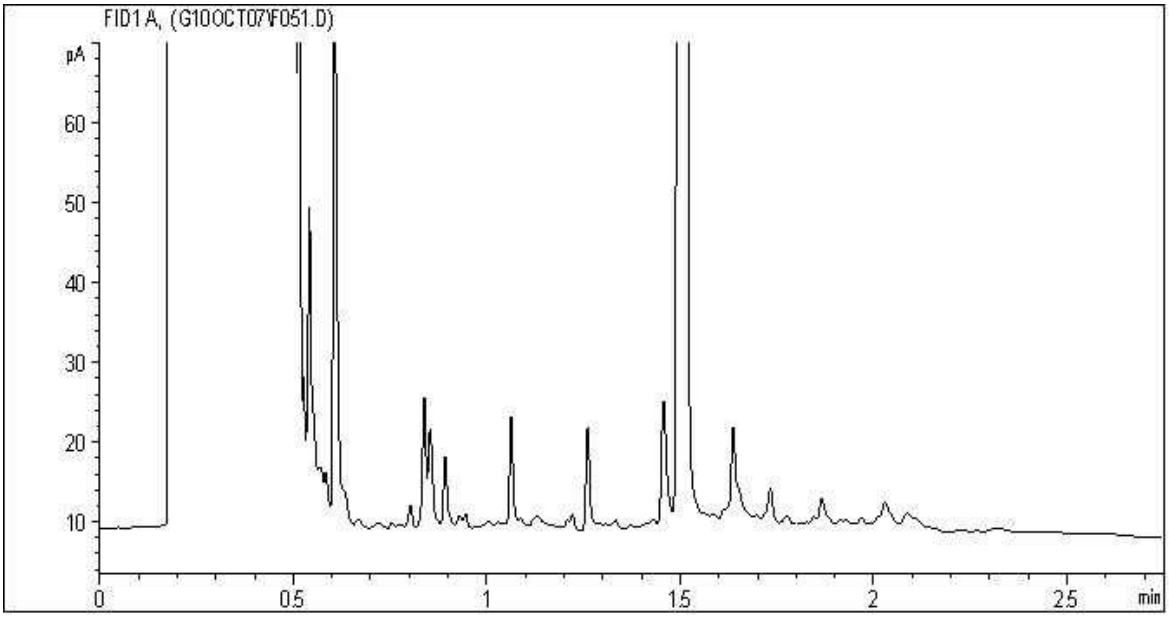


TYPICAL PRODUCT CARBON NUMBER RANGES

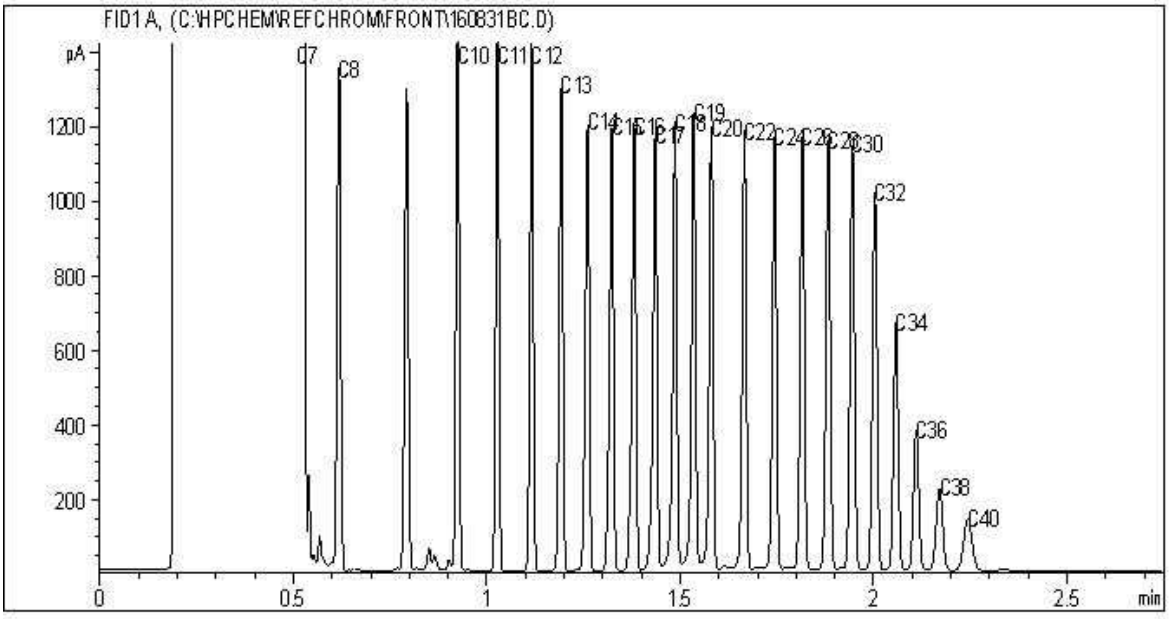
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL
Your C.O.C. #: G114732

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M8

Report Date: 2016/10/14
Report #: R2282727
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B688360
Received: 2016/10/06, 16:50

Sample Matrix: GROUND WATER
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS (1)	1	2016/10/11	2016/10/11	BBY8SOP-00010/11/12	EPA 8260c R3 m
Chloride by Automated Colourimetry (2)	1	N/A	2016/10/13	AB SOP-00020	SM 22-4500-Cl G m
COD by Colorimeter (1)	1	2016/10/12	2016/10/13	BBY6SOP-00024	SM 22 5220 D m
Conductance - water (1)	1	N/A	2016/10/12	BBY6SOP-00026	SM 22 2510 B m
Hardness Total (calculated as CaCO3) (1)	1	N/A	2016/10/14	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3) (1)	1	N/A	2016/10/14	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAF (1)	1	N/A	2016/10/14	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total) by CVAF (1)	1	2016/10/14	2016/10/14	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required (1)	1	2016/10/12	2016/10/12	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.) (1)	1	N/A	2016/10/14	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved) (1)	1	N/A	2016/10/14	BBY7SOP-00002	EPA 6020B R2 m
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	2016/10/07	2016/10/14	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total) (1)	1	2016/10/12	2016/10/13	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
PAH in Water by GC/MS (SIM) (1)	1	2016/10/12	2016/10/13	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc (1)	1	N/A	2016/10/13	BBY WI-00033	Auto Calc
Polychlorinated Biphenyls (2)	1	2016/10/13	2016/10/14	CAL SOP-00149	EPA 8082A R1 m
Filter and HNO3 Preserve for Metals (1)	1	N/A	2016/10/14	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (1, 4)	1	N/A	2016/10/12	BBY6SOP-00026	SM 22 4500-H+ B m
Phenols (4-AAP) (1)	1	N/A	2016/10/14	BBY6SOP-00008	SM 22 5530 D m
Salinity by Conductivity Method (1)	1	2016/10/12	2016/10/12	BBY6SOP-00026	SM 22 2520 B m
Sulphate by Automated Colourimetry (2)	1	N/A	2016/10/13	AB SOP-00018	SM 22 4500-SO4 E m
EPH less PAH in Water by GC/FID (1)	1	N/A	2016/10/13	BBY WI-00033	Auto Calc
Tannin & Lignin (Total) (1)	1	N/A	2016/10/13	BBY6SOP-00023	SM-5550B m
Volatile HC-BTEX (1)	1	N/A	2016/10/12	BBY WI-00033	Auto Calc
RFA Water Subcontract (3)	1	2016/10/11	2016/10/12		

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL
Your C.O.C. #: G114732

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M8

Report Date: 2016/10/14
Report #: R2282727
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B688360
Received: 2016/10/06, 16:50

(1) This test was performed by Maxxam Vancouver
(2) This test was performed by Maxxam Calgary Environmental
(3) This test was performed by Maxxam Montreal (From Burnaby)
(4) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Veronica De Guzman, Project Manager
Email: VDeGuzman@maxxam.ca
Phone# (250) 338 7786

==========

This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

RESULTS OF CHEMICAL ANALYSES OF GROUND WATER

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	**M-C1**	**RDL**	**QC Batch**
Parameter				
Subcontract Parameter	N/A	ATTACHED	N/A	8428811
Calculated Parameters				
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE
Demand Parameters				
Chemical Oxygen Demand	mg/L	140	10	8430568
MISCELLANEOUS				
Tannins and Lignins	mg/L	2.89	0.10	8431865
Misc. Organics				
Phenols	mg/L	0.0034	0.0010	8433783

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

POLYCHLORINATED BIPHENYLS BY GC-ECD (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Polychlorinated Biphenyls				
Aroclor 1016	mg/L	<0.000050	0.000050	8431646
Aroclor 1221	mg/L	<0.000050	0.000050	8431646
Aroclor 1232	mg/L	<0.000050	0.000050	8431646
Aroclor 1242	mg/L	<0.000050	0.000050	8431646
Aroclor 1248	mg/L	<0.000050	0.000050	8431646
Aroclor 1254	mg/L	<0.000050	0.000050	8431646
Aroclor 1260	mg/L	<0.000050	0.000050	8431646
Aroclor 1262	mg/L	<0.000050	0.000050	8431646
Aroclor 1268	mg/L	<0.000050	0.000050	8431646
Total Aroclors	mg/L	<0.000050	0.000050	8431646
Surrogate Recovery (%)				
NONACHLOROBIPHENYL (sur.)	%	95		8431646
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR BTEX/VPH IN WATER (GROUND WATER)

Maxxam ID		PS2353	PS2353		
Sampling Date		2016/10/06 14:30	2016/10/06 14:30		
COC Number		G114732	G114732		
	UNITS	M-C1	M-C1 Lab-Dup	RDL	QC Batch
Volatiles					
VPH (VH6 to 10 - BTEX)	ug/L	<300		300	8425784
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	4.0	8429571
Benzene	ug/L	<0.40	<0.40	0.40	8429571
Toluene	ug/L	<0.40	<0.40	0.40	8429571
Ethylbenzene	ug/L	<0.40	<0.40	0.40	8429571
m & p-Xylene	ug/L	<0.40	<0.40	0.40	8429571
o-Xylene	ug/L	<0.40	<0.40	0.40	8429571
Styrene	ug/L	<0.40	<0.40	0.40	8429571
Xylenes (Total)	ug/L	<0.40	<0.40	0.40	8429571
VH C6-C10	ug/L	<300	<300	300	8429571
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	100	99		8429571
4-Bromofluorobenzene (sur.)	%	99	100		8429571
D4-1,2-Dichloroethane (sur.)	%	107	108		8429571

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Polycyclic Aromatics				
Low Molecular Weight PAH`s	ug/L	<0.24	0.24	8425879
High Molecular Weight PAH`s	ug/L	0.087	0.050	8425879
Total PAH	ug/L	<0.24	0.24	8425879
Naphthalene	ug/L	<0.10	0.10	8431038
2-Methylnaphthalene	ug/L	<0.10	0.10	8431038
Quinoline	ug/L	<0.24	0.24	8431038
Acenaphthylene	ug/L	<0.050	0.050	8431038
Acenaphthene	ug/L	<0.050	0.050	8431038
Fluorene	ug/L	<0.050	0.050	8431038
Phenanthrene	ug/L	<0.050	0.050	8431038
Anthracene	ug/L	<0.010	0.010	8431038
Acridine	ug/L	<0.050	0.050	8431038
Fluoranthene	ug/L	0.044	0.020	8431038
Pyrene	ug/L	0.030	0.020	8431038
Benzo(a)anthracene	ug/L	0.013	0.010	8431038
Chrysene	ug/L	<0.050	0.050	8431038
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	8431038
Benzo(k)fluoranthene	ug/L	<0.050	0.050	8431038
Benzo(a)pyrene	ug/L	<0.0090	0.0090	8431038
Indeno(1,2,3-cd)pyrene	ug/L	<0.050 (1)	0.050	8431038
Dibenz(a,h)anthracene	ug/L	<0.050 (1)	0.050	8431038
Benzo(g,h,i)perylene	ug/L	<0.050 (1)	0.050	8431038
Calculated Parameters				
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	8425967
HEPH (C19-C32 less PAH)	mg/L	0.34	0.20	8425967
Ext. Pet. Hydrocarbon				
EPH (C10-C19)	mg/L	<0.20	0.20	8431047
EPH (C19-C32)	mg/L	0.34	0.20	8431047
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	90		8431047

RDL = Reportable Detection Limit
(1) Matrix spike exceeds acceptance limits due to matrix interference. Unable to reanalyze due to insufficient sample.

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
D10-ANTHRACENE (sur.)	%	18 (1)		8431038
D8-ACENAPHTHYLENE (sur.)	%	19 (1)		8431038
D8-NAPHTHALENE (sur.)	%	14 (1)		8431038
D9-Acridine	%	14 (1)		8431038
TERPHENYL-D14 (sur.)	%	14 (1)		8431038

RDL = Reportable Detection Limit

(1) Surrogate recovery below acceptance criteria . Unable to reanalyze due to insufficient sample.

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR DISSOLVED METALS IN WATER WITH CV HG (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Misc. Inorganics				
Dissolved Hardness (CaCO3)	mg/L	381	0.50	8425828
Elements				
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	8433207
Dissolved Metals by ICPMS				
Dissolved Aluminum (Al)	mg/L	0.0477	0.0030	8430416
Dissolved Antimony (Sb)	mg/L	<0.00050	0.00050	8430416
Dissolved Arsenic (As)	mg/L	0.00063	0.00010	8430416
Dissolved Barium (Ba)	mg/L	0.0101	0.0010	8430416
Dissolved Beryllium (Be)	mg/L	<0.00010	0.00010	8430416
Dissolved Bismuth (Bi)	mg/L	<0.0010	0.0010	8430416
Dissolved Boron (B)	mg/L	1.04	0.050	8430416
Dissolved Cadmium (Cd)	mg/L	<0.000010	0.000010	8430416
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	8430416
Dissolved Cobalt (Co)	mg/L	<0.00050	0.00050	8430416
Dissolved Copper (Cu)	mg/L	0.00024	0.00020	8430416
Dissolved Iron (Fe)	mg/L	0.0972	0.0050	8430416
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	8430416
Dissolved Lithium (Li)	mg/L	0.0167	0.0050	8430416
Dissolved Manganese (Mn)	mg/L	0.0109	0.0010	8430416
Dissolved Molybdenum (Mo)	mg/L	0.0021	0.0010	8430416
Dissolved Nickel (Ni)	mg/L	0.0033	0.0010	8430416
Dissolved Selenium (Se)	mg/L	<0.00010	0.00010	8430416
Dissolved Silicon (Si)	mg/L	7.60	0.10	8430416
Dissolved Silver (Ag)	mg/L	<0.000020	0.000020	8430416
Dissolved Strontium (Sr)	mg/L	0.540	0.0010	8430416
Dissolved Thallium (Tl)	mg/L	<0.000050	0.000050	8430416
Dissolved Tin (Sn)	mg/L	<0.0050	0.0050	8430416
Dissolved Titanium (Ti)	mg/L	<0.0050	0.0050	8430416
Dissolved Uranium (U)	mg/L	0.00013	0.00010	8430416
Dissolved Vanadium (V)	mg/L	<0.0050	0.0050	8430416
Dissolved Zinc (Zn)	mg/L	<0.0050	0.0050	8430416
Dissolved Zirconium (Zr)	mg/L	<0.00050	0.00050	8430416
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR DISSOLVED METALS IN WATER WITH CV HG (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	**M-C1**	**RDL**	**QC Batch**
Dissolved Calcium (Ca)	mg/L	34.3	0.050	8425878
Dissolved Magnesium (Mg)	mg/L	71.8	0.050	8425878
Dissolved Potassium (K)	mg/L	36.4	0.050	8425878
Dissolved Sodium (Na)	mg/L	896	0.050	8425878
Dissolved Sulphur (S)	mg/L	69.3	3.0	8425878
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR TOTAL METALS IN WATER WITH CV HG (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Calculated Parameters				
Total Hardness (CaCO3)	mg/L	510	0.50	8425781
Elements				
Total Mercury (Hg)	ug/L	<0.010	0.010	8433252
Total Metals by ICPMS				
Total Aluminum (Al)	mg/L	18.2	0.0030	8430726
Total Antimony (Sb)	mg/L	<0.00050	0.00050	8430726
Total Arsenic (As)	mg/L	0.00516	0.00010	8430726
Total Barium (Ba)	mg/L	0.0879	0.0010	8430726
Total Beryllium (Be)	mg/L	0.00020	0.00010	8430726
Total Bismuth (Bi)	mg/L	<0.0010	0.0010	8430726
Total Boron (B)	mg/L	1.01	0.050	8430726
Total Cadmium (Cd)	mg/L	0.000971	0.000010	8430726
Total Chromium (Cr)	mg/L	0.134	0.0010	8430726
Total Cobalt (Co)	mg/L	0.0127	0.00050	8430726
Total Copper (Cu)	mg/L	0.0750	0.00050	8430726
Total Iron (Fe)	mg/L	27.4	0.010	8430726
Total Lead (Pb)	mg/L	0.00368	0.00020	8430726
Total Lithium (Li)	mg/L	0.0309	0.0050	8430726
Total Manganese (Mn)	mg/L	0.370	0.0010	8430726
Total Molybdenum (Mo)	mg/L	0.0184	0.0010	8430726
Total Nickel (Ni)	mg/L	0.0843	0.0010	8430726
Total Selenium (Se)	mg/L	0.00038	0.00010	8430726
Total Silicon (Si)	mg/L	34.0	0.10	8430726
Total Silver (Ag)	mg/L	0.000065	0.000020	8430726
Total Strontium (Sr)	mg/L	0.735	0.0010	8430726
Total Thallium (Tl)	mg/L	0.000110	0.000050	8430726
Total Tin (Sn)	mg/L	<0.0050	0.0050	8430726
Total Titanium (Ti)	mg/L	1.61	0.0050	8430726
Total Uranium (U)	mg/L	0.00067	0.00010	8430726
Total Vanadium (V)	mg/L	0.0805	0.0050	8430726
Total Zinc (Zn)	mg/L	0.0763	0.0050	8430726
Total Zirconium (Zr)	mg/L	0.00312	0.00050	8430726
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR TOTAL METALS IN WATER WITH CV HG (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Total Calcium (Ca)	mg/L	70.3	0.050	8425782
Total Magnesium (Mg)	mg/L	81.1	0.050	8425782
Total Potassium (K)	mg/L	39.4	0.050	8425782
Total Sodium (Na)	mg/L	859	0.050	8425782
Total Sulphur (S)	mg/L	71.5	3.0	8425782
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

SALINITY 4 PACKAGE FOR WATER (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	**M-C1**	**RDL**	**QC Batch**
Misc. Inorganics				
Salinity	g/L	3.02	0.010	8430032
Anions				
Dissolved Sulphate (SO4)	mg/L	200 (1)	2.0	8431772
Dissolved Chloride (Cl)	mg/L	1500 (1)	10	8431771
Physical Properties				
Conductivity	uS/cm	5590	1.0	8430029
pH	pH	8.27		8430024

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Job #: B688360
Report Date: 2016/10/14

QUALITY ASSURANCE REPORT

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8429571	1,4-Difluorobenzene (sur.)	2016/10/11	95	70 - 130	95	70 - 130	101	%		
8429571	4-Bromofluorobenzene (sur.)	2016/10/11	100	70 - 130	100	70 - 130	100	%		
8429571	D4-1,2-Dichloroethane (sur.)	2016/10/11	104	70 - 130	103	70 - 130	109	%		
8431038	D10-ANTHRACENE (sur.)	2016/10/12	99	60 - 130	89	60 - 130	97	%		
8431038	D8-ACENAPHTHYLENE (sur.)	2016/10/12	105	50 - 130	92	50 - 130	102	%		
8431038	D8-NAPHTHALENE (sur.)	2016/10/12	72	50 - 130	68	50 - 130	83	%		
8431038	D9-Acridine	2016/10/12	83	50 - 130	83	50 - 130	90	%		
8431038	TERPHENYL-D14 (sur.)	2016/10/12	77	60 - 130	88	60 - 130	93	%		
8431047	O-TERPHENYL (sur.)	2016/10/13	95	50 - 130	93	50 - 130	87	%		
8431646	NONACHLOROBIPHENYL (sur.)	2016/10/14	94	30 - 130	101	30 - 130	97	%		
8429571	Benzene	2016/10/11	106	70 - 130	102	70 - 130	<0.40	ug/L	NC	30
8429571	Ethylbenzene	2016/10/11	112	70 - 130	108	70 - 130	<0.40	ug/L	NC	30
8429571	m & p-Xylene	2016/10/11	110	70 - 130	107	70 - 130	<0.40	ug/L	NC	30
8429571	Methyl-tert-butylether (MTBE)	2016/10/11	103	70 - 130	101	70 - 130	<4.0	ug/L	NC	30
8429571	o-Xylene	2016/10/11	104	70 - 130	98	70 - 130	<0.40	ug/L	NC	30
8429571	Styrene	2016/10/11	110	70 - 130	105	70 - 130	<0.40	ug/L	NC	30
8429571	Toluene	2016/10/11	107	70 - 130	102	70 - 130	<0.40	ug/L	NC	30
8429571	VH C6-C10	2016/10/11			90	70 - 130	<300	ug/L	NC	30
8429571	Xylenes (Total)	2016/10/11					<0.40	ug/L	NC	30
8430024	pH	2016/10/12			102	97 - 103			0.51	N/A
8430029	Conductivity	2016/10/12			100	80 - 120	<1.0	uS/cm	1.2	20
8430032	Salinity	2016/10/12					<0.010	g/L		
8430416	Dissolved Aluminum (Al)	2016/10/14	110	80 - 120	109	80 - 120	<0.0030	mg/L	NC	20
8430416	Dissolved Antimony (Sb)	2016/10/14	96	80 - 120	98	80 - 120	<0.00050	mg/L	NC	20
8430416	Dissolved Arsenic (As)	2016/10/14	109	80 - 120	105	80 - 120	<0.00010	mg/L	NC	20
8430416	Dissolved Barium (Ba)	2016/10/14	NC	80 - 120	104	80 - 120	<0.0010	mg/L	0.14	20
8430416	Dissolved Beryllium (Be)	2016/10/14	105	80 - 120	105	80 - 120	<0.00010	mg/L	NC	20
8430416	Dissolved Bismuth (Bi)	2016/10/14	87	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20
8430416	Dissolved Boron (B)	2016/10/14	96	80 - 120	99	80 - 120	<0.050	mg/L	NC	20
8430416	Dissolved Cadmium (Cd)	2016/10/14	100	80 - 120	101	80 - 120	<0.000010	mg/L	NC	20
8430416	Dissolved Chromium (Cr)	2016/10/14	92	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20

Maxxam Job #: B688360
Report Date: 2016/10/14

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8430416	Dissolved Cobalt (Co)	2016/10/14	87	80 - 120	94	80 - 120	<0.00050	mg/L	NC	20
8430416	Dissolved Copper (Cu)	2016/10/14	90	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8430416	Dissolved Iron (Fe)	2016/10/14	101	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Lead (Pb)	2016/10/14	91	80 - 120	99	80 - 120	<0.00020	mg/L	NC	20
8430416	Dissolved Lithium (Li)	2016/10/14	97	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Manganese (Mn)	2016/10/14	94	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20
8430416	Dissolved Molybdenum (Mo)	2016/10/14	97	80 - 120	101	80 - 120	<0.0010	mg/L	NC	20
8430416	Dissolved Nickel (Ni)	2016/10/14	90	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20
8430416	Dissolved Selenium (Se)	2016/10/14	111	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20
8430416	Dissolved Silicon (Si)	2016/10/14					<0.10	mg/L	2.5	20
8430416	Dissolved Silver (Ag)	2016/10/14	87	80 - 120	92	80 - 120	<0.000020	mg/L	NC	20
8430416	Dissolved Strontium (Sr)	2016/10/14	NC	80 - 120	108	80 - 120	<0.0010	mg/L	0.13	20
8430416	Dissolved Thallium (Tl)	2016/10/14	82	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8430416	Dissolved Tin (Sn)	2016/10/14	96	80 - 120	101	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Titanium (Ti)	2016/10/14	89	80 - 120	90	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Uranium (U)	2016/10/14	95	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8430416	Dissolved Vanadium (V)	2016/10/14	95	80 - 120	99	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Zinc (Zn)	2016/10/14	104	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Zirconium (Zr)	2016/10/14					<0.00050	mg/L	NC	20
8430568	Chemical Oxygen Demand	2016/10/13	102	80 - 120	108	80 - 120	<10	mg/L	NC	20
8430726	Total Aluminum (Al)	2016/10/13	NC	80 - 120	113	80 - 120	<0.0030	mg/L		
8430726	Total Antimony (Sb)	2016/10/13	100	80 - 120	104	80 - 120	<0.00050	mg/L		
8430726	Total Arsenic (As)	2016/10/13	NC	80 - 120	117	80 - 120	<0.00010	mg/L		
8430726	Total Barium (Ba)	2016/10/13	NC	80 - 120	110	80 - 120	<0.0010	mg/L		
8430726	Total Beryllium (Be)	2016/10/13	108	80 - 120	115	80 - 120	<0.00010	mg/L		
8430726	Total Bismuth (Bi)	2016/10/13	92	80 - 120	96	80 - 120	<0.0010	mg/L		
8430726	Total Boron (B)	2016/10/13	NC	80 - 120	111	80 - 120	<0.050	mg/L		
8430726	Total Cadmium (Cd)	2016/10/13	106	80 - 120	110	80 - 120	<0.000010	mg/L		
8430726	Total Chromium (Cr)	2016/10/13	95	80 - 120	99	80 - 120	<0.0010	mg/L		
8430726	Total Cobalt (Co)	2016/10/13	91	80 - 120	93	80 - 120	<0.00050	mg/L		
8430726	Total Copper (Cu)	2016/10/14	93	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20

Maxxam Job #: B688360
Report Date: 2016/10/14

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8430726	Total Iron (Fe)	2016/10/14	NC	80 - 120	100	80 - 120	<0.010	mg/L	7.2	20
8430726	Total Lead (Pb)	2016/10/13	96	80 - 120	99	80 - 120	<0.00020	mg/L		
8430726	Total Lithium (Li)	2016/10/13	NC	80 - 120	107	80 - 120	<0.0050	mg/L		
8430726	Total Manganese (Mn)	2016/10/14	NC	80 - 120	102	80 - 120	<0.0010	mg/L	3.0	20
8430726	Total Molybdenum (Mo)	2016/10/13	NC	80 - 120	102	80 - 120	<0.0010	mg/L		
8430726	Total Nickel (Ni)	2016/10/13	92	80 - 120	102	80 - 120	<0.0010	mg/L		
8430726	Total Selenium (Se)	2016/10/13	117	80 - 120	109	80 - 120	<0.00010	mg/L		
8430726	Total Silicon (Si)	2016/10/13					<0.10	mg/L		
8430726	Total Silver (Ag)	2016/10/13	92	80 - 120	110	80 - 120	<0.000020	mg/L		
8430726	Total Strontium (Sr)	2016/10/13	NC	80 - 120	112	80 - 120	<0.0010	mg/L		
8430726	Total Thallium (Tl)	2016/10/13	84	80 - 120	84	80 - 120	<0.000050	mg/L		
8430726	Total Tin (Sn)	2016/10/13	80	80 - 120	95	80 - 120	<0.0050	mg/L		
8430726	Total Titanium (Ti)	2016/10/13	111	80 - 120	93	80 - 120	<0.0050	mg/L		
8430726	Total Uranium (U)	2016/10/13	101	80 - 120	98	80 - 120	<0.00010	mg/L		
8430726	Total Vanadium (V)	2016/10/13	104	80 - 120	101	80 - 120	<0.0050	mg/L		
8430726	Total Zinc (Zn)	2016/10/14	NC	80 - 120	115	80 - 120	<0.0050	mg/L	NC	20
8430726	Total Zirconium (Zr)	2016/10/13					<0.00050	mg/L		
8431038	2-Methylnaphthalene	2016/10/13	102	50 - 130	87	50 - 130	<0.10	ug/L	NC	40
8431038	Acenaphthene	2016/10/13	119	50 - 130	103	50 - 130	<0.050	ug/L	NC	40
8431038	Acenaphthylene	2016/10/13	118	50 - 130	103	50 - 130	<0.050	ug/L	NC	40
8431038	Acridine	2016/10/13	91	50 - 130	92	50 - 130	<0.050	ug/L	NC	40
8431038	Anthracene	2016/10/13	111	60 - 130	103	60 - 130	<0.010	ug/L	NC	40
8431038	Benzo(a)anthracene	2016/10/13	109	60 - 130	104	60 - 130	<0.010	ug/L	NC	40
8431038	Benzo(a)pyrene	2016/10/13	62	60 - 130	106	60 - 130	<0.0090	ug/L	NC	40
8431038	Benzo(b&j)fluoranthene	2016/10/13	68	60 - 130	110	60 - 130	<0.050	ug/L	NC	40
8431038	Benzo(g,h,i)perylene	2016/10/13	23 (1)	60 - 130	97	60 - 130	<0.050	ug/L	NC	40
8431038	Benzo(k)fluoranthene	2016/10/13	65	60 - 130	107	60 - 130	<0.050	ug/L	NC	40
8431038	Chrysene	2016/10/13	109	60 - 130	105	60 - 130	<0.050	ug/L	NC	40
8431038	Dibenz(a,h)anthracene	2016/10/13	20 (1)	60 - 130	93	60 - 130	<0.050	ug/L	NC	40
8431038	Fluoranthene	2016/10/13	104	60 - 130	95	60 - 130	<0.020	ug/L	NC	40
8431038	Fluorene	2016/10/13	114	50 - 130	103	50 - 130	<0.050	ug/L	NC	40

Maxxam Job #: B688360
Report Date: 2016/10/14

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8431038	Indeno(1,2,3-cd)pyrene	2016/10/13	23 (1)	60 - 130	98	60 - 130	<0.050	ug/L	NC	40
8431038	Naphthalene	2016/10/13	84	50 - 130	77	50 - 130	<0.10	ug/L	NC	40
8431038	Phenanthrene	2016/10/13	114	60 - 130	102	60 - 130	<0.050	ug/L	NC	40
8431038	Pyrene	2016/10/13	104	60 - 130	95	60 - 130	<0.020	ug/L	NC	40
8431038	Quinoline	2016/10/13	128	50 - 130	127	50 - 130	<0.24	ug/L	NC	40
8431047	EPH (C10-C19)	2016/10/12	NC	50 - 130	89	50 - 130	<0.20	mg/L	NC	30
8431047	EPH (C19-C32)	2016/10/12	96	50 - 130	90	50 - 130	<0.20	mg/L	NC	30
8431646	Aroclor 1016	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1221	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1232	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1242	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1248	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1254	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1260	2016/10/14	82	30 - 130	89	30 - 130	<0.000050	mg/L		
8431646	Aroclor 1262	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1268	2016/10/14					<0.000050	mg/L		
8431646	Total Aroclors	2016/10/14					<0.000050	mg/L		
8431771	Dissolved Chloride (Cl)	2016/10/13	102	80 - 120	97	80 - 120	<1.0	mg/L	NC	20
8431772	Dissolved Sulphate (SO4)	2016/10/13	NC	80 - 120	99	80 - 120	<1.0	mg/L	1.8	20
8431865	Tannins and Lignins	2016/10/13	85	80 - 120	92	80 - 120	<0.10	mg/L	NC	20
8433207	Dissolved Mercury (Hg)	2016/10/14	92	80 - 120	101	80 - 120	<0.010	ug/L	NC	20
8433252	Total Mercury (Hg)	2016/10/14	105	80 - 120	104	80 - 120	<0.010	ug/L	NC	20

Maxxam Job #: B688360
Report Date: 2016/10/14

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8433783	Phenols	2016/10/14	101	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B688360
Report Date: 2016/10/14

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Harry (Peng) Liang, Senior Analyst

Rob Reinert, B.Sc., Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: B688360
Your C.O.C. #: N/A

Attention:
(SUBCONT) CUSTOMER SERVICE EBC

MAXXAM ANALYTICS
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2016/10/17
Report #: R2204427
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B670543
Received: 2016/10/12, 08:30

Sample Matrix: GROUND WATER
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary Reference
Resin and Fatty Acids*	1	2016/10/12	2016/10/14	STL SOP-00152	MA414-Aci-g-r-1.0R3m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

* Maxxam is accredited as per the MDDELCC program.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Lauriane Bernard, Project Manager
Email: LBernard@maxxam.ca
Phone# (514)448-9001
==========
This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B670543
Report Date: 2016/10/17

MAXXAM ANALYTICS
Client Project #: B688360

RESIN AND FATTY ACIDS BY GCMS (GROUND WATER)

Maxxam ID		DC5374		
Sampling Date		2016/10/06 14:30		
	Units	**PS2353-12R\M-C1**	**RDL**	**QC Batch**
Palmitoleic acid	ug/L	<3.0	3.0	1676157
Palmitic acid	ug/L	<30	30	1676157
Linoleic acid	ug/L	<3.0	3.0	1676157
Linolenic acid	ug/L	<3.0	3.0	1676157
Oleic acid	ug/L	<3.0	3.0	1676157
Stearic acid	ug/L	<30	30	1676157
9,10-Dichlorostearic acid	ug/L	<3.0	3.0	1676157
Total Fatty Acids	ug/L	<30	30	1676157
Pimaric acid	ug/L	<3.0	3.0	1676157
Sandaracopimaric acid	ug/L	<3.0	3.0	1676157
Isopimaric acid	ug/L	<3.0	3.0	1676157
Palustric acid	ug/L	<3.0	3.0	1676157
Levopimaric acid	ug/L	<3.0	3.0	1676157
Dehydroabietic acid	ug/L	<5.0	5.0	1676157
Abietic acid	ug/L	<5.0	5.0	1676157
Neoabietic acid	ug/L	<3.0	3.0	1676157
14-Chlorodehydroabietic acid	ug/L	<3.0	3.0	1676157
12-Chlorodehydroabietic acid	ug/L	<3.0	3.0	1676157
Total Resin Acids	ug/L	<5.0	5.0	1676157
Surrogate Recovery (%)				
O-Methylpodocarpic acid	%	113	N/A	1676157

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

2016/10/17 13:21

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B670543
Report Date: 2016/10/17

MAXXAM ANALYTICS
Client Project #: B688360

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD

RESIN AND FATTY ACIDS BY GCMS (GROUND WATER)

Please note that the results have not been corrected for QC recoveries (spiked blank and method blank) nor for the surrogates.

Un-rounded results are used in the totals "Total Resin Acids" and "Total Fatty Acids" calculation. These totals results are then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Results relate only to the items tested.

2016/10/17 13:21

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B670543
Report Date: 2016/10/17

MAXXAM ANALYTICS
Client Project #: B688360

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
1676157	CB5	Spiked Blank	O-Methylpodocarpic acid	2016/10/14		118	%	60 - 130
			Palmitoleic acid	2016/10/14		109	%	60 - 130
			Palmitic acid	2016/10/14		166 (1)	%	60 - 130
			Linoleic acid	2016/10/14		75	%	60 - 130
			Linolenic acid	2016/10/14		85	%	60 - 130
			Oleic acid	2016/10/14		101	%	60 - 130
			Stearic acid	2016/10/14		162 (1)	%	60 - 130
			9,10-Dichlorostearic acid	2016/10/14		106	%	60 - 130
			Pimaric acid	2016/10/14		112	%	60 - 130
			Sandaracopimaric acid	2016/10/14		128	%	60 - 130
			Isopimaric acid	2016/10/14		113	%	60 - 130
			Palustric acid	2016/10/14		105	%	60 - 130
			Levopimaric acid	2016/10/14		82	%	60 - 130
			Dehydroabietic acid	2016/10/14		122	%	60 - 130
			Abietic acid	2016/10/14		171 (1)	%	60 - 130
			Neoabietic acid	2016/10/14		129	%	60 - 130
			14-Chlorodehydroabietic acid	2016/10/14		124	%	60 - 130
			12-Chlorodehydroabietic acid	2016/10/14		125	%	60 - 130
1676157	CB5	Method Blank	O-Methylpodocarpic acid	2016/10/14		107	%	60 - 130
			Palmitoleic acid	2016/10/14	<3.0		ug/L	
			Palmitic acid	2016/10/14	<30		ug/L	
			Linoleic acid	2016/10/14	<3.0		ug/L	
			Linolenic acid	2016/10/14	<3.0		ug/L	
			Oleic acid	2016/10/14	<3.0		ug/L	
			Stearic acid	2016/10/14	<30		ug/L	
			9,10-Dichlorostearic acid	2016/10/14	<3.0		ug/L	
			Total Fatty Acids	2016/10/14	<30		ug/L	
			Pimaric acid	2016/10/14	<3.0		ug/L	
			Sandaracopimaric acid	2016/10/14	<3.0		ug/L	
			Isopimaric acid	2016/10/14	<3.0		ug/L	
			Palustric acid	2016/10/14	<3.0		ug/L	
			Levopimaric acid	2016/10/14	<3.0		ug/L	
			Dehydroabietic acid	2016/10/14	<5.0		ug/L	
			Abietic acid	2016/10/14	<5.0		ug/L	
			Neoabietic acid	2016/10/14	<3.0		ug/L	
			14-Chlorodehydroabietic acid	2016/10/14	<3.0		ug/L	
			12-Chlorodehydroabietic acid	2016/10/14	<3.0		ug/L	
			Total Resin Acids	2016/10/14	<5.0		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

FUNDAMENTAL LABORATORY ACCEPTANCE GUIDELINE

Invoice To:
MAXXAM ANALYTICS
BURNABY
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5
Client Contact:
(SUBCONT) CUSTOMER SERVICE EBC

Maxxam Job #:	B670543
Date Received:	2016/10/12
Your C.O.C. #:	N/A
Your Project #:	B688360
Maxxam Project Manager:	Lauriane Bernard
Quote #	B20512

No discrepancies noted.

Report Comments

Received Date:	**2016/10/12**	**Time:**	**08:30**	**By:**	
Inspected Date:		**Time:**		**By:**	
FLAG Created Date:		**Time:**		**By:**	

2016/10/17 13:21

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B670543
Report Date: 2016/10/17

MAXXAM ANALYTICS
Client Project #: B688360

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Caroline Bougie, B.Sc. Chemist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Analytics
2755-B Moray Avenue
Courtenay, British Columbia, V9N 8M9
(250) 338 7786
(250) 338 7553

WATERLINE RESOURCES INC. - NANAIMO
Maxxam PM Veronica De Guzman

SUBCONTRACTING REQUEST FORM

To: Maxxam Montreal (From Burnaby)

Job# B688360

☐ Yes ☐ No International Sample/BioHazard (if yes, add copy of Movement Cert., heat treat is required prior to disposal)

☐ Yes ☐ No Special Protocol (if yes, Protocol _____)

Sample ID	Matrix	Test(s) Required	Container	Date Sampled	Date Required
PS2353-12R\M-C1	GRWTR	RFA Water Subcontract	1 -1LAG	2016/10/06 14:30	2016/10/17

	Temp. 1	Temp. 2	Temp. 3			
Cooler #1	10	9	6	Custody Seal Present	YES	NO
				Custody Seal Intact	YES	NO
				Ice Present Upon Receipt	YES	NO
Cooler #2	11	9	9	Custody Seal Present	YES	NO
				Custody Seal Intact	YES	NO
				Ice Present Upon Receipt	YES	NO
Cooler #3				Custody Seal Present	YES	NO
				Custody Seal Intact	YES	NO
				Ice Present Upon Receipt	YES	NO

Receiving Maxxam Location: Maxxam Montreal (From Burnaby) JOB # _____

Relinquished by (Sign) _____ (print) M McIntosh Date and Time Oct 7/16

Received by (Sign) _____ (print) Giuseppina Marucci Date and Time 2016-10-12 8:30

NOTES:

1) Please call us if due date cannot be met. Please reference Sample ID on your report.
2) Include copy of this completed form, Client COC & signed final report to **CustomerServiceBc@MaxxamAnalytics.com** and to **VDeGuzman@maxxam.ca**

Reporting Requirements:

National:

Regional:

B670543_COC

Shipping Instructions

☐ Ship Immediately (highlight Yellow) ☐ Ship Cold
☐ Requires 9am ☐ Ship Room Temp
☐ Requires Sat. Delivery ☐ Ship Frozen
☐ Regular Ship next available day ☐ COC Must be Attached
Sender (Print) _____ Initial _____

Shipping Department Checklist

☐ Correct Shipping location
☐ Correct Sample Ids (Paperwork vs Bottles)
☐ Yes ☐ No Special-Cooler, Ice, Tape-custody seal, Date&Sign
Date Shipped _____ Number of coolers _____
Shipper (Print) _____ Initial _____

Success Through Science®

Your Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL
Your C.O.C. #: G114732

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M8

Report Date: 2016/10/17
Report #: R2283173
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B688360
Received: 2016/10/06, 16:50

Sample Matrix: GROUND WATER
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS (1)	1	2016/10/11	2016/10/11	BBY8SOP-00010/11/12	EPA 8260c R3 m
Chloride by Automated Colourimetry (2)	1	N/A	2016/10/13	AB SOP-00020	SM 22-4500-Cl G m
COD by Colorimeter (1)	1	2016/10/12	2016/10/13	BBY6SOP-00024	SM 22 5220 D m
Conductance - water (1)	1	N/A	2016/10/12	BBY6SOP-00026	SM 22 2510 B m
Hardness Total (calculated as CaCO3) (1)	1	N/A	2016/10/14	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3) (1)	1	N/A	2016/10/14	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAF (1)	1	N/A	2016/10/14	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total) by CVAF (1)	1	2016/10/14	2016/10/14	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required (1)	1	2016/10/12	2016/10/12	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.) (1)	1	N/A	2016/10/14	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved) (1)	1	N/A	2016/10/14	BBY7SOP-00002	EPA 6020B R2 m
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	2016/10/07	2016/10/14	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total) (1)	1	2016/10/12	2016/10/13	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
PAH in Water by GC/MS (SIM) (1)	1	2016/10/12	2016/10/13	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc (1)	1	N/A	2016/10/13	BBY WI-00033	Auto Calc
Polychlorinated Biphenyls (2)	1	2016/10/13	2016/10/14	CAL SOP-00149	EPA 8082A R1 m
Filter and HNO3 Preserve for Metals (1)	1	N/A	2016/10/14	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (1, 4)	1	N/A	2016/10/12	BBY6SOP-00026	SM 22 4500-H+ B m
Phenols (4-AAP) (1)	1	N/A	2016/10/14	BBY6SOP-00008	SM 22 5530 D m
Salinity by Conductivity Method (1)	1	2016/10/12	2016/10/12	BBY6SOP-00026	SM 22 2520 B m
Sulphate by Automated Colourimetry (2)	1	N/A	2016/10/13	AB SOP-00018	SM 22 4500-SO4 E m
EPH less PAH in Water by GC/FID (1)	1	N/A	2016/10/13	BBY WI-00033	Auto Calc
Tannin & Lignin (Total) (1)	1	N/A	2016/10/13	BBY6SOP-00023	SM-5550B m
Volatile HC-BTEX (1)	1	N/A	2016/10/12	BBY WI-00033	Auto Calc
RFA Water Subcontract (3)	1	2016/10/11	2016/10/12		

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL
Your C.O.C. #: G114732

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M8

Report Date: 2016/10/17
Report #: R2283173
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B688360
Received: 2016/10/06, 16:50

(1) This test was performed by Maxxam Vancouver
(2) This test was performed by Maxxam Calgary Environmental
(3) This test was performed by Maxxam Montreal (From Burnaby)
(4) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Veronica De Guzman, Project Manager
Email: VDeGuzman@maxxam.ca
Phone# (250) 338 7786

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

RESULTS OF CHEMICAL ANALYSES OF GROUND WATER

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	**M-C1**	**RDL**	**QC Batch**
Parameter				
Subcontract Parameter	N/A	ATTACHED	N/A	8428811
Calculated Parameters				
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE
Demand Parameters				
Chemical Oxygen Demand	mg/L	140	10	8430568
MISCELLANEOUS				
Tannins and Lignins	mg/L	2.89	0.10	8431865
Misc. Organics				
Phenols	mg/L	0.0034	0.0010	8433783

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

POLYCHLORINATED BIPHENYLS BY GC-ECD (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Polychlorinated Biphenyls				
Aroclor 1016	mg/L	<0.000050	0.000050	8431646
Aroclor 1221	mg/L	<0.000050	0.000050	8431646
Aroclor 1232	mg/L	<0.000050	0.000050	8431646
Aroclor 1242	mg/L	<0.000050	0.000050	8431646
Aroclor 1248	mg/L	<0.000050	0.000050	8431646
Aroclor 1254	mg/L	<0.000050	0.000050	8431646
Aroclor 1260	mg/L	<0.000050	0.000050	8431646
Aroclor 1262	mg/L	<0.000050	0.000050	8431646
Aroclor 1268	mg/L	<0.000050	0.000050	8431646
Total Aroclors	mg/L	<0.000050	0.000050	8431646
Surrogate Recovery (%)				
NONACHLOROBIPHENYL (sur.)	%	95		8431646
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR BTEX/VPH IN WATER (GROUND WATER)

Maxxam ID		PS2353	PS2353		
Sampling Date		2016/10/06 14:30	2016/10/06 14:30		
COC Number		G114732	G114732		
	UNITS	M-C1	M-C1 Lab-Dup	RDL	QC Batch
Volatiles					
VPH (VH6 to 10 - BTEX)	ug/L	<300		300	8425784
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	4.0	8429571
Benzene	ug/L	<0.40	<0.40	0.40	8429571
Toluene	ug/L	<0.40	<0.40	0.40	8429571
Ethylbenzene	ug/L	<0.40	<0.40	0.40	8429571
m & p-Xylene	ug/L	<0.40	<0.40	0.40	8429571
o-Xylene	ug/L	<0.40	<0.40	0.40	8429571
Styrene	ug/L	<0.40	<0.40	0.40	8429571
Xylenes (Total)	ug/L	<0.40	<0.40	0.40	8429571
VH C6-C10	ug/L	<300	<300	300	8429571
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	100	99		8429571
4-Bromofluorobenzene (sur.)	%	99	100		8429571
D4-1,2-Dichloroethane (sur.)	%	107	108		8429571

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Polycyclic Aromatics				
Low Molecular Weight PAH`s	ug/L	<0.24	0.24	8425879
High Molecular Weight PAH`s	ug/L	0.087	0.050	8425879
Total PAH	ug/L	<0.24	0.24	8425879
Naphthalene	ug/L	<0.10	0.10	8431038
2-Methylnaphthalene	ug/L	<0.10	0.10	8431038
Quinoline	ug/L	<0.24	0.24	8431038
Acenaphthylene	ug/L	<0.050	0.050	8431038
Acenaphthene	ug/L	<0.050	0.050	8431038
Fluorene	ug/L	<0.050	0.050	8431038
Phenanthrene	ug/L	<0.050	0.050	8431038
Anthracene	ug/L	<0.010	0.010	8431038
Acridine	ug/L	<0.050	0.050	8431038
Fluoranthene	ug/L	0.044	0.020	8431038
Pyrene	ug/L	0.030	0.020	8431038
Benzo(a)anthracene	ug/L	0.013	0.010	8431038
Chrysene	ug/L	<0.050	0.050	8431038
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	8431038
Benzo(k)fluoranthene	ug/L	<0.050	0.050	8431038
Benzo(a)pyrene	ug/L	<0.0090	0.0090	8431038
Indeno(1,2,3-cd)pyrene	ug/L	<0.050 (1)	0.050	8431038
Dibenz(a,h)anthracene	ug/L	<0.050 (1)	0.050	8431038
Benzo(g,h,i)perylene	ug/L	<0.050 (1)	0.050	8431038
Calculated Parameters				
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	8425967
HEPH (C19-C32 less PAH)	mg/L	0.34	0.20	8425967
Ext. Pet. Hydrocarbon				
EPH (C10-C19)	mg/L	<0.20	0.20	8431047
EPH (C19-C32)	mg/L	0.34	0.20	8431047
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	90		8431047

RDL = Reportable Detection Limit
(1) Matrix spike exceeds acceptance limits due to matrix interference. Unable to reanalyze due to insufficient sample.

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
D10-ANTHRACENE (sur.)	%	18 (1)		8431038
D8-ACENAPHTHYLENE (sur.)	%	19 (1)		8431038
D8-NAPHTHALENE (sur.)	%	14 (1)		8431038
D9-Acridine	%	14 (1)		8431038
TERPHENYL-D14 (sur.)	%	14 (1)		8431038

RDL = Reportable Detection Limit

(1) Surrogate recovery below acceptance criteria . Unable to reanalyze due to insufficient sample.

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR DISSOLVED METALS IN WATER WITH CV HG (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Misc. Inorganics				
Dissolved Hardness (CaCO3)	mg/L	381	0.50	8425828
Elements				
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	8433207
Dissolved Metals by ICPMS				
Dissolved Aluminum (Al)	mg/L	0.0477	0.0030	8430416
Dissolved Antimony (Sb)	mg/L	<0.00050	0.00050	8430416
Dissolved Arsenic (As)	mg/L	0.00063	0.00010	8430416
Dissolved Barium (Ba)	mg/L	0.0101	0.0010	8430416
Dissolved Beryllium (Be)	mg/L	<0.00010	0.00010	8430416
Dissolved Bismuth (Bi)	mg/L	<0.0010	0.0010	8430416
Dissolved Boron (B)	mg/L	1.04	0.050	8430416
Dissolved Cadmium (Cd)	mg/L	<0.000010	0.000010	8430416
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	8430416
Dissolved Cobalt (Co)	mg/L	<0.00050	0.00050	8430416
Dissolved Copper (Cu)	mg/L	0.00024	0.00020	8430416
Dissolved Iron (Fe)	mg/L	0.0972	0.0050	8430416
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	8430416
Dissolved Lithium (Li)	mg/L	0.0167	0.0050	8430416
Dissolved Manganese (Mn)	mg/L	0.0109	0.0010	8430416
Dissolved Molybdenum (Mo)	mg/L	0.0021	0.0010	8430416
Dissolved Nickel (Ni)	mg/L	0.0033	0.0010	8430416
Dissolved Selenium (Se)	mg/L	<0.00010	0.00010	8430416
Dissolved Silicon (Si)	mg/L	7.60	0.10	8430416
Dissolved Silver (Ag)	mg/L	<0.000020	0.000020	8430416
Dissolved Strontium (Sr)	mg/L	0.540	0.0010	8430416
Dissolved Thallium (Tl)	mg/L	<0.000050	0.000050	8430416
Dissolved Tin (Sn)	mg/L	<0.0050	0.0050	8430416
Dissolved Titanium (Ti)	mg/L	<0.0050	0.0050	8430416
Dissolved Uranium (U)	mg/L	0.00013	0.00010	8430416
Dissolved Vanadium (V)	mg/L	<0.0050	0.0050	8430416
Dissolved Zinc (Zn)	mg/L	<0.0050	0.0050	8430416
Dissolved Zirconium (Zr)	mg/L	<0.00050	0.00050	8430416
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR DISSOLVED METALS IN WATER WITH CV HG (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	**M-C1**	**RDL**	**QC Batch**
Dissolved Calcium (Ca)	mg/L	34.3	0.050	8425878
Dissolved Magnesium (Mg)	mg/L	71.8	0.050	8425878
Dissolved Potassium (K)	mg/L	36.4	0.050	8425878
Dissolved Sodium (Na)	mg/L	896	0.050	8425878
Dissolved Sulphur (S)	mg/L	69.3	3.0	8425878
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR TOTAL METALS IN WATER WITH CV HG (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	M-C1	RDL	QC Batch
Calculated Parameters				
Total Hardness (CaCO3)	mg/L	510	0.50	8425781
Elements				
Total Mercury (Hg)	ug/L	<0.010	0.010	8433252
Total Metals by ICPMS				
Total Aluminum (Al)	mg/L	18.2	0.0030	8430726
Total Antimony (Sb)	mg/L	<0.00050	0.00050	8430726
Total Arsenic (As)	mg/L	0.00516	0.00010	8430726
Total Barium (Ba)	mg/L	0.0879	0.0010	8430726
Total Beryllium (Be)	mg/L	0.00020	0.00010	8430726
Total Bismuth (Bi)	mg/L	<0.0010	0.0010	8430726
Total Boron (B)	mg/L	1.01	0.050	8430726
Total Cadmium (Cd)	mg/L	0.000971	0.000010	8430726
Total Chromium (Cr)	mg/L	0.134	0.0010	8430726
Total Cobalt (Co)	mg/L	0.0127	0.00050	8430726
Total Copper (Cu)	mg/L	0.0750	0.00050	8430726
Total Iron (Fe)	mg/L	27.4	0.010	8430726
Total Lead (Pb)	mg/L	0.00368	0.00020	8430726
Total Lithium (Li)	mg/L	0.0309	0.0050	8430726
Total Manganese (Mn)	mg/L	0.370	0.0010	8430726
Total Molybdenum (Mo)	mg/L	0.0184	0.0010	8430726
Total Nickel (Ni)	mg/L	0.0843	0.0010	8430726
Total Selenium (Se)	mg/L	0.00038	0.00010	8430726
Total Silicon (Si)	mg/L	34.0	0.10	8430726
Total Silver (Ag)	mg/L	0.000065	0.000020	8430726
Total Strontium (Sr)	mg/L	0.735	0.0010	8430726
Total Thallium (Tl)	mg/L	0.000110	0.000050	8430726
Total Tin (Sn)	mg/L	<0.0050	0.0050	8430726
Total Titanium (Ti)	mg/L	1.61	0.0050	8430726
Total Uranium (U)	mg/L	0.00067	0.00010	8430726
Total Vanadium (V)	mg/L	0.0805	0.0050	8430726
Total Zinc (Zn)	mg/L	0.0763	0.0050	8430726
Total Zirconium (Zr)	mg/L	0.00312	0.00050	8430726
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

CSR TOTAL METALS IN WATER WITH CV HG (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	**M-C1**	**RDL**	**QC Batch**
Total Calcium (Ca)	mg/L	70.3	0.050	8425782
Total Magnesium (Mg)	mg/L	81.1	0.050	8425782
Total Potassium (K)	mg/L	39.4	0.050	8425782
Total Sodium (Na)	mg/L	859	0.050	8425782
Total Sulphur (S)	mg/L	71.5	3.0	8425782
RDL = Reportable Detection Limit				

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

SALINITY 4 PACKAGE FOR WATER (GROUND WATER)

Maxxam ID		PS2353		
Sampling Date		2016/10/06 14:30		
COC Number		G114732		
	UNITS	**M-C1**	**RDL**	**QC Batch**
Misc. Inorganics				
Salinity	g/L	3.02	0.010	8430032
Anions				
Dissolved Sulphate (SO4)	mg/L	200 (1)	2.0	8431772
Dissolved Chloride (Cl)	mg/L	1500 (1)	10	8431771
Physical Properties				
Conductivity	uS/cm	5590	1.0	8430029
pH	pH	8.27		8430024

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

GENERAL COMMENTS

Revised Report Version 2:RFA Results included in the report VD1 216/10/17

Results relate only to the items tested.

Maxxam Job #: B688360
Report Date: 2016/10/17

QUALITY ASSURANCE REPORT

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8429571	1,4-Difluorobenzene (sur.)	2016/10/11	95	70 - 130	95	70 - 130	101	%		
8429571	4-Bromofluorobenzene (sur.)	2016/10/11	100	70 - 130	100	70 - 130	100	%		
8429571	D4-1,2-Dichloroethane (sur.)	2016/10/11	104	70 - 130	103	70 - 130	109	%		
8431038	D10-ANTHRACENE (sur.)	2016/10/12	99	60 - 130	89	60 - 130	97	%		
8431038	D8-ACENAPHTHYLENE (sur.)	2016/10/12	105	50 - 130	92	50 - 130	102	%		
8431038	D8-NAPHTHALENE (sur.)	2016/10/12	72	50 - 130	68	50 - 130	83	%		
8431038	D9-Acridine	2016/10/12	83	50 - 130	83	50 - 130	90	%		
8431038	TERPHENYL-D14 (sur.)	2016/10/12	77	60 - 130	88	60 - 130	93	%		
8431047	O-TERPHENYL (sur.)	2016/10/13	95	50 - 130	93	50 - 130	87	%		
8431646	NONACHLOROBIPHENYL (sur.)	2016/10/14	94	30 - 130	101	30 - 130	97	%		
8429571	Benzene	2016/10/11	106	70 - 130	102	70 - 130	<0.40	ug/L	NC	30
8429571	Ethylbenzene	2016/10/11	112	70 - 130	108	70 - 130	<0.40	ug/L	NC	30
8429571	m & p-Xylene	2016/10/11	110	70 - 130	107	70 - 130	<0.40	ug/L	NC	30
8429571	Methyl-tert-butylether (MTBE)	2016/10/11	103	70 - 130	101	70 - 130	<4.0	ug/L	NC	30
8429571	o-Xylene	2016/10/11	104	70 - 130	98	70 - 130	<0.40	ug/L	NC	30
8429571	Styrene	2016/10/11	110	70 - 130	105	70 - 130	<0.40	ug/L	NC	30
8429571	Toluene	2016/10/11	107	70 - 130	102	70 - 130	<0.40	ug/L	NC	30
8429571	VH C6-C10	2016/10/11			90	70 - 130	<300	ug/L	NC	30
8429571	Xylenes (Total)	2016/10/11					<0.40	ug/L	NC	30
8430024	pH	2016/10/12			102	97 - 103			0.51	N/A
8430029	Conductivity	2016/10/12			100	80 - 120	<1.0	uS/cm	1.2	20
8430032	Salinity	2016/10/12					<0.010	g/L		
8430416	Dissolved Aluminum (Al)	2016/10/14	110	80 - 120	109	80 - 120	<0.0030	mg/L	NC	20
8430416	Dissolved Antimony (Sb)	2016/10/14	96	80 - 120	98	80 - 120	<0.00050	mg/L	NC	20
8430416	Dissolved Arsenic (As)	2016/10/14	109	80 - 120	105	80 - 120	<0.00010	mg/L	NC	20
8430416	Dissolved Barium (Ba)	2016/10/14	NC	80 - 120	104	80 - 120	<0.0010	mg/L	0.14	20
8430416	Dissolved Beryllium (Be)	2016/10/14	105	80 - 120	105	80 - 120	<0.00010	mg/L	NC	20
8430416	Dissolved Bismuth (Bi)	2016/10/14	87	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20
8430416	Dissolved Boron (B)	2016/10/14	96	80 - 120	99	80 - 120	<0.050	mg/L	NC	20
8430416	Dissolved Cadmium (Cd)	2016/10/14	100	80 - 120	101	80 - 120	<0.000010	mg/L	NC	20
8430416	Dissolved Chromium (Cr)	2016/10/14	92	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20

Maxxam Job #: B688360
Report Date: 2016/10/17

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8430416	Dissolved Cobalt (Co)	2016/10/14	87	80 - 120	94	80 - 120	<0.00050	mg/L	NC	20
8430416	Dissolved Copper (Cu)	2016/10/14	90	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8430416	Dissolved Iron (Fe)	2016/10/14	101	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Lead (Pb)	2016/10/14	91	80 - 120	99	80 - 120	<0.00020	mg/L	NC	20
8430416	Dissolved Lithium (Li)	2016/10/14	97	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Manganese (Mn)	2016/10/14	94	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20
8430416	Dissolved Molybdenum (Mo)	2016/10/14	97	80 - 120	101	80 - 120	<0.0010	mg/L	NC	20
8430416	Dissolved Nickel (Ni)	2016/10/14	90	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20
8430416	Dissolved Selenium (Se)	2016/10/14	111	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20
8430416	Dissolved Silicon (Si)	2016/10/14					<0.10	mg/L	2.5	20
8430416	Dissolved Silver (Ag)	2016/10/14	87	80 - 120	92	80 - 120	<0.000020	mg/L	NC	20
8430416	Dissolved Strontium (Sr)	2016/10/14	NC	80 - 120	108	80 - 120	<0.0010	mg/L	0.13	20
8430416	Dissolved Thallium (Tl)	2016/10/14	82	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8430416	Dissolved Tin (Sn)	2016/10/14	96	80 - 120	101	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Titanium (Ti)	2016/10/14	89	80 - 120	90	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Uranium (U)	2016/10/14	95	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8430416	Dissolved Vanadium (V)	2016/10/14	95	80 - 120	99	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Zinc (Zn)	2016/10/14	104	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
8430416	Dissolved Zirconium (Zr)	2016/10/14					<0.00050	mg/L	NC	20
8430568	Chemical Oxygen Demand	2016/10/13	102	80 - 120	108	80 - 120	<10	mg/L	NC	20
8430726	Total Aluminum (Al)	2016/10/13	NC	80 - 120	113	80 - 120	<0.0030	mg/L		
8430726	Total Antimony (Sb)	2016/10/13	100	80 - 120	104	80 - 120	<0.00050	mg/L		
8430726	Total Arsenic (As)	2016/10/13	NC	80 - 120	117	80 - 120	<0.00010	mg/L		
8430726	Total Barium (Ba)	2016/10/13	NC	80 - 120	110	80 - 120	<0.0010	mg/L		
8430726	Total Beryllium (Be)	2016/10/13	108	80 - 120	115	80 - 120	<0.00010	mg/L		
8430726	Total Bismuth (Bi)	2016/10/13	92	80 - 120	96	80 - 120	<0.0010	mg/L		
8430726	Total Boron (B)	2016/10/13	NC	80 - 120	111	80 - 120	<0.050	mg/L		
8430726	Total Cadmium (Cd)	2016/10/13	106	80 - 120	110	80 - 120	<0.000010	mg/L		
8430726	Total Chromium (Cr)	2016/10/13	95	80 - 120	99	80 - 120	<0.0010	mg/L		
8430726	Total Cobalt (Co)	2016/10/13	91	80 - 120	93	80 - 120	<0.00050	mg/L		
8430726	Total Copper (Cu)	2016/10/14	93	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20

Maxxam Job #: B688360
Report Date: 2016/10/17

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8430726	Total Iron (Fe)	2016/10/14	NC	80 - 120	100	80 - 120	<0.010	mg/L	7.2	20
8430726	Total Lead (Pb)	2016/10/13	96	80 - 120	99	80 - 120	<0.00020	mg/L		
8430726	Total Lithium (Li)	2016/10/13	NC	80 - 120	107	80 - 120	<0.0050	mg/L		
8430726	Total Manganese (Mn)	2016/10/14	NC	80 - 120	102	80 - 120	<0.0010	mg/L	3.0	20
8430726	Total Molybdenum (Mo)	2016/10/13	NC	80 - 120	102	80 - 120	<0.0010	mg/L		
8430726	Total Nickel (Ni)	2016/10/13	92	80 - 120	102	80 - 120	<0.0010	mg/L		
8430726	Total Selenium (Se)	2016/10/13	117	80 - 120	109	80 - 120	<0.00010	mg/L		
8430726	Total Silicon (Si)	2016/10/13					<0.10	mg/L		
8430726	Total Silver (Ag)	2016/10/13	92	80 - 120	110	80 - 120	<0.000020	mg/L		
8430726	Total Strontium (Sr)	2016/10/13	NC	80 - 120	112	80 - 120	<0.0010	mg/L		
8430726	Total Thallium (Tl)	2016/10/13	84	80 - 120	84	80 - 120	<0.000050	mg/L		
8430726	Total Tin (Sn)	2016/10/13	80	80 - 120	95	80 - 120	<0.0050	mg/L		
8430726	Total Titanium (Ti)	2016/10/13	111	80 - 120	93	80 - 120	<0.0050	mg/L		
8430726	Total Uranium (U)	2016/10/13	101	80 - 120	98	80 - 120	<0.00010	mg/L		
8430726	Total Vanadium (V)	2016/10/13	104	80 - 120	101	80 - 120	<0.0050	mg/L		
8430726	Total Zinc (Zn)	2016/10/14	NC	80 - 120	115	80 - 120	<0.0050	mg/L	NC	20
8430726	Total Zirconium (Zr)	2016/10/13					<0.00050	mg/L		
8431038	2-Methylnaphthalene	2016/10/13	102	50 - 130	87	50 - 130	<0.10	ug/L	NC	40
8431038	Acenaphthene	2016/10/13	119	50 - 130	103	50 - 130	<0.050	ug/L	NC	40
8431038	Acenaphthylene	2016/10/13	118	50 - 130	103	50 - 130	<0.050	ug/L	NC	40
8431038	Acridine	2016/10/13	91	50 - 130	92	50 - 130	<0.050	ug/L	NC	40
8431038	Anthracene	2016/10/13	111	60 - 130	103	60 - 130	<0.010	ug/L	NC	40
8431038	Benzo(a)anthracene	2016/10/13	109	60 - 130	104	60 - 130	<0.010	ug/L	NC	40
8431038	Benzo(a)pyrene	2016/10/13	62	60 - 130	106	60 - 130	<0.0090	ug/L	NC	40
8431038	Benzo(b&j)fluoranthene	2016/10/13	68	60 - 130	110	60 - 130	<0.050	ug/L	NC	40
8431038	Benzo(g,h,i)perylene	2016/10/13	23 (1)	60 - 130	97	60 - 130	<0.050	ug/L	NC	40
8431038	Benzo(k)fluoranthene	2016/10/13	65	60 - 130	107	60 - 130	<0.050	ug/L	NC	40
8431038	Chrysene	2016/10/13	109	60 - 130	105	60 - 130	<0.050	ug/L	NC	40
8431038	Dibenz(a,h)anthracene	2016/10/13	20 (1)	60 - 130	93	60 - 130	<0.050	ug/L	NC	40
8431038	Fluoranthene	2016/10/13	104	60 - 130	95	60 - 130	<0.020	ug/L	NC	40
8431038	Fluorene	2016/10/13	114	50 - 130	103	50 - 130	<0.050	ug/L	NC	40

Maxxam Job #: B688360
Report Date: 2016/10/17

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8431038	Indeno(1,2,3-cd)pyrene	2016/10/13	23 (1)	60 - 130	98	60 - 130	<0.050	ug/L	NC	40
8431038	Naphthalene	2016/10/13	84	50 - 130	77	50 - 130	<0.10	ug/L	NC	40
8431038	Phenanthrene	2016/10/13	114	60 - 130	102	60 - 130	<0.050	ug/L	NC	40
8431038	Pyrene	2016/10/13	104	60 - 130	95	60 - 130	<0.020	ug/L	NC	40
8431038	Quinoline	2016/10/13	128	50 - 130	127	50 - 130	<0.24	ug/L	NC	40
8431047	EPH (C10-C19)	2016/10/12	NC	50 - 130	89	50 - 130	<0.20	mg/L	NC	30
8431047	EPH (C19-C32)	2016/10/12	96	50 - 130	90	50 - 130	<0.20	mg/L	NC	30
8431646	Aroclor 1016	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1221	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1232	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1242	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1248	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1254	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1260	2016/10/14	82	30 - 130	89	30 - 130	<0.000050	mg/L		
8431646	Aroclor 1262	2016/10/14					<0.000050	mg/L		
8431646	Aroclor 1268	2016/10/14					<0.000050	mg/L		
8431646	Total Aroclors	2016/10/14					<0.000050	mg/L		
8431771	Dissolved Chloride (Cl)	2016/10/13	102	80 - 120	97	80 - 120	<1.0	mg/L	NC	20
8431772	Dissolved Sulphate (SO4)	2016/10/13	NC	80 - 120	99	80 - 120	<1.0	mg/L	1.8	20
8431865	Tannins and Lignins	2016/10/13	85	80 - 120	92	80 - 120	<0.10	mg/L	NC	20
8433207	Dissolved Mercury (Hg)	2016/10/14	92	80 - 120	101	80 - 120	<0.010	ug/L	NC	20
8433252	Total Mercury (Hg)	2016/10/14	105	80 - 120	104	80 - 120	<0.010	ug/L	NC	20

Maxxam Job #: B688360
Report Date: 2016/10/17

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8433783	Phenols	2016/10/14	101	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B688360
Report Date: 2016/10/17

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Site Location: ELK FALLS PULP MILL

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Harry (Peng) Liang, Senior Analyst

Rob Reinert, B.Sc., Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: B711941
Your C.O.C. #: na

Attention:Veronica De Guzman

MAXXAM ANALYTICS
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2017/02/28
Report #: R2253395
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B709209
Received: 2017/02/21, 13:10

Sample Matrix: WATER
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary Reference
Resin and Fatty Acids*	4	2017/02/22	2017/02/24	STL SOP-00152	MA414-Aci-g-r-1.0R3m
Resin and Fatty Acids*	2	2017/02/27	2017/02/28	STL SOP-00152	MA414-Aci-g-r-1.0R3m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

* Maxxam is accredited as per the MDDELCC program.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Your Project #: B711941
Your C.O.C. #: na

Attention:Veronica De Guzman

MAXXAM ANALYTICS
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2017/02/28
Report #: R2253395
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B709209
Received: 2017/02/21, 13:10

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Sophie Retailleau, Project Manager
Email: SRetailleau@maxxam.ca
Phone# (514) 448-9001
==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

RESIN AND FATTY ACIDS BY GCMS (WATER)

Maxxam ID		DQ8738	DQ8739		DQ8740		DQ8741		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30		2017/02/17 12:00		2017/02/17 14:50		
COC Number		na	na		na		na		
	Units	QO6863-MW13-1	QO6864-MW13-2	QC Batch	QO6865-MW05-1	QC Batch	QO6866-MC-1	RDL	QC Batch
Palmitoleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	45	3.0	1729878
Palmitic acid	ug/L	<30	<30	1729878	<30	1731244	<30	30	1729878
Linoleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	7.1	3.0	1729878
Linolenic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Oleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	3.9	3.0	1729878
Stearic acid	ug/L	<30	<30	1729878	<30	1731244	<30	30	1729878
9,10-Dichlorostearic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Total Fatty Acids	ug/L	<30	<30	1729878	<30	1731244	56	30	1729878
Pimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Sandaracopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Isopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Palustric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Levopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Dehydroabietic acid	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Abietic acid	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Neoabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
14-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
12-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Total Resin Acids	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Surrogate Recovery (%)									
O-Methylpodocarpic acid	%	103	96	1729878	88	1731244	97	N/A	1729878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

2017/02/28 16:52

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

RESIN AND FATTY ACIDS BY GCMS (WATER)

Maxxam ID		DQ8742		DQ8743		
Sampling Date		2017/02/17 16:30		2017/02/17 15:30		
COC Number		na		na		
	Units	**QO6867-NLLD**	**QC Batch**	**QO6868-OLWP**	**RDL**	**QC Batch**
Palmitoleic acid	ug/L	<3.0	1731244	3.5	3.0	1729878
Palmitic acid	ug/L	32	1731244	<30	30	1729878
Linoleic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Linolenic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Oleic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Stearic acid	ug/L	<30	1731244	<30	30	1729878
9,10-Dichlorostearic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Total Fatty Acids	ug/L	32	1731244	<30	30	1729878
Pimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Sandaracopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Isopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Palustric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Levopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Dehydroabietic acid	ug/L	<5.0	1731244	<5.0	5.0	1729878
Abietic acid	ug/L	<5.0	1731244	<5.0	5.0	1729878
Neoabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
14-Chlorodehydroabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
12-Chlorodehydroabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Total Resin Acids	ug/L	<5.0	1731244	<5.0	5.0	1729878
Surrogate Recovery (%)						
O-Methylpodocarpic acid	%	96	1731244	81	N/A	1729878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD

RESIN AND FATTY ACIDS BY GCMS (WATER)

Please note that the results have not been corrected for QC recoveries (spiked blank and method blank) nor for the surrogates.

The total indicated is calculated only for the requested parameters.

Un-rounded results are used in the totals "Total Resin Acids"and "Total Fatty Acids" calculation. These totals results are then rounded to two significant figures.

Results relate only to the items tested.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
1729878	ADR	Spiked Blank	O-Methylpodocarpic acid	2017/02/24		106	%	60 - 130
			Palmitoleic acid	2017/02/24		115	%	60 - 130
			Palmitic acid	2017/02/24		146 (1)	%	60 - 130
			Linoleic acid	2017/02/24		101	%	60 - 130
			Linolenic acid	2017/02/24		93	%	60 - 130
			Oleic acid	2017/02/24		120	%	60 - 130
			Stearic acid	2017/02/24		138 (1)	%	60 - 130
			9,10-Dichlorostearic acid	2017/02/24		111	%	60 - 130
			Pimaric acid	2017/02/24		111	%	60 - 130
			Sandaracopimaric acid	2017/02/24		118	%	60 - 130
			Isopimaric acid	2017/02/24		114	%	60 - 130
			Palustric acid	2017/02/24		109	%	60 - 130
			Levopimaric acid	2017/02/24		105	%	60 - 130
			Dehydroabietic acid	2017/02/24		108	%	60 - 130
			Abietic acid	2017/02/24		151 (1)	%	60 - 130
			Neoabietic acid	2017/02/24		151 (1)	%	60 - 130
			14-Chlorodehydroabietic acid	2017/02/24		124	%	60 - 130
			12-Chlorodehydroabietic acid	2017/02/24		123	%	60 - 130
1729878	ADR	Method Blank	O-Methylpodocarpic acid	2017/02/24		101	%	60 - 130
			Palmitoleic acid	2017/02/24	<3.0		ug/L	
			Palmitic acid	2017/02/24	<30		ug/L	
			Linoleic acid	2017/02/24	<3.0		ug/L	
			Linolenic acid	2017/02/24	<3.0		ug/L	
			Oleic acid	2017/02/24	<3.0		ug/L	
			Stearic acid	2017/02/24	<30		ug/L	
			9,10-Dichlorostearic acid	2017/02/24	<3.0		ug/L	
			Total Fatty Acids	2017/02/24	<30		ug/L	
			Pimaric acid	2017/02/24	<3.0		ug/L	
			Sandaracopimaric acid	2017/02/24	<3.0		ug/L	
			Isopimaric acid	2017/02/24	<3.0		ug/L	
			Palustric acid	2017/02/24	<3.0		ug/L	
			Levopimaric acid	2017/02/24	<3.0		ug/L	
			Dehydroabietic acid	2017/02/24	<5.0		ug/L	
			Abietic acid	2017/02/24	<5.0		ug/L	
			Neoabietic acid	2017/02/24	<3.0		ug/L	
			14-Chlorodehydroabietic acid	2017/02/24	<3.0		ug/L	
			12-Chlorodehydroabietic acid	2017/02/24	<3.0		ug/L	
			Total Resin Acids	2017/02/24	<5.0		ug/L	
1731244	CB5	Spiked Blank	O-Methylpodocarpic acid	2017/02/28		95	%	60 - 130
			Palmitoleic acid	2017/02/28		82	%	60 - 130
			Palmitic acid	2017/02/28		115	%	60 - 130
			Linoleic acid	2017/02/28		63	%	60 - 130
			Linolenic acid	2017/02/28		62	%	60 - 130
			Oleic acid	2017/02/28		81	%	60 - 130
			Stearic acid	2017/02/28		104	%	60 - 130
			9,10-Dichlorostearic acid	2017/02/28		74	%	60 - 130
			Pimaric acid	2017/02/28		84	%	60 - 130
			Sandaracopimaric acid	2017/02/28		97	%	60 - 130
			Isopimaric acid	2017/02/28		90	%	60 - 130
			Palustric acid	2017/02/28		80	%	60 - 130
			Levopimaric acid	2017/02/28		65	%	60 - 130
			Dehydroabietic acid	2017/02/28		84	%	60 - 130
			Abietic acid	2017/02/28		145 (1)	%	60 - 130

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Neoabietic acid	2017/02/28		100	%	60 - 130
			14-Chlorodehydroabietic acid	2017/02/28		94	%	60 - 130
			12-Chlorodehydroabietic acid	2017/02/28		96	%	60 - 130
1731244	CB5	Method Blank	O-Methylpodocarpic acid	2017/02/28		98	%	60 - 130
			Palmitoleic acid	2017/02/28	<3.0		ug/L	
			Palmitic acid	2017/02/28	<30		ug/L	
			Linoleic acid	2017/02/28	<3.0		ug/L	
			Linolenic acid	2017/02/28	<3.0		ug/L	
			Oleic acid	2017/02/28	<3.0		ug/L	
			Stearic acid	2017/02/28	<30		ug/L	
			9,10-Dichlorostearic acid	2017/02/28	<3.0		ug/L	
			Total Fatty Acids	2017/02/28	<30		ug/L	
			Pimaric acid	2017/02/28	<3.0		ug/L	
			Sandaracopimaric acid	2017/02/28	<3.0		ug/L	
			Isopimaric acid	2017/02/28	<3.0		ug/L	
			Palustric acid	2017/02/28	<3.0		ug/L	
			Levopimaric acid	2017/02/28	<3.0		ug/L	
			Dehydroabietic acid	2017/02/28	<5.0		ug/L	
			Abietic acid	2017/02/28	<5.0		ug/L	
			Neoabietic acid	2017/02/28	<3.0		ug/L	
			14-Chlorodehydroabietic acid	2017/02/28	<3.0		ug/L	
			12-Chlorodehydroabietic acid	2017/02/28	<3.0		ug/L	
			Total Resin Acids	2017/02/28	<5.0		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

FUNDAMENTAL LABORATORY ACCEPTANCE GUIDELINE

Invoice To:
MAXXAM ANALYTICS
BURNABY
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5
Client Contact:
Veronica De Guzman

Maxxam Job #:	B709209
Date Received:	2017/02/21
Your C.O.C. #:	na
Your Project #:	B711941
Maxxam Project Manager:	Sophie Retailleau
Quote #	B20512

No discrepancies noted.

Report Comments

Received Date:	**2017/02/21**	**Time:**	**13:10**	**By:**	
Inspected Date:		**Time:**		**By:**	
FLAG Created Date:		**Time:**		**By:**	

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Caroline Bougie, B.Sc. Chemist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam
A Bureau Veritas Group Company

Sent to: Maxxam Mont
889 Montee d
Viille St-Laurer
Tel: (514) 448

B709209_COC

M INTERLAB CHAIN OF CUSTODY RECORD

COC # B711941-QUEV-01-01

REPORT INFORMATION	
Company:	Maxxam
Address:	4606 Canada Way, Burnaby, British Columbia, V5G 1K5
Contact Name:	Veronica De Guzman
Email:	VDeGuzman@maxxam.ca, customerservicebc@maxxamanalytics.com
Phone:	
Maxxam Project #:	B711941
Client Invoice To:	WATERLINE RESOURCES INC. (5950)
Client Report To:	WATERLINE RESOURCES INC. (5950) Incl. on Report? Yes / No

ANALYSIS REQUESTED

Job Barcode Label

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	RFA Water Subcontract										ADDITIONAL SAMPLE INFORMATION
1	QO6863-MW13-1	WATER	2017/02/17	13:30		1	X										(P: 12)
2	QO6864-MW13-2	WATER	2017/02/17	10:30		1	X										(P: 12)
3	QO6865-MW05-1	WATER	2017/02/17	12:00		1	X										(P: 12)
4	QO6866-M-C1	WATER	2017/02/17	14:50		1	X										(P: 12)
5	QO6867-NLLD	WATER	2017/02/17	16:30		1	X										(P: 12)
6	QO6868-OLWP	WATER	2017/02/17	15:30		1	X										(P: 12)
7																	
8																	
9																	
10																	

SITE LOCATION:

SITE #:

PROJECT #:
2719-16-001

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Maxxam immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
Excel Export (csv) (A004)

TURNAROUND TIME
☐ Rush Required
2017/02/27
Date Required
Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓					
Custody Seal Intact	✓					
Cooling Media Present	✓					
				3	1	4

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RECEIVING LAB USE ONLY
Maxxam Job #

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. ANTONIUS BENGE TOMAS	2017 02 20	14:00	1 Gm Giuseppina MARTUCCI	2017-02-21	13:10		
2 Gm Giuseppina MARTUCCI	2017-02-21	13:10	2				

Your Project #: 2719-16-001
Your C.O.C. #: 516403-01-01

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M9

Report Date: 2017/02/28
Report #: R2350882
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B711941
Received: 2017/02/18, 12:30

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS	6	2017/02/20	2017/02/21	BBY8SOP-00010/11/12	PBM BC Lab Manual
Chloride by Automated Colourimetry	3	N/A	2017/02/20	BBY6SOP-00011	SM 22 4500-Cl- E m
Chloride by Automated Colourimetry	3	N/A	2017/02/21	BBY6SOP-00011	SM 22 4500-Cl- E m
COD by Colorimeter	6	2017/02/21	2017/02/22	BBY6SOP-00024	SM 22 5220 D m
Conductance - water	6	N/A	2017/02/21	BBY6SOP-00026	SM 22 2510 B m
Hardness Total (calculated as CaCO3)	6	N/A	2017/02/22	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	6	N/A	2017/02/23	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAF	6	N/A	2017/02/23	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total) by CVAF	6	2017/02/23	2017/02/23	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	5	2017/02/23	2017/02/23	BBY8SOP-00029	BCMOE EPH w 12/00 m
EPH in Water when PAH required	1	2017/02/23	2017/02/24	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	6	N/A	2017/02/23	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	6	N/A	2017/02/22	BBY7SOP-00002	EPA 6020B R2 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	6	2017/02/18	2017/02/22	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	6	2017/02/20	2017/02/22	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Ammonia-N (Preserved)	6	N/A	2017/02/21	BBY6SOP-00009	SM 22 4500-NH3- G m
PAH in Water by GC/MS (SIM)	6	2017/02/23	2017/02/24	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	2	N/A	2017/02/24	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	4	N/A	2017/02/27	BBY WI-00033	Auto Calc
Polychlorinated Biphenyls (1)	6	2017/02/21	2017/02/21	CAL SOP-00149	EPA 8082A R1 m
Filter and HNO3 Preserve for Metals	6	N/A	2017/02/22	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (3)	6	N/A	2017/02/21	BBY6SOP-00026	SM 22 4500-H+ B m
Phenols (4-AAP)	6	N/A	2017/02/24	BBY6SOP-00008	SM 22 5530 D m
Salinity by Conductivity Method	6	2017/02/21	2017/02/21	BBY6SOP-00026	SM 22 2520 B m
Sulphate by Automated Colourimetry	5	N/A	2017/02/20	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate by Automated Colourimetry	1	N/A	2017/02/21	BBY6SOP-00017	SM 22 4500-SO42- E m
EPH less PAH in Water by GC/FID	2	N/A	2017/02/24	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	4	N/A	2017/02/27	BBY WI-00033	Auto Calc
Tannin & Lignin (Total)	6	N/A	2017/02/23	BBY6SOP-00023	SM-5550B m

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: 2719-16-001
Your C.O.C. #: 516403-01-01

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M9

Report Date: 2017/02/28
Report #: R2350882
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B711941
Received: 2017/02/18, 12:30

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Volatile HC-BTEX	6	N/A	2017/02/21	BBY WI-00033	Auto Calc
RFA Water Subcontract (2)	6	2017/02/28	2017/02/28		

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Calgary Environmental
(2) This test was performed by Maxxam Montreal (From Burnaby)
(3) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Your Project #: 2719-16-001
Your C.O.C. #: 516403-01-01

Attention:DALTON PAJAK

WATERLINE RESOURCES INC.
UNIT D
2301 MCCULLOUGH RD.
Nanaimo, BC
CANADA V9S 4M9

Report Date: 2017/02/28
Report #: R2350882
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B711941
Received: 2017/02/18, 12:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Veronica De Guzman, Project Manager
Email: VDeGuzman@maxxam.ca
Phone# (604) 734 7276

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		QO6863	QO6864	QO6865		QO6866	QO6867		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00		2017/02/17 14:50	2017/02/17 16:30		
COC Number		516403-01-01	516403-01-01	516403-01-01		516403-01-01	516403-01-01		
	UNITS	**MW13-1**	**MW13-2**	**MW05-1**	**RDL**	**M-C1**	**NLLD**	**RDL**	**QC Batch**
Parameter									
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	N/A	ATTACHED	ATTACHED	N/A	8564786
Calculated Parameters									
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD		FIELD	FIELD		ONSITE
Demand Parameters									
Chemical Oxygen Demand	mg/L	28	52	48	10	346	82	10	8557987
MISCELLANEOUS									
Tannins and Lignins	mg/L	1.09	0.49	0.23	0.10	7.74	6.70	0.10	8558133
Nutrients									
Total Ammonia (N)	mg/L	0.079	0.075	0.052	0.0050	1.0 (1)	4.5 (1)	0.050	8558235
Misc. Organics									
Phenols	mg/L	<0.0010	<0.0010	0.0030	0.0010	0.0037	0.0025	0.0010	8561939

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam ID		QO6868		
Sampling Date		2017/02/17 15:30		
COC Number		516403-01-01		
	UNITS	**OLWP**	**RDL**	**QC Batch**
Parameter				
Subcontract Parameter	N/A	ATTACHED	N/A	8564786
Calculated Parameters				
Filter and HNO3 Preservation	N/A	FIELD		ONSITE
Demand Parameters				
Chemical Oxygen Demand	mg/L	128	10	8557987
MISCELLANEOUS				
Tannins and Lignins	mg/L	13.8 (1)	0.20	8558133
Nutrients				
Total Ammonia (N)	mg/L	0.97 (1)	0.050	8558235
Misc. Organics				
Phenols	mg/L	0.0030	0.0010	8561939

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		QO6863	QO6864	QO6865		QO6866		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00		2017/02/17 14:50		
COC Number		516403-01-01	516403-01-01	516403-01-01		516403-01-01		
	UNITS	MW13-1	MW13-2	MW05-1	RDL	M-C1	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Aroclor 1221	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Aroclor 1232	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Aroclor 1242	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Aroclor 1248	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Aroclor 1254	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Aroclor 1260	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Aroclor 1262	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Aroclor 1268	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Total Aroclors	mg/L	<0.000050	<0.000050	<0.000050	0.000050	<0.0050	0.0050	8557440
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	84	82	81		85		8557440
RDL = Reportable Detection Limit								

Maxxam ID		QO6867		QO6868		
Sampling Date		2017/02/17 16:30		2017/02/17 15:30		
COC Number		516403-01-01		516403-01-01		
	UNITS	NLLD	RDL	OLWP	RDL	QC Batch
Polychlorinated Biphenyls						
Aroclor 1016	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Aroclor 1221	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Aroclor 1232	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Aroclor 1242	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Aroclor 1248	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Aroclor 1254	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Aroclor 1260	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Aroclor 1262	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Aroclor 1268	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Total Aroclors	mg/L	<0.000050	0.000050	<0.00025	0.00025	8557440
Surrogate Recovery (%)						
NONACHLOROBIPHENYL (sur.)	%	83		85		8557440
RDL = Reportable Detection Limit						

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR BTEX/VPH IN WATER (WATER)

Maxxam ID		QO6863	QO6864	QO6865	QO6866	QO6867	QO6868		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00	2017/02/17 14:50	2017/02/17 16:30	2017/02/17 15:30		
COC Number		516403-01-01	516403-01-01	516403-01-01	516403-01-01	516403-01-01	516403-01-01		
	UNITS	MW13-1	MW13-2	MW05-1	M-C1	NLLD	OLWP	RDL	QC Batch
Volatiles									
VPH (VH6 to 10 - BTEX)	ug/L	<300	<300	<300	<300	<300	<300	300	8556748
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	4.0	8557291
Benzene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8557291
Toluene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8557291
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8557291
m & p-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8557291
o-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8557291
Styrene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8557291
Xylenes (Total)	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8557291
VH C6-C10	ug/L	<300	<300	<300	<300	<300	<300	300	8557291
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	92	99	110	96	107	100		8557291
4-Bromofluorobenzene (sur.)	%	104	105	105	102	112	99		8557291
D4-1,2-Dichloroethane (sur.)	%	107	105	120	106	113	99		8557291

RDL = Reportable Detection Limit

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		QO6863	QO6864	QO6865	QO6866	QO6867	QO6868		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00	2017/02/17 14:50	2017/02/17 16:30	2017/02/17 15:30		
COC Number		516403-01-01	516403-01-01	516403-01-01	516403-01-01	516403-01-01	516403-01-01		
	UNITS	MW13-1	MW13-2	MW05-1	M-C1	NLLD	OLWP	RDL	QC Batch
Polycyclic Aromatics									
Low Molecular Weight PAH`s	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.19	0.10	8556725
High Molecular Weight PAH`s	ug/L	<0.050	<0.050	0.094	0.19	<0.050	<0.050	0.050	8556725
Total PAH	ug/L	<0.10	<0.10	<0.10	0.19	<0.10	0.19	0.10	8556725
Naphthalene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.19	0.10	8559904
2-Methylnaphthalene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8559904
Quinoline	ug/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8559904
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Phenanthrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8559904
Acridine	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Fluoranthene	ug/L	<0.020	<0.020	0.056	0.091	<0.020	<0.020	0.020	8559904
Pyrene	ug/L	<0.020	<0.020	0.038	0.064	<0.020	<0.020	0.020	8559904
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	0.022	<0.010	<0.010	0.010	8559904
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Benzo(b&j)fluoranthene	ug/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	8559904
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Benzo(a)pyrene	ug/L	<0.0050	<0.0050	<0.0050	0.019	<0.0050	<0.0050	0.0050	8559904
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Dibenz(a,h)anthracene	ug/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0030	8559904
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8559904
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8556828
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8556828
Ext. Pet. Hydrocarbon									
EPH (C10-C19)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8559910
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8559910
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	103	103	97	86	96	98		8559910
D10-ANTHRACENE (sur.)	%	99	95	94	95	97	96		8559904
D8-ACENAPHTHYLENE (sur.)	%	100	99	98	105	97	99		8559904
D8-NAPHTHALENE (sur.)	%	93	92	97	101	86	94		8559904

RDL = Reportable Detection Limit

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		QO6863	QO6864	QO6865	QO6866	QO6867	QO6868		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00	2017/02/17 14:50	2017/02/17 16:30	2017/02/17 15:30		
COC Number		516403-01-01	516403-01-01	516403-01-01	516403-01-01	516403-01-01	516403-01-01		
	UNITS	MW13-1	MW13-2	MW05-1	M-C1	NLLD	OLWP	RDL	QC Batch
D9-Acridine	%	90	89	90	97	92	85		8559904
TERPHENYL-D14 (sur.)	%	93	83	89	86	94	93		8559904
RDL = Reportable Detection Limit									

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		QO6863	QO6864	QO6865		QO6866		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00		2017/02/17 14:50		
COC Number		516403-01-01	516403-01-01	516403-01-01		516403-01-01		
	UNITS	MW13-1	MW13-2	MW05-1	RDL	M-C1	RDL	QC Batch
Misc. Inorganics								
Dissolved Hardness (CaCO3)	mg/L	72.5	97.5	192	0.50	2340	0.50	8556700
Elements								
Dissolved Mercury (Hg)	ug/L	<0.010	<0.010	<0.010	0.010	<0.020 (1)	0.020	8560224
Dissolved Metals by ICPMS								
Dissolved Aluminum (Al)	mg/L	0.0120	0.0068	0.0167	0.0030	0.041	0.012	8558052
Dissolved Antimony (Sb)	mg/L	<0.00050	<0.00050	<0.00050	0.00050	<0.0020	0.0020	8558052
Dissolved Arsenic (As)	mg/L	0.00133	0.00073	0.00076	0.00010	0.00058	0.00040	8558052
Dissolved Barium (Ba)	mg/L	0.0069	0.0079	0.0105	0.0010	0.0706	0.0040	8558052
Dissolved Beryllium (Be)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	<0.00040	0.00040	8558052
Dissolved Bismuth (Bi)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	<0.0040	0.0040	8558052
Dissolved Boron (B)	mg/L	<0.050	<0.050	<0.050	0.050	1.42	0.20	8558052
Dissolved Cadmium (Cd)	mg/L	<0.000010	<0.000010	<0.000010	0.000010	<0.000040	0.000040	8558052
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	<0.0040	0.0040	8558052
Dissolved Cobalt (Co)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	<0.00080	0.00080	8558052
Dissolved Copper (Cu)	mg/L	<0.00020	0.00088	0.00040	0.00020	<0.00080	0.00080	8558052
Dissolved Iron (Fe)	mg/L	<0.0050	<0.0050	0.0653	0.0050	0.086	0.020	8558052
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	<0.00080	0.00080	8558052
Dissolved Lithium (Li)	mg/L	<0.0020	<0.0020	<0.0020	0.0020	0.0433	0.0080	8558052
Dissolved Manganese (Mn)	mg/L	0.0379	0.0135	0.0751	0.0010	0.0465	0.0040	8558052
Dissolved Molybdenum (Mo)	mg/L	0.0011	<0.0010	<0.0010	0.0010	<0.0040	0.0040	8558052
Dissolved Nickel (Ni)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	<0.0040	0.0040	8558052
Dissolved Selenium (Se)	mg/L	<0.00010	<0.00010	0.00012	0.00010	<0.00040	0.00040	8558052
Dissolved Silicon (Si)	mg/L	8.33	10.2	6.97	0.10	8.21	0.40	8558052
Dissolved Silver (Ag)	mg/L	<0.000020	<0.000020	<0.000020	0.000020	<0.000080	0.000080	8558052
Dissolved Strontium (Sr)	mg/L	0.0927	0.0863	0.226	0.0010	3.43	0.0040	8558052
Dissolved Thallium (Tl)	mg/L	<0.000010	<0.000010	<0.000010	0.000010	<0.000040	0.000040	8558052
Dissolved Tin (Sn)	mg/L	<0.0050	<0.0050	<0.0050	0.0050	<0.020	0.020	8558052
Dissolved Titanium (Ti)	mg/L	<0.0050	<0.0050	<0.0050	0.0050	<0.020	0.020	8558052
Dissolved Uranium (U)	mg/L	0.00078	0.00013	0.00135	0.00010	<0.00040	0.00040	8558052
Dissolved Vanadium (V)	mg/L	<0.0050	<0.0050	0.0144	0.0050	<0.020	0.020	8558052
Dissolved Zinc (Zn)	mg/L	<0.0050	<0.0050	<0.0050	0.0050	<0.020	0.020	8558052
Dissolved Zirconium (Zr)	mg/L	<0.00050	<0.00050	<0.00050	0.00050	<0.0020	0.0020	8558052

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference sample dilution required

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		QO6863	QO6864	QO6865		QO6866		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00		2017/02/17 14:50		
COC Number		516403-01-01	516403-01-01	516403-01-01		516403-01-01		
	UNITS	**MW13-1**	**MW13-2**	**MW05-1**	**RDL**	**M-C1**	**RDL**	**QC Batch**
Dissolved Calcium (Ca)	mg/L	18.7	22.8	46.9	0.050	166	0.20	8556701
Dissolved Magnesium (Mg)	mg/L	6.27	9.88	18.2	0.050	467	0.20	8556701
Dissolved Potassium (K)	mg/L	2.45	1.48	3.27	0.050	125	0.20	8556701
Dissolved Sodium (Na)	mg/L	10.7	9.02	15.6	0.050	3650	0.20	8556701
Dissolved Sulphur (S)	mg/L	<3.0	<3.0	<3.0	3.0	292	12	8556701
RDL = Reportable Detection Limit								

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		QO6867	QO6868		
Sampling Date		2017/02/17 16:30	2017/02/17 15:30		
COC Number		516403-01-01	516403-01-01		
	UNITS	NLLD	OLWP	RDL	QC Batch
Misc. Inorganics					
Dissolved Hardness (CaCO3)	mg/L	211	409	0.50	8556700
Elements					
Dissolved Mercury (Hg)	ug/L	<0.020 (1)	<0.020 (1)	0.020	8560224
Dissolved Metals by ICPMS					
Dissolved Aluminum (Al)	mg/L	0.310	0.0450	0.0030	8558052
Dissolved Antimony (Sb)	mg/L	0.00479	<0.00050	0.00050	8558052
Dissolved Arsenic (As)	mg/L	0.0201	0.00400	0.00010	8558052
Dissolved Barium (Ba)	mg/L	0.0058	0.0051	0.0010	8558052
Dissolved Beryllium (Be)	mg/L	<0.00010	<0.00010	0.00010	8558052
Dissolved Bismuth (Bi)	mg/L	<0.0010	<0.0010	0.0010	8558052
Dissolved Boron (B)	mg/L	4.02	1.98	0.050	8558052
Dissolved Cadmium (Cd)	mg/L	0.000014	<0.000010	0.000010	8558052
Dissolved Chromium (Cr)	mg/L	0.0039	0.0112	0.0010	8558052
Dissolved Cobalt (Co)	mg/L	0.00031	0.00049	0.00020	8558052
Dissolved Copper (Cu)	mg/L	0.00023	0.00024	0.00020	8558052
Dissolved Iron (Fe)	mg/L	0.0833	0.106	0.0050	8558052
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	0.00020	8558052
Dissolved Lithium (Li)	mg/L	0.0093	0.0124	0.0020	8558052
Dissolved Manganese (Mn)	mg/L	0.0507	0.0916	0.0010	8558052
Dissolved Molybdenum (Mo)	mg/L	0.0417	0.0013	0.0010	8558052
Dissolved Nickel (Ni)	mg/L	0.0156	0.0324	0.0010	8558052
Dissolved Selenium (Se)	mg/L	0.00026	0.00017	0.00010	8558052
Dissolved Silicon (Si)	mg/L	21.4	11.8	0.10	8558052
Dissolved Silver (Ag)	mg/L	<0.000020	<0.000020	0.000020	8558052
Dissolved Strontium (Sr)	mg/L	0.0895	0.429	0.0010	8558052
Dissolved Thallium (Tl)	mg/L	<0.000010	<0.000010	0.000010	8558052
Dissolved Tin (Sn)	mg/L	<0.0050	<0.0050	0.0050	8558052
Dissolved Titanium (Ti)	mg/L	0.0243	0.122	0.0050	8558052
Dissolved Uranium (U)	mg/L	0.00280	0.00084	0.00010	8558052
Dissolved Vanadium (V)	mg/L	0.111	0.0641	0.0050	8558052
Dissolved Zinc (Zn)	mg/L	0.0057	<0.0050	0.0050	8558052
Dissolved Zirconium (Zr)	mg/L	0.00187	0.00286	0.00050	8558052

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference sample dilution required

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		QO6867	QO6868		
Sampling Date		2017/02/17 16:30	2017/02/17 15:30		
COC Number		516403-01-01	516403-01-01		
	UNITS	NLLD	OLWP	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	17.7	35.8	0.050	8556701
Dissolved Magnesium (Mg)	mg/L	40.6	77.6	0.050	8556701
Dissolved Potassium (K)	mg/L	86.9	78.4	0.050	8556701
Dissolved Sodium (Na)	mg/L	1200	1260	0.050	8556701
Dissolved Sulphur (S)	mg/L	147	39.7	3.0	8556701
RDL = Reportable Detection Limit					

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Maxxam ID		QO6863	QO6864	QO6865		QO6866		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00		2017/02/17 14:50		
COC Number		516403-01-01	516403-01-01	516403-01-01		516403-01-01		
	UNITS	MW13-1	MW13-2	MW05-1	RDL	M-C1	RDL	QC Batch
Calculated Parameters								
Total Hardness (CaCO3)	mg/L	109	124	288	0.50	2250	0.50	8556771
Elements								
Total Mercury (Hg)	ug/L	<0.010	<0.010	<0.010	0.010	0.112 (1)	0.020	8560374
Total Metals by ICPMS								
Total Aluminum (Al)	mg/L	11.7	9.01	31.3	0.0030	10.4	0.0060	8557331
Total Antimony (Sb)	mg/L	<0.00050	<0.00050	<0.00050	0.00050	<0.0010	0.0010	8557331
Total Arsenic (As)	mg/L	0.00195	0.00104	0.00169	0.00010	0.00205	0.00020	8557331
Total Barium (Ba)	mg/L	0.132	0.0667	0.177	0.0010	0.120	0.0020	8557331
Total Beryllium (Be)	mg/L	0.00013	<0.00010	0.00035	0.00010	<0.00020	0.00020	8557331
Total Bismuth (Bi)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	<0.0020	0.0020	8557331
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	0.050	1.21	0.10	8557331
Total Cadmium (Cd)	mg/L	0.000117	0.000095	0.000240	0.000010	0.000299	0.000020	8557331
Total Chromium (Cr)	mg/L	0.0073	0.0086	0.0204	0.0010	0.0439	0.0020	8557331
Total Cobalt (Co)	mg/L	0.00727	0.00519	0.0120	0.00020	0.00814	0.00040	8557331
Total Copper (Cu)	mg/L	0.0309	0.0236	0.153	0.00050	0.0505	0.0010	8557331
Total Iron (Fe)	mg/L	10.1	6.09	18.5	0.010	16.9	0.020	8557331
Total Lead (Pb)	mg/L	0.00160	0.00587	0.0118	0.00020	0.00347	0.00040	8557331
Total Lithium (Li)	mg/L	0.0056	<0.0020	0.0050	0.0020	0.0471	0.0040	8557331
Total Manganese (Mn)	mg/L	0.285	0.223	0.470	0.0010	0.286	0.0020	8557331
Total Molybdenum (Mo)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	0.0027	0.0020	8557331
Total Nickel (Ni)	mg/L	0.0074	0.0070	0.0190	0.0010	0.0318	0.0020	8557331
Total Selenium (Se)	mg/L	<0.00010	0.00016	<0.00010	0.00010	<0.00020	0.00020	8557331
Total Silicon (Si)	mg/L	22.9	19.7	40.7	0.10	20.6	0.20	8557331
Total Silver (Ag)	mg/L	0.000029	0.000022	0.000048	0.000020	0.000075	0.000040	8557331
Total Strontium (Sr)	mg/L	0.137	0.113	0.356	0.0010	3.39	0.0020	8557331
Total Thallium (Tl)	mg/L	0.000118	0.000038	0.000091	0.000010	0.000095	0.000020	8557331
Total Tin (Sn)	mg/L	<0.0050	<0.0050	<0.0050	0.0050	<0.010	0.010	8557331
Total Titanium (Ti)	mg/L	0.557	0.263	0.285	0.0050	0.561	0.010	8557331
Total Uranium (U)	mg/L	0.00139	0.00041	0.00230	0.00010	0.00059	0.00020	8557331
Total Vanadium (V)	mg/L	0.0238	0.0134	0.0666	0.0050	0.057	0.010	8557331
Total Zinc (Zn)	mg/L	0.0291	0.0172	0.0472	0.0050	0.065	0.010	8557331
Total Zirconium (Zr)	mg/L	<0.00050	<0.00050	<0.00050	0.00050	0.0011	0.0010	8557331

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference sample dilution required

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Maxxam ID		QO6863	QO6864	QO6865		QO6866		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30	2017/02/17 12:00		2017/02/17 14:50		
COC Number		516403-01-01	516403-01-01	516403-01-01		516403-01-01		
	UNITS	**MW13-1**	**MW13-2**	**MW05-1**	**RDL**	**M-C1**	**RDL**	**QC Batch**
Total Calcium (Ca)	mg/L	25.9	30.1	71.9	0.050	207	0.10	8556772
Total Magnesium (Mg)	mg/L	10.7	11.9	26.3	0.050	420	0.10	8556772
Total Potassium (K)	mg/L	5.58	2.20	5.65	0.050	122	0.10	8556772
Total Sodium (Na)	mg/L	12.1	9.51	19.3	0.050	3390	0.10	8556772
Total Sulphur (S)	mg/L	<3.0	<3.0	<3.0	3.0	296	6.0	8556772
RDL = Reportable Detection Limit								

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Maxxam ID		QO6867	QO6868		
Sampling Date		2017/02/17 16:30	2017/02/17 15:30		
COC Number		516403-01-01	516403-01-01		
	UNITS	NLLD	OLWP	RDL	QC Batch
Calculated Parameters					
Total Hardness (CaCO3)	mg/L	196	376	0.50	8556771
Elements					
Total Mercury (Hg)	ug/L	0.082 (1)	<0.020 (1)	0.020	8560374
Total Metals by ICPMS					
Total Aluminum (Al)	mg/L	0.315	0.0871	0.0030	8557331
Total Antimony (Sb)	mg/L	0.00397	<0.00050	0.00050	8557331
Total Arsenic (As)	mg/L	0.0269	0.00402	0.00010	8557331
Total Barium (Ba)	mg/L	0.0062	0.0049	0.0010	8557331
Total Beryllium (Be)	mg/L	<0.00010	<0.00010	0.00010	8557331
Total Bismuth (Bi)	mg/L	<0.0010	<0.0010	0.0010	8557331
Total Boron (B)	mg/L	3.40	1.62	0.050	8557331
Total Cadmium (Cd)	mg/L	0.000015	<0.000010	0.000010	8557331
Total Chromium (Cr)	mg/L	0.0039	0.0112	0.0010	8557331
Total Cobalt (Co)	mg/L	0.00035	0.00043	0.00020	8557331
Total Copper (Cu)	mg/L	<0.00050	<0.00050	0.00050	8557331
Total Iron (Fe)	mg/L	0.150	0.203	0.010	8557331
Total Lead (Pb)	mg/L	<0.00020	0.00041	0.00020	8557331
Total Lithium (Li)	mg/L	0.0078	0.0115	0.0020	8557331
Total Manganese (Mn)	mg/L	0.0471	0.0843	0.0010	8557331
Total Molybdenum (Mo)	mg/L	0.0350	<0.0010	0.0010	8557331
Total Nickel (Ni)	mg/L	0.0185	0.0375	0.0010	8557331
Total Selenium (Se)	mg/L	0.00020	0.00015	0.00010	8557331
Total Silicon (Si)	mg/L	20.5	11.8	0.10	8557331
Total Silver (Ag)	mg/L	<0.000020	<0.000020	0.000020	8557331
Total Strontium (Sr)	mg/L	0.0892	0.393	0.0010	8557331
Total Thallium (Tl)	mg/L	<0.000010	<0.000010	0.000010	8557331
Total Tin (Sn)	mg/L	<0.0050	<0.0050	0.0050	8557331
Total Titanium (Ti)	mg/L	0.0300	0.120	0.0050	8557331
Total Uranium (U)	mg/L	0.00231	0.00075	0.00010	8557331
Total Vanadium (V)	mg/L	0.108	0.0764	0.0050	8557331
Total Zinc (Zn)	mg/L	<0.0050	<0.0050	0.0050	8557331
Total Zirconium (Zr)	mg/L	0.00181	0.00248	0.00050	8557331

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference sample dilution required

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Maxxam ID		QO6867	QO6868		
Sampling Date		2017/02/17 16:30	2017/02/17 15:30		
COC Number		516403-01-01	516403-01-01		
	UNITS	NLLD	OLWP	RDL	QC Batch
Total Calcium (Ca)	mg/L	17.2	36.4	0.050	8556772
Total Magnesium (Mg)	mg/L	37.2	69.3	0.050	8556772
Total Potassium (K)	mg/L	83.1	76.9	0.050	8556772
Total Sodium (Na)	mg/L	1110	1110	0.050	8556772
Total Sulphur (S)	mg/L	137	36.7	3.0	8556772
RDL = Reportable Detection Limit					

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

SALINITY 4 PACKAGE FOR WATER (WATER)

Maxxam ID		QO6863		QO6864	QO6864		QO6865		
Sampling Date		2017/02/17 13:30		2017/02/17 10:30	2017/02/17 10:30		2017/02/17 12:00		
COC Number		516403-01-01		516403-01-01	516403-01-01		516403-01-01		
	UNITS	MW13-1	QC Batch	MW13-2	MW13-2 Lab-Dup	QC Batch	MW05-1	RDL	QC Batch
Misc. Inorganics									
Salinity	g/L	0.090	8558484	0.110	0.110	8558493	0.190	0.010	8558484
Anions									
Dissolved Sulphate (SO4)	mg/L	9.44	8558536	5.01		8557366	4.60	0.50	8557366
Dissolved Chloride (Cl)	mg/L	12	8558535	8.6		8557365	10	0.50	8557365
Physical Properties									
Conductivity	uS/cm	189	8558472	230	226	8558477	398	1.0	8558472
pH	pH	8.17	8558468	8.25		8558475	8.29		8558468

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		QO6866		QO6867			QO6868		
Sampling Date		2017/02/17 14:50		2017/02/17 16:30			2017/02/17 15:30		
COC Number		516403-01-01		516403-01-01			516403-01-01		
	UNITS	M-C1	RDL	NLLD	RDL	QC Batch	OLWP	RDL	QC Batch
Misc. Inorganics									
Salinity	g/L	11.2	0.010	2.69	0.010	8558484	2.96	0.010	8558493
Anions									
Dissolved Sulphate (SO4)	mg/L	781 (1)	5.0	375 (1)	5.0	8557366	106 (1)	5.0	8557364
Dissolved Chloride (Cl)	mg/L	6800 (1)	50	160	0.50	8558535	830 (1)	5.0	8557362
Physical Properties									
Conductivity	uS/cm	18700	1.0	4940	1.0	8558472	5410	1.0	8558477
pH	pH	8.25		9.52		8558468	8.97		8558475

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

GENERAL COMMENTS

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER) Comments

Sample QO6866 [M-C1] Polychlorinated Biphenyls: Detection limits raised due to matrix interference.
Sample QO6868 [OLWP] Polychlorinated Biphenyls: Detection limits raised due to matrix interference.

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER) Comments

Sample QO6866 [M-C1] Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference.

CSR TOTAL METALS IN WATER WITH CV HG (WATER) Comments

Sample QO6866 [M-C1] Elements by CRC ICPMS (total): RDL raised due to sample matrix interference.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

QUALITY ASSURANCE REPORT

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8557291	1,4-Difluorobenzene (sur.)	2017/02/20	92	70 - 130	99	70 - 130	100	%		
8557291	4-Bromofluorobenzene (sur.)	2017/02/20	95	70 - 130	106	70 - 130	103	%		
8557291	D4-1,2-Dichloroethane (sur.)	2017/02/20	90	70 - 130	98	70 - 130	101	%		
8557440	NONACHLOROBIPHENYL (sur.)	2017/02/21	87	50 - 130	76	50 - 130	71	%		
8559904	D10-ANTHRACENE (sur.)	2017/02/24	100	60 - 130	96	60 - 130	93	%		
8559904	D8-ACENAPHTHYLENE (sur.)	2017/02/24	113	50 - 130	97	50 - 130	96	%		
8559904	D8-NAPHTHALENE (sur.)	2017/02/24	100	50 - 130	90	50 - 130	88	%		
8559904	D9-Acridine	2017/02/24	99	50 - 130	98	50 - 130	89	%		
8559904	TERPHENYL-D14 (sur.)	2017/02/24	81	60 - 130	97	60 - 130	82	%		
8559910	O-TERPHENYL (sur.)	2017/02/23	97	50 - 130	101	50 - 130	97	%		
8557291	Benzene	2017/02/21	88	70 - 130	93	70 - 130	<0.40	ug/L	NC	30
8557291	Ethylbenzene	2017/02/21	98	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
8557291	m & p-Xylene	2017/02/21	100	70 - 130	95	70 - 130	<0.40	ug/L	NC	30
8557291	Methyl-tert-butylether (MTBE)	2017/02/21	83	70 - 130	88	70 - 130	<4.0	ug/L	NC	30
8557291	o-Xylene	2017/02/21	93	70 - 130	96	70 - 130	<0.40	ug/L	NC	30
8557291	Styrene	2017/02/21	99	70 - 130	103	70 - 130	<0.40	ug/L	NC	30
8557291	Toluene	2017/02/21	88	70 - 130	88	70 - 130	<0.40	ug/L	NC	30
8557291	VH C6-C10	2017/02/21			101	70 - 130	<300	ug/L	NC	30
8557291	Xylenes (Total)	2017/02/21					<0.40	ug/L	NC	30
8557331	Total Aluminum (Al)	2017/02/22	NC	80 - 120	114	80 - 120	<0.0030	mg/L	4.0	20
8557331	Total Antimony (Sb)	2017/02/22	104	80 - 120	97	80 - 120	<0.00050	mg/L	NC	20
8557331	Total Arsenic (As)	2017/02/22	105	80 - 120	98	80 - 120	<0.00010	mg/L	3.5	20
8557331	Total Barium (Ba)	2017/02/22	NC	80 - 120	95	80 - 120	<0.0010	mg/L	2.9	20
8557331	Total Beryllium (Be)	2017/02/22	103	80 - 120	101	80 - 120	<0.00010	mg/L	NC	20
8557331	Total Bismuth (Bi)	2017/02/22	98	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20
8557331	Total Boron (B)	2017/02/22	102	80 - 120	105	80 - 120	<0.050	mg/L	NC	20
8557331	Total Cadmium (Cd)	2017/02/22	103	80 - 120	97	80 - 120	<0.000010	mg/L	NC	20
8557331	Total Chromium (Cr)	2017/02/22	99	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20
8557331	Total Cobalt (Co)	2017/02/22	99	80 - 120	96	80 - 120	<0.00020	mg/L	NC	20
8557331	Total Copper (Cu)	2017/02/22	101	80 - 120	100	80 - 120	<0.00050	mg/L	4.0	20
8557331	Total Iron (Fe)	2017/02/22	NC	80 - 120	105	80 - 120	<0.010	mg/L	4.4	20
8557331	Total Lead (Pb)	2017/02/22	104	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8557331	Total Lithium (Li)	2017/02/22	105	80 - 120	96	80 - 120	<0.0020	mg/L	NC	20
8557331	Total Manganese (Mn)	2017/02/22	NC	80 - 120	96	80 - 120	<0.0010	mg/L	1.2	20
8557331	Total Molybdenum (Mo)	2017/02/22	110	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20
8557331	Total Nickel (Ni)	2017/02/22	102	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20
8557331	Total Selenium (Se)	2017/02/22	107	80 - 120	106	80 - 120	<0.00010	mg/L	NC	20
8557331	Total Silicon (Si)	2017/02/22					<0.10	mg/L	7.2	20
8557331	Total Silver (Ag)	2017/02/22	104	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8557331	Total Strontium (Sr)	2017/02/22	NC	80 - 120	96	80 - 120	<0.0010	mg/L	1.8	20
8557331	Total Thallium (Tl)	2017/02/22	104	80 - 120	98	80 - 120	<0.000010	mg/L	NC	20
8557331	Total Tin (Sn)	2017/02/22	82	80 - 120	96	80 - 120	<0.0050	mg/L	NC	20
8557331	Total Titanium (Ti)	2017/02/22	117	80 - 120	91	80 - 120	<0.0050	mg/L	NC	20
8557331	Total Uranium (U)	2017/02/22	101	80 - 120	96	80 - 120	<0.00010	mg/L	NC	20
8557331	Total Vanadium (V)	2017/02/22	102	80 - 120	98	80 - 120	<0.0050	mg/L	NC	20
8557331	Total Zinc (Zn)	2017/02/22	101	80 - 120	97	80 - 120	<0.0050	mg/L	NC	20
8557331	Total Zirconium (Zr)	2017/02/22					<0.00050	mg/L	NC	20
8557362	Dissolved Chloride (Cl)	2017/02/20	NC	80 - 120	98	80 - 120	0.56, RDL=0.50	mg/L	0.24	20
8557364	Dissolved Sulphate (SO4)	2017/02/20			96	80 - 120	0.51, RDL=0.50	mg/L		
8557365	Dissolved Chloride (Cl)	2017/02/20			100	80 - 120	<0.50	mg/L		
8557366	Dissolved Sulphate (SO4)	2017/02/20	117	80 - 120	97	80 - 120	<0.50	mg/L	2.9	20
8557440	Aroclor 1016	2017/02/21					<0.000050	mg/L	NC	30
8557440	Aroclor 1221	2017/02/21					<0.000050	mg/L	NC	30
8557440	Aroclor 1232	2017/02/21					<0.000050	mg/L	NC	30
8557440	Aroclor 1242	2017/02/21					<0.000050	mg/L	NC	30
8557440	Aroclor 1248	2017/02/21					<0.000050	mg/L	NC	30
8557440	Aroclor 1254	2017/02/21					<0.000050	mg/L	NC	30
8557440	Aroclor 1260	2017/02/21	84	50 - 130	74	50 - 130	<0.000050	mg/L	NC	30
8557440	Aroclor 1262	2017/02/21					<0.000050	mg/L	NC	30
8557440	Aroclor 1268	2017/02/21					<0.000050	mg/L	NC	30
8557440	Total Aroclors	2017/02/21					<0.000050	mg/L	NC	30
8557987	Chemical Oxygen Demand	2017/02/22	NC	80 - 120	101	80 - 120	<10	mg/L	2.3	20
8558052	Dissolved Aluminum (Al)	2017/02/22	105	80 - 120	109	80 - 120	<0.0030	mg/L		
8558052	Dissolved Antimony (Sb)	2017/02/22	100	80 - 120	97	80 - 120	<0.00050	mg/L		

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8558052	Dissolved Arsenic (As)	2017/02/22	107	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8558052	Dissolved Barium (Ba)	2017/02/22	NC	80 - 120	99	80 - 120	<0.0010	mg/L		
8558052	Dissolved Beryllium (Be)	2017/02/22	100	80 - 120	94	80 - 120	<0.00010	mg/L		
8558052	Dissolved Bismuth (Bi)	2017/02/22	92	80 - 120	100	80 - 120	<0.0010	mg/L		
8558052	Dissolved Boron (B)	2017/02/22	120	80 - 120	103	80 - 120	<0.050	mg/L		
8558052	Dissolved Cadmium (Cd)	2017/02/22	99	80 - 120	98	80 - 120	<0.000010	mg/L	NC	20
8558052	Dissolved Chromium (Cr)	2017/02/22	93	80 - 120	101	80 - 120	<0.0010	mg/L		
8558052	Dissolved Cobalt (Co)	2017/02/22	91	80 - 120	101	80 - 120	<0.00020	mg/L		
8558052	Dissolved Copper (Cu)	2017/02/22	85	80 - 120	99	80 - 120	<0.00020	mg/L		
8558052	Dissolved Iron (Fe)	2017/02/22	96	80 - 120	108	80 - 120	<0.0050	mg/L	NC	20
8558052	Dissolved Lead (Pb)	2017/02/22	92	80 - 120	99	80 - 120	<0.00020	mg/L		
8558052	Dissolved Lithium (Li)	2017/02/22	95	80 - 120	90	80 - 120	<0.0020	mg/L		
8558052	Dissolved Manganese (Mn)	2017/02/22	NC	80 - 120	103	80 - 120	<0.0010	mg/L		
8558052	Dissolved Molybdenum (Mo)	2017/02/22	NC	80 - 120	103	80 - 120	<0.0010	mg/L		
8558052	Dissolved Nickel (Ni)	2017/02/22	89	80 - 120	101	80 - 120	<0.0010	mg/L		
8558052	Dissolved Selenium (Se)	2017/02/22	109	80 - 120	104	80 - 120	<0.00010	mg/L		
8558052	Dissolved Silicon (Si)	2017/02/22					<0.10	mg/L		
8558052	Dissolved Silver (Ag)	2017/02/22	99	80 - 120	105	80 - 120	<0.000020	mg/L		
8558052	Dissolved Strontium (Sr)	2017/02/22	NC	80 - 120	92	80 - 120	<0.0010	mg/L		
8558052	Dissolved Thallium (Tl)	2017/02/22	97	80 - 120	98	80 - 120	<0.000010	mg/L		
8558052	Dissolved Tin (Sn)	2017/02/22	99	80 - 120	99	80 - 120	<0.0050	mg/L		
8558052	Dissolved Titanium (Ti)	2017/02/22	98	80 - 120	94	80 - 120	<0.0050	mg/L		
8558052	Dissolved Uranium (U)	2017/02/22	93	80 - 120	94	80 - 120	<0.00010	mg/L		
8558052	Dissolved Vanadium (V)	2017/02/22	98	80 - 120	100	80 - 120	<0.0050	mg/L		
8558052	Dissolved Zinc (Zn)	2017/02/22	96	80 - 120	103	80 - 120	<0.0050	mg/L		
8558052	Dissolved Zirconium (Zr)	2017/02/22					<0.00050	mg/L		
8558133	Tannins and Lignins	2017/02/23	87	80 - 120	94	80 - 120	<0.10	mg/L	NC	20
8558235	Total Ammonia (N)	2017/02/21	108	80 - 120	95	80 - 120	<0.0050	mg/L	NC	20
8558468	pH	2017/02/21			101	97 - 103			0.96	N/A
8558472	Conductivity	2017/02/21			99	80 - 120	<1.0	uS/cm	NC	20
8558475	pH	2017/02/21			101	97 - 103				
8558477	Conductivity	2017/02/21			99	80 - 120	<1.0	uS/cm	1.8	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8558484	Salinity	2017/02/21					<0.010	g/L		
8558493	Salinity	2017/02/21					<0.010	g/L	0	25
8558535	Dissolved Chloride (Cl)	2017/02/21			106	80 - 120	0.64, RDL=0.50	mg/L		
8558536	Dissolved Sulphate (SO4)	2017/02/21	NC	80 - 120	101	80 - 120	<0.50	mg/L	0.59	20
8559904	2-Methylnaphthalene	2017/02/24	101	50 - 130	95	50 - 130	<0.10	ug/L	NC	40
8559904	Acenaphthene	2017/02/24	100	50 - 130	96	50 - 130	<0.050	ug/L	NC	40
8559904	Acenaphthylene	2017/02/24	105	50 - 130	97	50 - 130	<0.050	ug/L	NC	40
8559904	Acridine	2017/02/24	101	50 - 130	95	50 - 130	<0.050	ug/L	NC	40
8559904	Anthracene	2017/02/24	102	60 - 130	98	60 - 130	<0.010	ug/L	NC	40
8559904	Benzo(a)anthracene	2017/02/24	93	60 - 130	92	60 - 130	<0.010	ug/L	NC	40
8559904	Benzo(a)pyrene	2017/02/24	98	60 - 130	97	60 - 130	<0.0050	ug/L	NC	40
8559904	Benzo(b&j)fluoranthene	2017/02/24	102	60 - 130	96	60 - 130	<0.030	ug/L	NC	40
8559904	Benzo(g,h,i)perylene	2017/02/24	90	60 - 130	93	60 - 130	<0.050	ug/L	NC	40
8559904	Benzo(k)fluoranthene	2017/02/24	97	60 - 130	103	60 - 130	<0.050	ug/L	NC	40
8559904	Chrysene	2017/02/24	98	60 - 130	97	60 - 130	<0.050	ug/L	NC	40
8559904	Dibenz(a,h)anthracene	2017/02/24	90	60 - 130	95	60 - 130	<0.0030	ug/L	NC	40
8559904	Fluoranthene	2017/02/24	79	60 - 130	92	60 - 130	<0.020	ug/L	NC	40
8559904	Fluorene	2017/02/24	113	50 - 130	95	50 - 130	<0.050	ug/L	NC	40
8559904	Indeno(1,2,3-cd)pyrene	2017/02/24	92	60 - 130	86	60 - 130	<0.050	ug/L	NC	40
8559904	Naphthalene	2017/02/24	96	50 - 130	91	50 - 130	<0.10	ug/L	NC	40
8559904	Phenanthrene	2017/02/24	100	60 - 130	94	60 - 130	<0.050	ug/L	NC	40
8559904	Pyrene	2017/02/24	80	60 - 130	93	60 - 130	<0.020	ug/L	NC	40
8559904	Quinoline	2017/02/24	114	50 - 130	112	50 - 130	<0.020	ug/L	NC	40
8559910	EPH (C10-C19)	2017/02/23	91	50 - 130	97	50 - 130	<0.20	mg/L	NC	30
8559910	EPH (C19-C32)	2017/02/23	95	50 - 130	90	50 - 130	<0.20	mg/L	NC	30
8560224	Dissolved Mercury (Hg)	2017/02/23	97	80 - 120	103	80 - 120	<0.010	ug/L	NC	20
8560374	Total Mercury (Hg)	2017/02/23	83	80 - 120	93	80 - 120	<0.010	ug/L	NC	20

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

QUALITY ASSURANCE REPORT(CONT'D)

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8561939	Phenols	2017/02/24	88	80 - 120	91	80 - 120	<0.0010	mg/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

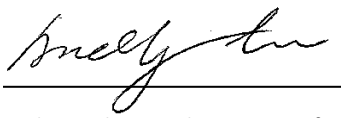
Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B711941
Report Date: 2017/02/28

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

Jingyuan Song, QP, Organics – Senior Analyst

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-free:800-563-6266 Fax:(604) 731 2386 www.maxxam.ca

Chain Of Custody Record

Page 1 of 1

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#5950 WATERLINE RESOURCES INC.	Company Name		Quotation #	B51832	Maxxam Job #	Bottle Order #:
Contact Name	Accounts Payable	Contact Name	DALTON PAJAK	P.O. #		B711941	516403
Address	UNIT D 2301 MCCULLOUGH RD. Nanaimo BC V9S 4M8	Address		Project #	2719-16-001	Chain Of Custody Record	Project Manager
Phone	(250) 585-~~0801~~ x 9102 Fax:	Phone	(250) 585-~~0802~~ x 9102 Fax:	Project Name		C#516403-01-01	Veronica De Guzman
Email	info@waterlineresources.com	Email	dpajak@waterlineresources.com; blennox@waterlinere	Site #			
				Sampled By			

Regulatory Criteria:
- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other

Special Instructions

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: (will be applied if Rush TAT is not specified) X

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

1 DAY ☐ 2 Day ☐ 3 Day ☐ Date Required: ☐

Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	BTEX/VPH	LEPH/HEPH with PAH	TOTAL PHENOLS	PCB	DISSOLVED METALS + HG	TOTAL METALS + HG	COD, Ammonia	TANNINS + LIGNINS	RFA	DETAILED SALINITY	# of Bottles	Comments
1		MW13-1	17/02/16	1330		✓	X	X	X	X	X	X	X	X	X	X	14	
2		~~MW13-1 dup~~																
3		MW13-2	17/02/16	1030		✓	X	X	X	X	X	X	X	X	X	X	14	
4		MW05-1	17/02/16	1200		✓	X	X	X	X	X	X	X	X	X	X	14	
5		M-C1	17/02/16	1450		✓	X	X	X	X	X	X	X	X	X	X	14	
6		NLLD	17/02/16	1630		✓	X	X	X	X	X	X	X	X	X	X	14	
7		OLWP	17/02/16	1530		✓	X	X	X	X	X	X	X	X	X	X	14	
8																		
9																		
10																		

B711941_COC

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Thomy Scott Thomy Scott	17/02/17	10:15	Yuan pens Lin	2017/02/18	12:30		☐	1.1.1, 1.1.1.	☐ Yes ☑ No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

3.1.1

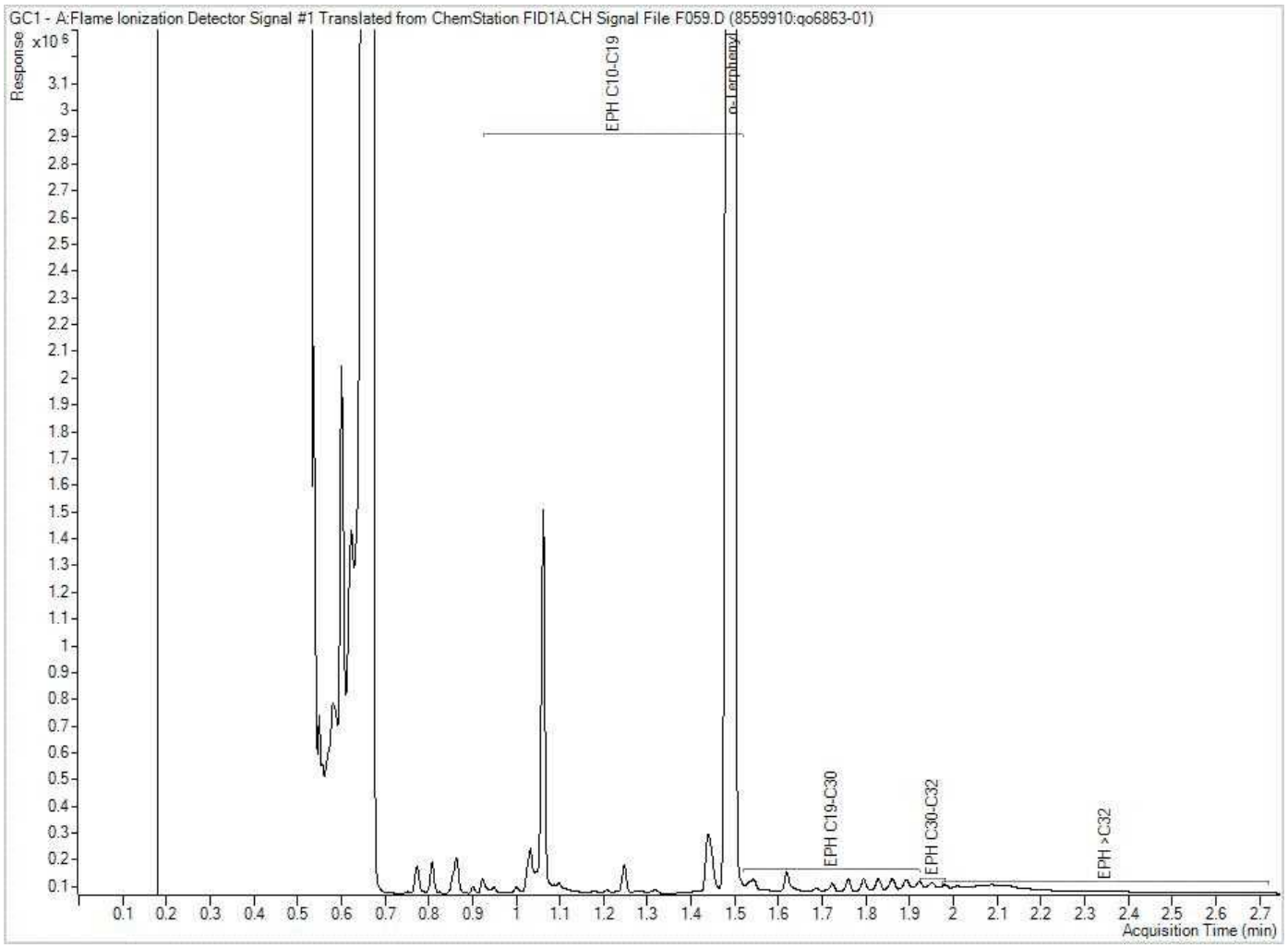
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B711941
Report Date: 2017/02/28
Maxxam Sample: QO6863

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Client ID: MW13-1

EPH in Water when PAH required Chromatogram

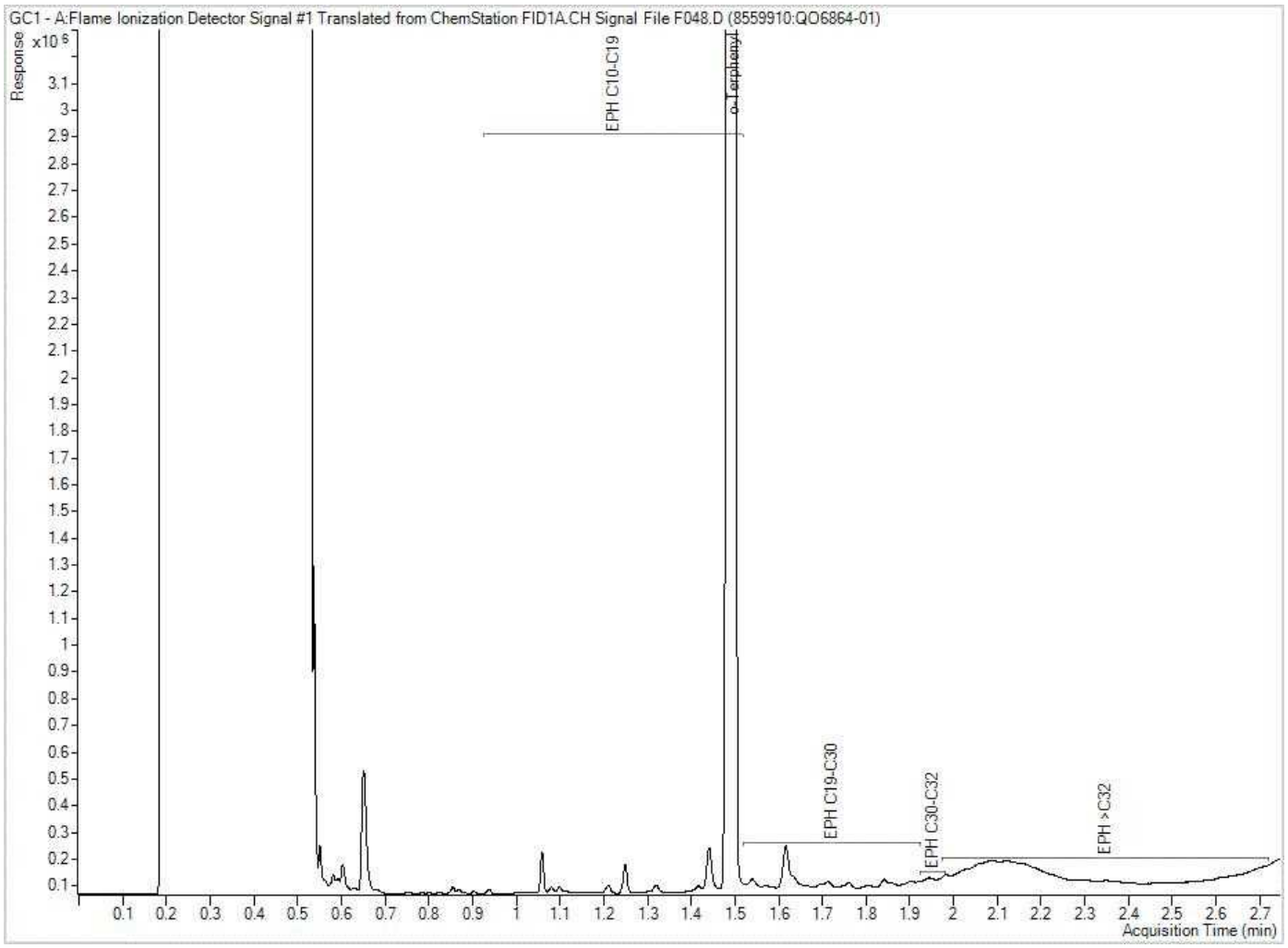


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B711941
Report Date: 2017/02/28
Maxxam Sample: QO6864

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Client ID: MW13-2

EPH in Water when PAH required Chromatogram

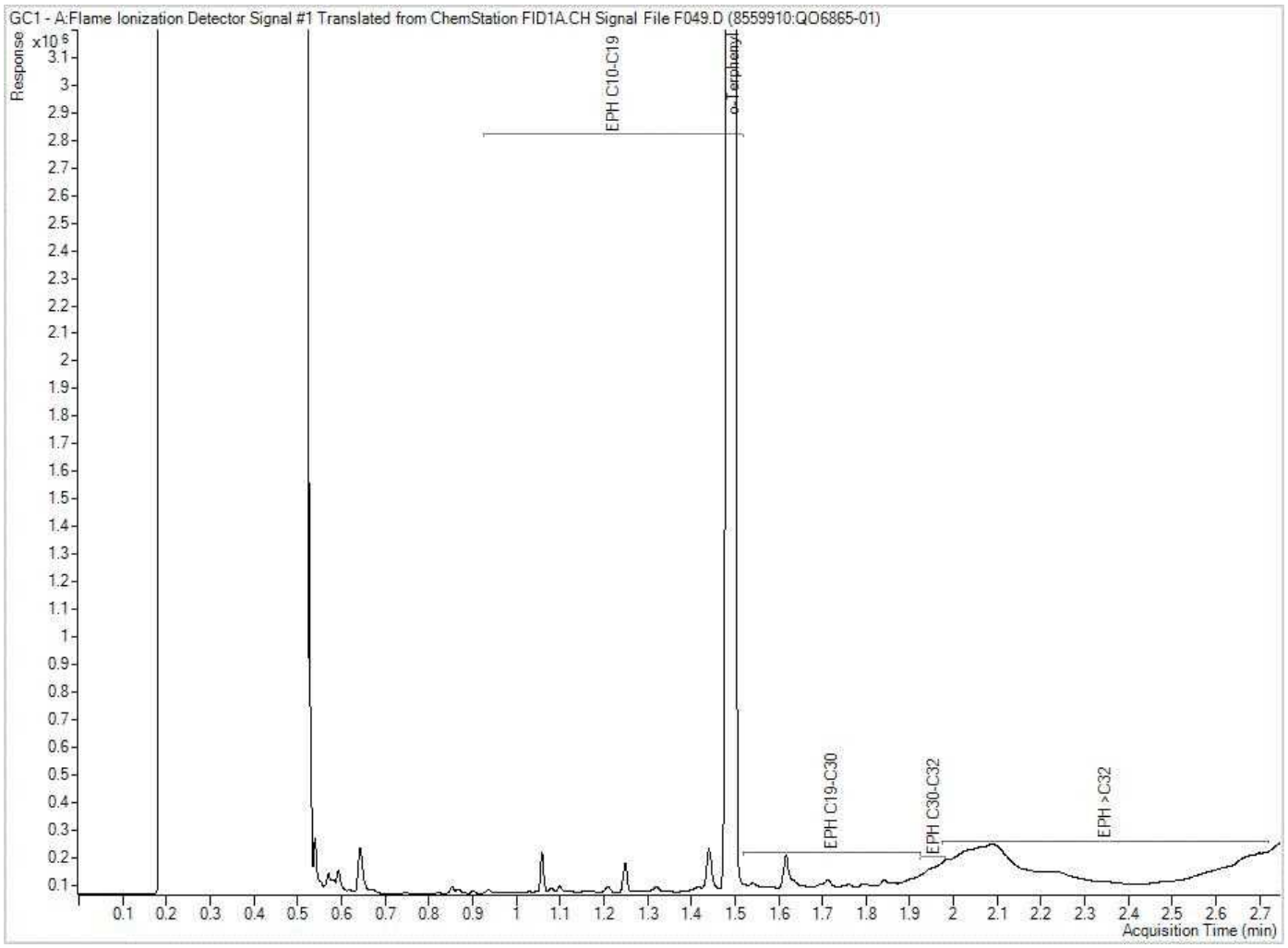


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B711941
Report Date: 2017/02/28
Maxxam Sample: QO6865

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Client ID: MW05-1

EPH in Water when PAH required Chromatogram

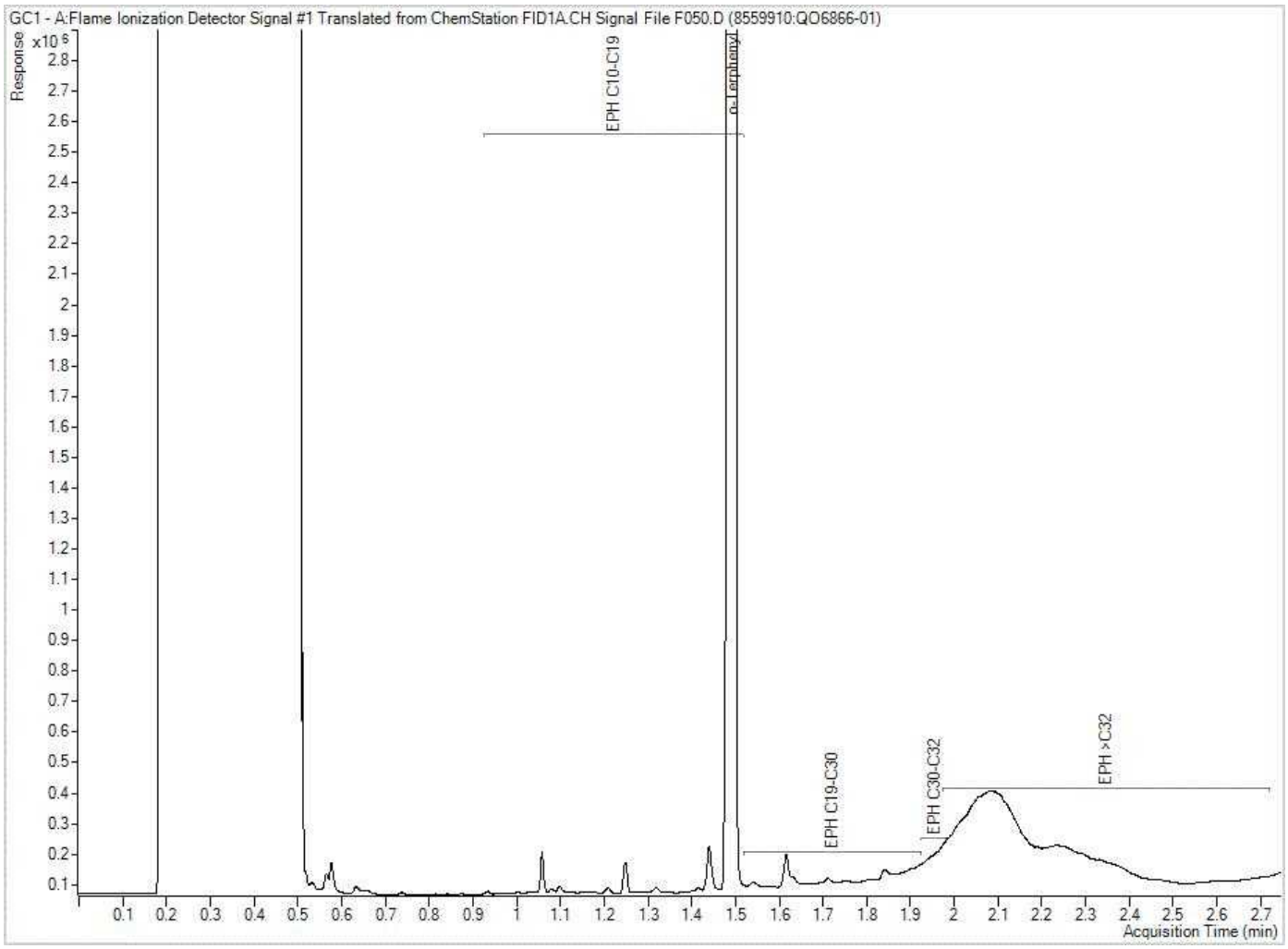


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B711941
Report Date: 2017/02/28
Maxxam Sample: QO6866

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Client ID: M-C1

EPH in Water when PAH required Chromatogram

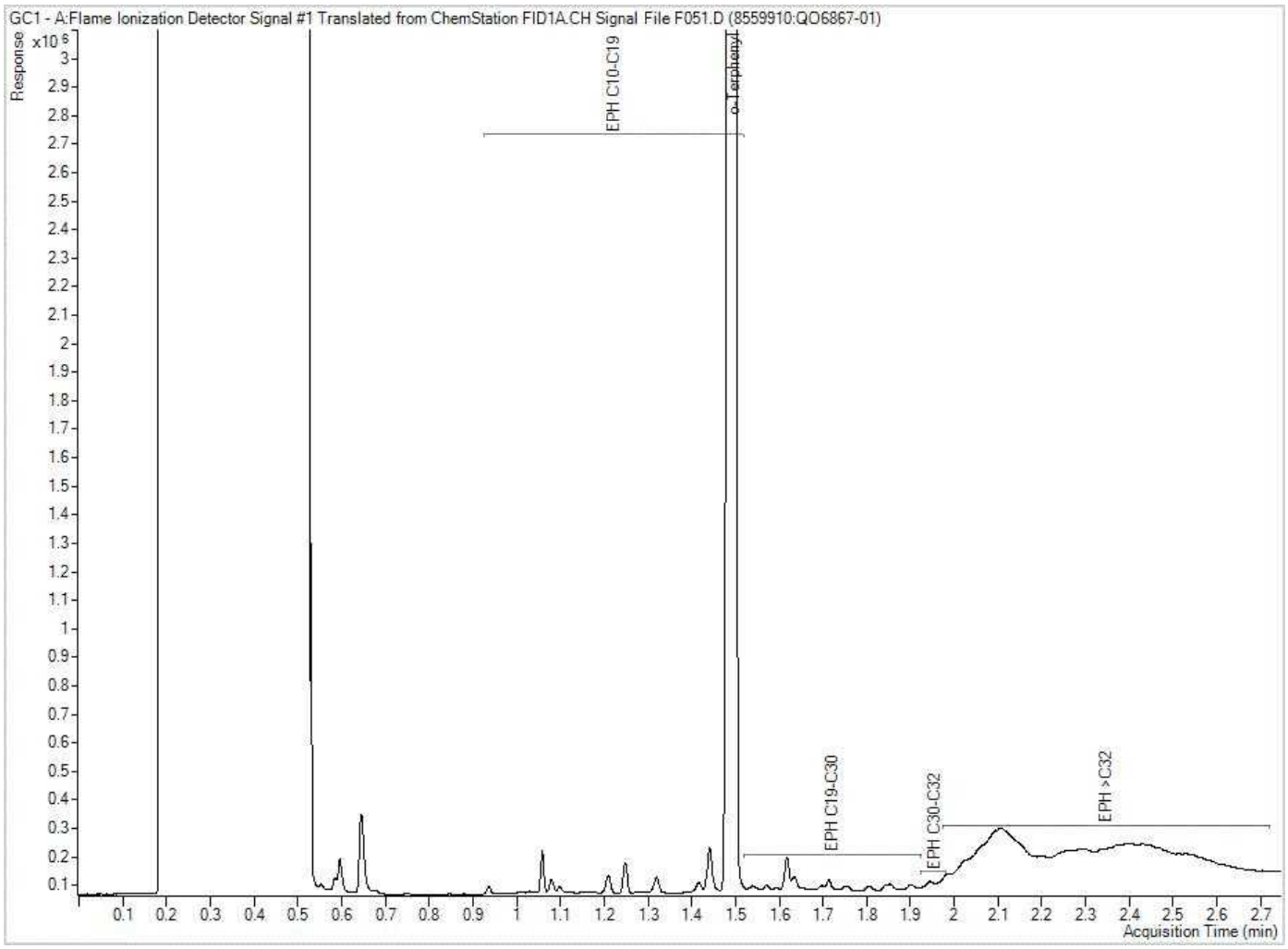


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B711941
Report Date: 2017/02/28
Maxxam Sample: QO6867

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Client ID: NLLD

EPH in Water when PAH required Chromatogram

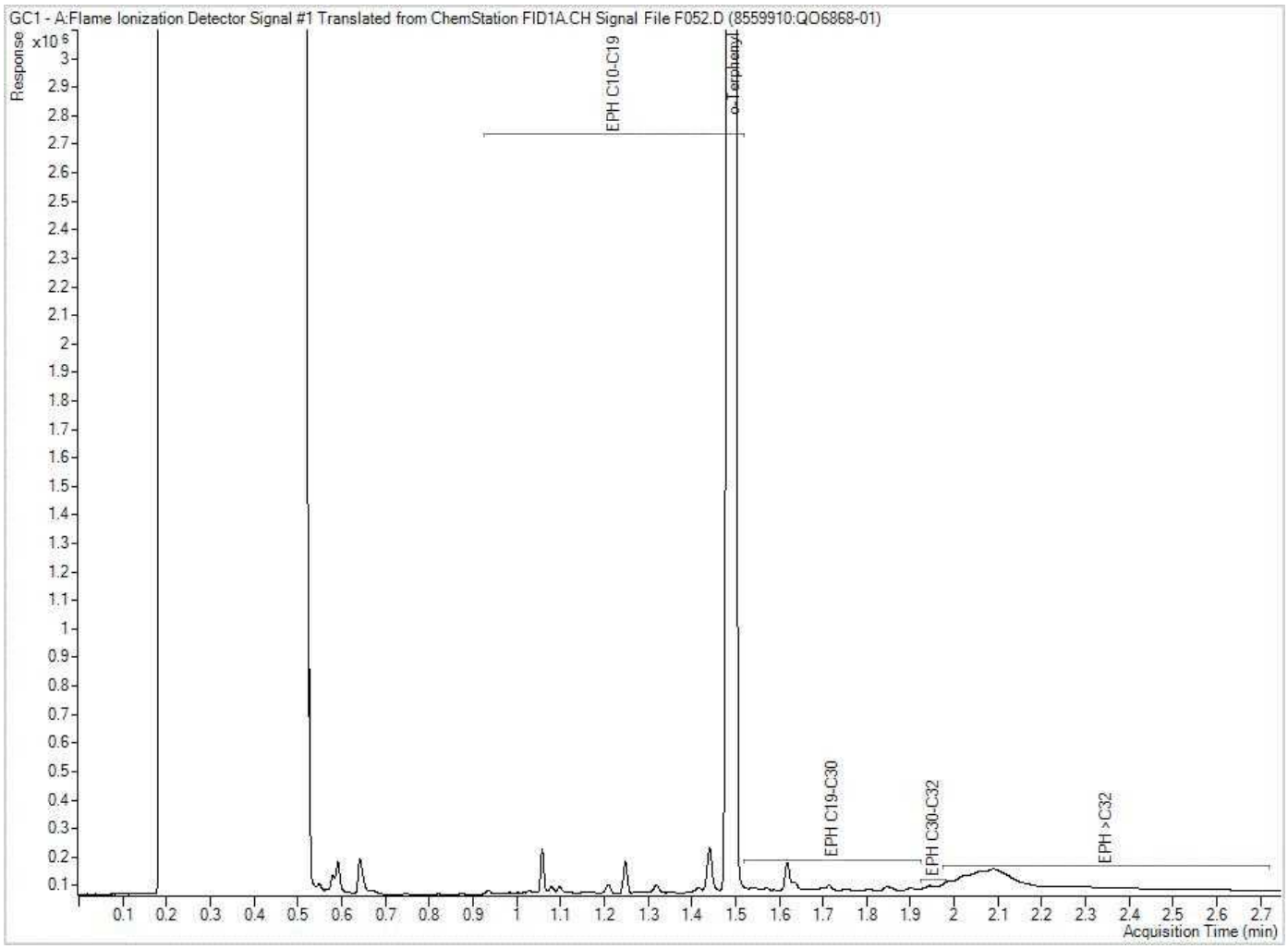


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B711941
Report Date: 2017/02/28
Maxxam Sample: QO6868

WATERLINE RESOURCES INC.
Client Project #: 2719-16-001
Client ID: OLWP

EPH in Water when PAH required Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: B711941
Your C.O.C. #: na

Attention:Veronica De Guzman

MAXXAM ANALYTICS
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2017/02/28
Report #: R2253395
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B709209
Received: 2017/02/21, 13:10

Sample Matrix: WATER
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary Reference
Resin and Fatty Acids*	4	2017/02/22	2017/02/24	STL SOP-00152	MA414-Aci-g-r-1.0R3m
Resin and Fatty Acids*	2	2017/02/27	2017/02/28	STL SOP-00152	MA414-Aci-g-r-1.0R3m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

* Maxxam is accredited as per the MDDELCC program.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Your Project #: B711941
Your C.O.C. #: na

Attention:Veronica De Guzman

MAXXAM ANALYTICS
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2017/02/28
Report #: R2253395
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B709209
Received: 2017/02/21, 13:10

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Sophie Retailleau, Project Manager
Email: SRetailleau@maxxam.ca
Phone# (514) 448-9001
==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

RESIN AND FATTY ACIDS BY GCMS (WATER)

Maxxam ID		DQ8738	DQ8739		DQ8740		DQ8741		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30		2017/02/17 12:00		2017/02/17 14:50		
COC Number		na	na		na		na		
	Units	QO6863-MW13-1	QO6864-MW13-2	QC Batch	QO6865-MW05-1	QC Batch	QO6866-MC-1	RDL	QC Batch
Palmitoleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	45	3.0	1729878
Palmitic acid	ug/L	<30	<30	1729878	<30	1731244	<30	30	1729878
Linoleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	7.1	3.0	1729878
Linolenic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Oleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	3.9	3.0	1729878
Stearic acid	ug/L	<30	<30	1729878	<30	1731244	<30	30	1729878
9,10-Dichlorostearic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Total Fatty Acids	ug/L	<30	<30	1729878	<30	1731244	56	30	1729878
Pimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Sandaracopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Isopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Palustric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Levopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Dehydroabietic acid	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Abietic acid	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Neoabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
14-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
12-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Total Resin Acids	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Surrogate Recovery (%)									
O-Methylpodocarpic acid	%	103	96	1729878	88	1731244	97	N/A	1729878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

2017/02/28 16:52

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

RESIN AND FATTY ACIDS BY GCMS (WATER)

Maxxam ID		DQ8742		DQ8743		
Sampling Date		2017/02/17 16:30		2017/02/17 15:30		
COC Number		na		na		
	Units	**QO6867-NLLD**	**QC Batch**	**QO6868-OLWP**	**RDL**	**QC Batch**
Palmitoleic acid	ug/L	<3.0	1731244	3.5	3.0	1729878
Palmitic acid	ug/L	32	1731244	<30	30	1729878
Linoleic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Linolenic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Oleic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Stearic acid	ug/L	<30	1731244	<30	30	1729878
9,10-Dichlorostearic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Total Fatty Acids	ug/L	32	1731244	<30	30	1729878
Pimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Sandaracopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Isopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Palustric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Levopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Dehydroabietic acid	ug/L	<5.0	1731244	<5.0	5.0	1729878
Abietic acid	ug/L	<5.0	1731244	<5.0	5.0	1729878
Neoabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
14-Chlorodehydroabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
12-Chlorodehydroabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Total Resin Acids	ug/L	<5.0	1731244	<5.0	5.0	1729878
Surrogate Recovery (%)						
O-Methylpodocarpic acid	%	96	1731244	81	N/A	1729878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD

RESIN AND FATTY ACIDS BY GCMS (WATER)

Please note that the results have not been corrected for QC recoveries (spiked blank and method blank) nor for the surrogates.

The total indicated is calculated only for the requested parameters.

Un-rounded results are used in the totals "Total Resin Acids"and "Total Fatty Acids" calculation. These totals results are then rounded to two significant figures.

Results relate only to the items tested.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
1729878	ADR	Spiked Blank	O-Methylpodocarpic acid	2017/02/24		106	%	60 - 130
			Palmitoleic acid	2017/02/24		115	%	60 - 130
			Palmitic acid	2017/02/24		146 (1)	%	60 - 130
			Linoleic acid	2017/02/24		101	%	60 - 130
			Linolenic acid	2017/02/24		93	%	60 - 130
			Oleic acid	2017/02/24		120	%	60 - 130
			Stearic acid	2017/02/24		138 (1)	%	60 - 130
			9,10-Dichlorostearic acid	2017/02/24		111	%	60 - 130
			Pimaric acid	2017/02/24		111	%	60 - 130
			Sandaracopimaric acid	2017/02/24		118	%	60 - 130
			Isopimaric acid	2017/02/24		114	%	60 - 130
			Palustric acid	2017/02/24		109	%	60 - 130
			Levopimaric acid	2017/02/24		105	%	60 - 130
			Dehydroabietic acid	2017/02/24		108	%	60 - 130
			Abietic acid	2017/02/24		151 (1)	%	60 - 130
			Neoabietic acid	2017/02/24		151 (1)	%	60 - 130
			14-Chlorodehydroabietic acid	2017/02/24		124	%	60 - 130
			12-Chlorodehydroabietic acid	2017/02/24		123	%	60 - 130
1729878	ADR	Method Blank	O-Methylpodocarpic acid	2017/02/24		101	%	60 - 130
			Palmitoleic acid	2017/02/24	<3.0		ug/L	
			Palmitic acid	2017/02/24	<30		ug/L	
			Linoleic acid	2017/02/24	<3.0		ug/L	
			Linolenic acid	2017/02/24	<3.0		ug/L	
			Oleic acid	2017/02/24	<3.0		ug/L	
			Stearic acid	2017/02/24	<30		ug/L	
			9,10-Dichlorostearic acid	2017/02/24	<3.0		ug/L	
			Total Fatty Acids	2017/02/24	<30		ug/L	
			Pimaric acid	2017/02/24	<3.0		ug/L	
			Sandaracopimaric acid	2017/02/24	<3.0		ug/L	
			Isopimaric acid	2017/02/24	<3.0		ug/L	
			Palustric acid	2017/02/24	<3.0		ug/L	
			Levopimaric acid	2017/02/24	<3.0		ug/L	
			Dehydroabietic acid	2017/02/24	<5.0		ug/L	
			Abietic acid	2017/02/24	<5.0		ug/L	
			Neoabietic acid	2017/02/24	<3.0		ug/L	
			14-Chlorodehydroabietic acid	2017/02/24	<3.0		ug/L	
			12-Chlorodehydroabietic acid	2017/02/24	<3.0		ug/L	
			Total Resin Acids	2017/02/24	<5.0		ug/L	
1731244	CB5	Spiked Blank	O-Methylpodocarpic acid	2017/02/28		95	%	60 - 130
			Palmitoleic acid	2017/02/28		82	%	60 - 130
			Palmitic acid	2017/02/28		115	%	60 - 130
			Linoleic acid	2017/02/28		63	%	60 - 130
			Linolenic acid	2017/02/28		62	%	60 - 130
			Oleic acid	2017/02/28		81	%	60 - 130
			Stearic acid	2017/02/28		104	%	60 - 130
			9,10-Dichlorostearic acid	2017/02/28		74	%	60 - 130
			Pimaric acid	2017/02/28		84	%	60 - 130
			Sandaracopimaric acid	2017/02/28		97	%	60 - 130
			Isopimaric acid	2017/02/28		90	%	60 - 130
			Palustric acid	2017/02/28		80	%	60 - 130
			Levopimaric acid	2017/02/28		65	%	60 - 130
			Dehydroabietic acid	2017/02/28		84	%	60 - 130
			Abietic acid	2017/02/28		145 (1)	%	60 - 130

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Neoabietic acid	2017/02/28		100	%	60 - 130
			14-Chlorodehydroabietic acid	2017/02/28		94	%	60 - 130
			12-Chlorodehydroabietic acid	2017/02/28		96	%	60 - 130
1731244	CB5	Method Blank	O-Methylpodocarpic acid	2017/02/28		98	%	60 - 130
			Palmitoleic acid	2017/02/28	<3.0		ug/L	
			Palmitic acid	2017/02/28	<30		ug/L	
			Linoleic acid	2017/02/28	<3.0		ug/L	
			Linolenic acid	2017/02/28	<3.0		ug/L	
			Oleic acid	2017/02/28	<3.0		ug/L	
			Stearic acid	2017/02/28	<30		ug/L	
			9,10-Dichlorostearic acid	2017/02/28	<3.0		ug/L	
			Total Fatty Acids	2017/02/28	<30		ug/L	
			Pimaric acid	2017/02/28	<3.0		ug/L	
			Sandaracopimaric acid	2017/02/28	<3.0		ug/L	
			Isopimaric acid	2017/02/28	<3.0		ug/L	
			Palustric acid	2017/02/28	<3.0		ug/L	
			Levopimaric acid	2017/02/28	<3.0		ug/L	
			Dehydroabietic acid	2017/02/28	<5.0		ug/L	
			Abietic acid	2017/02/28	<5.0		ug/L	
			Neoabietic acid	2017/02/28	<3.0		ug/L	
			14-Chlorodehydroabietic acid	2017/02/28	<3.0		ug/L	
			12-Chlorodehydroabietic acid	2017/02/28	<3.0		ug/L	
			Total Resin Acids	2017/02/28	<5.0		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

FUNDAMENTAL LABORATORY ACCEPTANCE GUIDELINE

Invoice To:
MAXXAM ANALYTICS
BURNABY
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5
Client Contact:
Veronica De Guzman

Maxxam Job #:	B709209
Date Received:	2017/02/21
Your C.O.C. #:	na
Your Project #:	B711941
Maxxam Project Manager:	Sophie Retailleau
Quote #	B20512

No discrepancies noted.

Report Comments

Received Date:	**2017/02/21**	**Time:**	**13:10**	**By:**	
Inspected Date:		**Time:**		**By:**	
FLAG Created Date:		**Time:**		**By:**	

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Caroline Bougie, B.Sc. Chemist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam
A Bureau Veritas Group Company

Sent to: Maxxam Mont
889 Montee d
Viille St-Laurer
Tel: (514) 448

B709209_COC

M INTERLAB CHAIN OF CUSTODY RECORD

COC # B711941-QUEV-01-01

REPORT INFORMATION	
Company:	Maxxam
Address:	4606 Canada Way, Burnaby, British Columbia, V5G 1K5
Contact Name:	Veronica De Guzman
Email:	VDeGuzman@maxxam.ca, customerservicebc@maxxamanalytics.com
Phone:	
Maxxam Project #:	B711941
Client Invoice To:	WATERLINE RESOURCES INC. (5950)
Client Report To:	WATERLINE RESOURCES INC. (5950) Incl. on Report? Yes / No

ANALYSIS REQUESTED

Job Barcode Label

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	RFA Water Subcontract										ADDITIONAL SAMPLE INFORMATION
1	QO6863-MW13-1	WATER	2017/02/17	13:30		1	X										(P: 12)
2	QO6864-MW13-2	WATER	2017/02/17	10:30		1	X										(P: 12)
3	QO6865-MW05-1	WATER	2017/02/17	12:00		1	X										(P: 12)
4	QO6866-M-C1	WATER	2017/02/17	14:50		1	X										(P: 12)
5	QO6867-NLLD	WATER	2017/02/17	16:30		1	X										(P: 12)
6	QO6868-OLWP	WATER	2017/02/17	15:30		1	X										(P: 12)
7																	
8																	
9																	
10																	

SITE LOCATION:

SITE #:

PROJECT #:
2719-16-001

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Maxxam immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
Excel Export (csv) (A004)

TURNAROUND TIME
☐ Rush Required
2017/02/27
Date Required
Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓					
Custody Seal Intact	✓					
Cooling Media Present	✓					
				3	1	4

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RECEIVING LAB USE ONLY
Maxxam Job #

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. ANTONIUS BENGE TOMAS	2017 02 20	14:00	1 Gm Giuseppina MARTUCCI	2017-02-21	13:10		
2 Gm Giuseppina MARTUCCI	2017-02-21	13:10	2				

Your Project #: B711941
Your C.O.C. #: na

Attention:Veronica De Guzman

MAXXAM ANALYTICS
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2017/02/28
Report #: R2253395
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B709209
Received: 2017/02/21, 13:10

Sample Matrix: WATER
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary Reference
Resin and Fatty Acids*	4	2017/02/22	2017/02/24	STL SOP-00152	MA414-Aci-g-r-1.0R3m
Resin and Fatty Acids*	2	2017/02/27	2017/02/28	STL SOP-00152	MA414-Aci-g-r-1.0R3m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

* Maxxam is accredited as per the MDDELCC program.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Your Project #: B711941
Your C.O.C. #: na

Attention:Veronica De Guzman

MAXXAM ANALYTICS
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2017/02/28
Report #: R2253395
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B709209
Received: 2017/02/21, 13:10

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Sophie Retailleau, Project Manager
Email: SRetailleau@maxxam.ca
Phone# (514) 448-9001
==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

RESIN AND FATTY ACIDS BY GCMS (WATER)

Maxxam ID		DQ8738	DQ8739		DQ8740		DQ8741		
Sampling Date		2017/02/17 13:30	2017/02/17 10:30		2017/02/17 12:00		2017/02/17 14:50		
COC Number		na	na		na		na		
	Units	QO6863-MW13-1	QO6864-MW13-2	QC Batch	QO6865-MW05-1	QC Batch	QO6866-MC-1	RDL	QC Batch
Palmitoleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	45	3.0	1729878
Palmitic acid	ug/L	<30	<30	1729878	<30	1731244	<30	30	1729878
Linoleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	7.1	3.0	1729878
Linolenic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Oleic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	3.9	3.0	1729878
Stearic acid	ug/L	<30	<30	1729878	<30	1731244	<30	30	1729878
9,10-Dichlorostearic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Total Fatty Acids	ug/L	<30	<30	1729878	<30	1731244	56	30	1729878
Pimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Sandaracopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Isopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Palustric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Levopimaric acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Dehydroabietic acid	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Abietic acid	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Neoabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
14-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
12-Chlorodehydroabietic acid	ug/L	<3.0	<3.0	1729878	<3.0	1731244	<3.0	3.0	1729878
Total Resin Acids	ug/L	<5.0	<5.0	1729878	<5.0	1731244	<5.0	5.0	1729878
Surrogate Recovery (%)									
O-Methylpodocarpic acid	%	103	96	1729878	88	1731244	97	N/A	1729878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

2017/02/28 16:52

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

RESIN AND FATTY ACIDS BY GCMS (WATER)

Maxxam ID		DQ8742		DQ8743		
Sampling Date		2017/02/17 16:30		2017/02/17 15:30		
COC Number		na		na		
	Units	**QO6867-NLLD**	**QC Batch**	**QO6868-OLWP**	**RDL**	**QC Batch**
Palmitoleic acid	ug/L	<3.0	1731244	3.5	3.0	1729878
Palmitic acid	ug/L	32	1731244	<30	30	1729878
Linoleic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Linolenic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Oleic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Stearic acid	ug/L	<30	1731244	<30	30	1729878
9,10-Dichlorostearic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Total Fatty Acids	ug/L	32	1731244	<30	30	1729878
Pimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Sandaracopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Isopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Palustric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Levopimaric acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Dehydroabietic acid	ug/L	<5.0	1731244	<5.0	5.0	1729878
Abietic acid	ug/L	<5.0	1731244	<5.0	5.0	1729878
Neoabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
14-Chlorodehydroabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
12-Chlorodehydroabietic acid	ug/L	<3.0	1731244	<3.0	3.0	1729878
Total Resin Acids	ug/L	<5.0	1731244	<5.0	5.0	1729878
Surrogate Recovery (%)						
O-Methylpodocarpic acid	%	96	1731244	81	N/A	1729878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD

RESIN AND FATTY ACIDS BY GCMS (WATER)

Please note that the results have not been corrected for QC recoveries (spiked blank and method blank) nor for the surrogates.

The total indicated is calculated only for the requested parameters.

Un-rounded results are used in the totals "Total Resin Acids"and "Total Fatty Acids" calculation. These totals results are then rounded to two significant figures.

Results relate only to the items tested.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
1729878	ADR	Spiked Blank	O-Methylpodocarpic acid	2017/02/24		106	%	60 - 130
			Palmitoleic acid	2017/02/24		115	%	60 - 130
			Palmitic acid	2017/02/24		146 (1)	%	60 - 130
			Linoleic acid	2017/02/24		101	%	60 - 130
			Linolenic acid	2017/02/24		93	%	60 - 130
			Oleic acid	2017/02/24		120	%	60 - 130
			Stearic acid	2017/02/24		138 (1)	%	60 - 130
			9,10-Dichlorostearic acid	2017/02/24		111	%	60 - 130
			Pimaric acid	2017/02/24		111	%	60 - 130
			Sandaracopimaric acid	2017/02/24		118	%	60 - 130
			Isopimaric acid	2017/02/24		114	%	60 - 130
			Palustric acid	2017/02/24		109	%	60 - 130
			Levopimaric acid	2017/02/24		105	%	60 - 130
			Dehydroabietic acid	2017/02/24		108	%	60 - 130
			Abietic acid	2017/02/24		151 (1)	%	60 - 130
			Neoabietic acid	2017/02/24		151 (1)	%	60 - 130
			14-Chlorodehydroabietic acid	2017/02/24		124	%	60 - 130
			12-Chlorodehydroabietic acid	2017/02/24		123	%	60 - 130
1729878	ADR	Method Blank	O-Methylpodocarpic acid	2017/02/24		101	%	60 - 130
			Palmitoleic acid	2017/02/24	<3.0		ug/L	
			Palmitic acid	2017/02/24	<30		ug/L	
			Linoleic acid	2017/02/24	<3.0		ug/L	
			Linolenic acid	2017/02/24	<3.0		ug/L	
			Oleic acid	2017/02/24	<3.0		ug/L	
			Stearic acid	2017/02/24	<30		ug/L	
			9,10-Dichlorostearic acid	2017/02/24	<3.0		ug/L	
			Total Fatty Acids	2017/02/24	<30		ug/L	
			Pimaric acid	2017/02/24	<3.0		ug/L	
			Sandaracopimaric acid	2017/02/24	<3.0		ug/L	
			Isopimaric acid	2017/02/24	<3.0		ug/L	
			Palustric acid	2017/02/24	<3.0		ug/L	
			Levopimaric acid	2017/02/24	<3.0		ug/L	
			Dehydroabietic acid	2017/02/24	<5.0		ug/L	
			Abietic acid	2017/02/24	<5.0		ug/L	
			Neoabietic acid	2017/02/24	<3.0		ug/L	
			14-Chlorodehydroabietic acid	2017/02/24	<3.0		ug/L	
			12-Chlorodehydroabietic acid	2017/02/24	<3.0		ug/L	
			Total Resin Acids	2017/02/24	<5.0		ug/L	
1731244	CB5	Spiked Blank	O-Methylpodocarpic acid	2017/02/28		95	%	60 - 130
			Palmitoleic acid	2017/02/28		82	%	60 - 130
			Palmitic acid	2017/02/28		115	%	60 - 130
			Linoleic acid	2017/02/28		63	%	60 - 130
			Linolenic acid	2017/02/28		62	%	60 - 130
			Oleic acid	2017/02/28		81	%	60 - 130
			Stearic acid	2017/02/28		104	%	60 - 130
			9,10-Dichlorostearic acid	2017/02/28		74	%	60 - 130
			Pimaric acid	2017/02/28		84	%	60 - 130
			Sandaracopimaric acid	2017/02/28		97	%	60 - 130
			Isopimaric acid	2017/02/28		90	%	60 - 130
			Palustric acid	2017/02/28		80	%	60 - 130
			Levopimaric acid	2017/02/28		65	%	60 - 130
			Dehydroabietic acid	2017/02/28		84	%	60 - 130
			Abietic acid	2017/02/28		145 (1)	%	60 - 130

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Neoabietic acid	2017/02/28		100	%	60 - 130
			14-Chlorodehydroabietic acid	2017/02/28		94	%	60 - 130
			12-Chlorodehydroabietic acid	2017/02/28		96	%	60 - 130
1731244	CB5	Method Blank	O-Methylpodocarpic acid	2017/02/28		98	%	60 - 130
			Palmitoleic acid	2017/02/28	<3.0		ug/L	
			Palmitic acid	2017/02/28	<30		ug/L	
			Linoleic acid	2017/02/28	<3.0		ug/L	
			Linolenic acid	2017/02/28	<3.0		ug/L	
			Oleic acid	2017/02/28	<3.0		ug/L	
			Stearic acid	2017/02/28	<30		ug/L	
			9,10-Dichlorostearic acid	2017/02/28	<3.0		ug/L	
			Total Fatty Acids	2017/02/28	<30		ug/L	
			Pimaric acid	2017/02/28	<3.0		ug/L	
			Sandaracopimaric acid	2017/02/28	<3.0		ug/L	
			Isopimaric acid	2017/02/28	<3.0		ug/L	
			Palustric acid	2017/02/28	<3.0		ug/L	
			Levopimaric acid	2017/02/28	<3.0		ug/L	
			Dehydroabietic acid	2017/02/28	<5.0		ug/L	
			Abietic acid	2017/02/28	<5.0		ug/L	
			Neoabietic acid	2017/02/28	<3.0		ug/L	
			14-Chlorodehydroabietic acid	2017/02/28	<3.0		ug/L	
			12-Chlorodehydroabietic acid	2017/02/28	<3.0		ug/L	
			Total Resin Acids	2017/02/28	<5.0		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

FUNDAMENTAL LABORATORY ACCEPTANCE GUIDELINE

Invoice To:
MAXXAM ANALYTICS
BURNABY
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5
Client Contact:
Veronica De Guzman

Maxxam Job #:	B709209
Date Received:	2017/02/21
Your C.O.C. #:	na
Your Project #:	B711941
Maxxam Project Manager:	Sophie Retailleau
Quote #	B20512

No discrepancies noted.

Report Comments

Received Date:	**2017/02/21**	**Time:**	**13:10**	**By:**	
Inspected Date:		**Time:**		**By:**	
FLAG Created Date:		**Time:**		**By:**	

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam Job #: B709209
Report Date: 2017/02/28

MAXXAM ANALYTICS
Client Project #: B711941

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Caroline Bougie, B.Sc. Chemist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tel: (514) 448-9001 Fax: (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

Maxxam
A Bureau Veritas Group Company

Sent to: Maxxam Mont
889 Montee d
Viille St-Laurer
Tel: (514) 448

B709209_COC

M INTERLAB CHAIN OF CUSTODY RECORD

COC # B711941-QUEV-01-01

REPORT INFORMATION	
Company:	Maxxam
Address:	4606 Canada Way, Burnaby, British Columbia, V5G 1K5
Contact Name:	Veronica De Guzman
Email:	VDeGuzman@maxxam.ca, customerservicebc@maxxamanalytics.com
Phone:	
Maxxam Project #:	B711941
Client Invoice To:	WATERLINE RESOURCES INC. (5950)
Client Report To:	WATERLINE RESOURCES INC. (5950) Incl. on Report? Yes / No

ANALYSIS REQUESTED

Job Barcode Label

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	RFA Water Subcontract										ADDITIONAL SAMPLE INFORMATION
1	QO6863-MW13-1	WATER	2017/02/17	13:30		1	X										(P: 12)
2	QO6864-MW13-2	WATER	2017/02/17	10:30		1	X										(P: 12)
3	QO6865-MW05-1	WATER	2017/02/17	12:00		1	X										(P: 12)
4	QO6866-M-C1	WATER	2017/02/17	14:50		1	X										(P: 12)
5	QO6867-NLLD	WATER	2017/02/17	16:30		1	X										(P: 12)
6	QO6868-OLWP	WATER	2017/02/17	15:30		1	X										(P: 12)
7																	
8																	
9																	
10																	

SITE LOCATION:

SITE #:

PROJECT #:
2719-16-001

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Maxxam immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
Excel Export (csv) (A004)

TURNAROUND TIME
☐ Rush Required
2017/02/27
Date Required
Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓					
Custody Seal Intact	✓					
Cooling Media Present	✓					
				3	1	4

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RECEIVING LAB USE ONLY
Maxxam Job #

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. ANTONIUS BENGE TOMAS	2017 02 20	14:00	1 Gm Giuseppina MARTUCCI	2017-02-21	13:10		
2 Gm Giuseppina MARTUCCI	2017-02-21	13:10	2				