The City of Winnipeg Tender No. 170-2020 Template Version: eC120200131 - C BCIVII

# APPENDIX E ARCHIBALD OUTFALL – 2011 SEWER SAMPLE INFORMATION



KGS Group Consultants (Winnipeg)

ATTN: RAY OFFMAN

865 Waverly Street - 3rd Floor

Winnipeg MB R3T 5P4

Phone: 204-896-1209

Date Received: 08-FEB-11

Report Date: 10-FEB-11 12:47 (MT)

Version: FINAL

# Certificate of Analysis

Lab Work Order #: L976608
Project P.O. #: NOT SUBMITTED
Job Reference: 10-0107-24

Legal Site Desc: MISSION FLOOD PUMPING STATION

C of C Numbers:

Paul Necolas

Paul Nicolas Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721 MANITOBA TECHNOLOGY CENTRE LTD. Part of the ALS Group A Campbell Brothers Limited Company



L976608 CONTD.... PAGE 2 of 4 Version: FINAL

## ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L976608-1 MISSION TRUNK SEWER SAMPLE 1							
Sampled By: CLIENT on 08-FEB-11 @ 08:56							
Matrix: SEWAGE							
Routine total							
Alkalinity Alkalinity, Total (as CaCO3)	434		1.0	mg/L		08-FEB-11	R1926843
Bicarbonate (HCO3)	530		2.0	mg/L		08-FEB-11	R1926843
Carbonate (CO3)	<0.60		0.60	mg/L		08-FEB-11	R1926843
Hydroxide (OH)	< 0.40		0.40	mg/L		08-FEB-11	R1926843
Anions scan (IC)							
Chloride	439		2.5	mg/L		08-FEB-11	R1930024
Nitrite-N	<0.25		0.25	mg/L		08-FEB-11	R1930024
Nitrate-N	0.27		0.25	mg/L		08-FEB-11	R1930024
Sulfate	163		2.5	mg/L		08-FEB-11	R1930024
Conductivity Conductivity	2770		0.40	umhos/cm		08-FEB-11	R1926843
Hardness Calculated	2110		0.40	ummos/cm		00-1 ED-11	1/13/20043
Hardness (as CaCO3)	272		0.30	mg/L		10-FEB-11	
Nitrate+Nitrite							
Nitrate and Nitrite as N	< 0.35		0.35	mg/L		09-FEB-11	
TDS calculated							
TDS (Calculated)	1380		5.0	mg/L		10-FEB-11	
Total Metals by ICP-MS	F0 F		0.00		09-FEB-11	00 FFB 11	D4004640
Calcium (Ca)-Total Magnesium (Mg)-Total	52.5 34.1		0.20 0.050	mg/L mg/L	09-FEB-11 09-FEB-11	09-FEB-11 09-FEB-11	R1931643 R1931643
Potassium (K)-Total	64.6		0.050	mg/L	09-FEB-11	09-FEB-11	R1931643
Sodium (Na)-Total	367		0.050	mg/L	09-FEB-11	09-FEB-11	R1931643
pH	001		0.000	9/ =	00 : 22 : :	00.22	111001010
рН	7.45		0.10	pH units		08-FEB-11	R1926843
L976608-2 MISSION TRUNK SEWER SAMPLE 2							
Sampled By: CLIENT on 08-FEB-11 @ 08:56							
Matrix: SEWAGE							
Routine total							
Alkalinity							
Alkalinity, Total (as CaCO3)	431		1.0	mg/L		08-FEB-11	R1926843
Bicarbonate (HCO3)	526		2.0	mg/L		08-FEB-11	R1926843
Carbonate (CO3)	<0.60		0.60	mg/L		08-FEB-11	R1926843
Hydroxide (OH)	<0.40		0.40	mg/L		08-FEB-11	R1926843
Anions scan (IC)	405		0.5			00 550 44	D4000004
Chloride Nitrite-N	435 <0.25		2.5	mg/L mg/L		08-FEB-11 08-FEB-11	R1930024 R1930024
Nitrate-N	<0.25 0.27		0.25 0.25	mg/L mg/L		08-FEB-11 08-FEB-11	R1930024 R1930024
Sulfate	160		2.5	mg/L		08-FEB-11	R1930024
Conductivity	100		2.0	g, L		3312511	11.000024
Conductivity	2710		0.40	umhos/cm		08-FEB-11	R1926843
Hardness Calculated							
Hardness (as CaCO3)	325		0.30	mg/L		10-FEB-11	
Nitrate+Nitrite	2.25		0.0=			00 555 ::	
Nitrate and Nitrite as N	<0.35		0.35	mg/L		09-FEB-11	
TDS calculated TDS (Calculated)	1360		5.0	mg/L		10-FEB-11	
Total Metals by ICP-MS	1300		5.0	mg/L		10-1 20-11	
Calcium (Ca)-Total	66.7		0.20	mg/L	09-FEB-11	09-FEB-11	R1931643
Magnesium (Mg)-Total	38.6		0.050	mg/L	09-FEB-11	09-FEB-11	R1931643

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L976608 CONTD.... PAGE 3 of 4 Version: FINAL

## ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L976608-2 MISSION TRUNK SEWER SAMPLE 2 Sampled By: CLIENT on 08-FEB-11 @ 08:56 Matrix: SEWAGE							
Total Metals by ICP-MS Potassium (K)-Total Sodium (Na)-Total	60.4 345		0.10 0.050	mg/L mg/L	09-FEB-11 09-FEB-11	09-FEB-11 09-FEB-11	R1931643 R1931643
<b>pH</b> pH	7.44		0.10	pH units		08-FEB-11	R1926843

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L976608 CONTD....

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## **Reference Information**

**Test Method References:** 

ALS Test Code Matrix Test Description Method Reference\*\*

Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

**APHA 2320B** 

ANIONS5-IC-WP Water Anions scan (IC) EPA 300.1 IC

Alkalinity

Water

This analysis is carried out using procedures adapted from EPA Method 300.1 "Determination of Inorganic Anions in Drinking Water by Ion

Chromatography".

ALK-TOT-WP

EC-WP Water Conductivity APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

ETL-HARDNESS-TOT-WP Water Hardness Calculated HARDNESS CALCULATED

ETL-SOLIDS-CALC-WP Water TDS calculated CALCULATION

IONBALANCE-OP05-WP Water Ion Balance Calculation No APHA 1030E

Reporting

MET-T-MS-WP Water Total Metals by ICP-MS U.S. EPA 200.8-T

Total Metals by ICP-MS: This analysis is carried out using sample preparation procedures adapted from Standard Methods for the examination of Water and Wastewater Method 3030E and analytical procedures adapted from U.S EPA Method 200.8 for analysis of metals by inductively coupled-mass spectrometery.

NO2+NO3-CALC-WP Water Nitrate+Nitrite CALCULATION
PH-WP Water pH APHA 4500H

pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

 Laboratory Definition Code
 Laboratory Location

 WP
 ALS LABORATORY GROUP - WINNIPEG, MANITOBA, CANADA

#### **Chain of Custody Numbers:**

### **GLOSSARY OF REPORT TERMS**

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

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

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

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



## **Quality Control Report**

Workorder: L976608 Report Date: 10-FEB-11 Page 1 of 3

Client: KGS Group Consultants (Winnipeg)

865 Waverly Street - 3rd Floor

Winnipeg MB R3T 5P4

Contact: RAY OFFMAN

Contact: RAY OFFI	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
		- TOTOTOTIO	Nosun	- Guuilliei			III	Allaryzea
ALK-TOT-WP	Water							
Batch R1926843								
WG1238215-5 CVS Alkalinity, Total (as CaCC	)3)		102		%		85-115	08-FEB-11
	,		. 0=				00 110	0012511
ANIONS5-IC-WP	Water							
Batch R1930024								
WG1238558-2 LCS			00		0/			
Chloride Nitrite-N			99 103		%		85-115	08-FEB-11
							85-115	08-FEB-11
Nitrate-N			99		%		85-115	08-FEB-11
Sulfate			99		%		85-115	08-FEB-11
WG1238558-1 MB Chloride			<0.50		mg/L		0.5	08-FEB-11
Nitrite-N			<0.050		mg/L		0.05	08-FEB-11
Nitrate-N			<0.050		mg/L		0.05	08-FEB-11
Sulfate			<0.50		mg/L		0.5	08-FEB-11
	<b></b> .		40.00		g, _		0.0	00-1 LD-11
EC-WP	Water							
Batch R1926843 WG1238215-2 CCV								
Conductivity			102		%		95-105	08-FEB-11
WG1238215-1 CVS								
Conductivity			99		%		90-110	08-FEB-11
MET-T-MS-WP	Water							
Batch R1931643								
WG1238736-3 CCV								
Calcium (Ca)-Total			99		%		90-110	09-FEB-11
Magnesium (Mg)-Total			98		%		90-110	09-FEB-11
Potassium (K)-Total			100		%		90-110	09-FEB-11
Sodium (Na)-Total			98		%		90-110	09-FEB-11
WG1238736-1 CVS			400		0/			
Calcium (Ca)-Total			100		%		70-130	09-FEB-11
Magnesium (Mg)-Total			97		%		70-130	09-FEB-11
Potassium (K)-Total			101		%		70-130	09-FEB-11
Sodium (Na)-Total			95		%		70-130	09-FEB-11
WG1238736-2 CVS Calcium (Ca)-Total			100		%		70 420	00 EED 44
Magnesium (Mg)-Total			97		%		70-130	09-FEB-11
iviagnesium (ivig)-Total			91		70		70-130	09-FEB-11



## **Quality Control Report**

Workorder: L976608

Report Date: 10-FEB-11 Page 2 of 3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WP	Water							
Batch R1931643	}							
WG1238736-2 CVS								
Potassium (K)-Total			102		%		70-130	09-FEB-11
Sodium (Na)-Total			98		%		70-130	09-FEB-11
WG1238354-2 LCS								
Calcium (Ca)-Total			97		%		80-120	09-FEB-11
Magnesium (Mg)-Total			102		%		80-120	09-FEB-11
Potassium (K)-Total			100		%		80-120	09-FEB-11
Sodium (Na)-Total			104		%		80-120	09-FEB-11
WG1238354-1 MB								
Calcium (Ca)-Total			<0.20		mg/L		0.2	09-FEB-11
Magnesium (Mg)-Total			< 0.050		mg/L		0.05	09-FEB-11
Potassium (K)-Total			<0.10		mg/L		0.1	09-FEB-11
Sodium (Na)-Total			< 0.050		mg/L		0.05	09-FEB-11
PH-WP	Water							
Batch R1926843	}							
WG1238215-4 CCV								
рН			101		%		90-110	08-FEB-11
WG1238215-3 LCS								
рН			7.40		pH units		7.3-7.5	08-FEB-11

## **Quality Control Report**

Workorder: L976608 Report Date: 10-FEB-11 Page 3 of 3

#### Legend:

Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard

#### **Sample Parameter Qualifier Definitions:**

LCSD Laboratory Control Sample Duplicate

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

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

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

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

# ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

**Environmental Division** 



uest Form 1878

coc# <u>08-001977</u>

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Company: K	G3 Group		Standard: Other:					Regular (Default)											
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Phone: (104) 896-1209 Fax: (204) 896-0754											An	alysis F	Request	1					
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