

# **APPENDIX A**

## **Hazardous Materials Memorandum**

# MEMORANDUM

**TO:** Rudy Derksen P.Eng – Project Manager  
Brad Shalley P. Eng.

**FROM:** Dan Leitch, M.Sc.

**DATE:** December 20, 2016

**FILE NO:** 16-0107-025

**RE:** Larchdale FPS Generator Replacement – Hazardous Materials Assessment

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## 1.0 INTRODUCTION

As per part of the generator replacement project at the Larchdale FPS, a hazardous materials assessment was conducted in order to confirm the absence and/or presence of lead-based paint and asbestos-containing materials potentially affected by the project.

## 2.0 SITE VISIT

KGS Group designated personnel conducted the lead-paint and asbestos sampling at the Larchdale FPS on December 1, 2016. Four paint samples were collected from various locations which may be impacted by the project. All samples were placed in dedicated labelled and sealed plastic bags and subsequently submitted to ALS Environmental on December 5, 2016 for analysis of total lead content.

Samples for asbestos analysis were collected in triplicate from inner and outer pipe wrap material (total of six samples). Triplicate samples are recommended to satisfy the *Manitoba Guidelines for an Asbestos Operations and Maintenance Program*. Bulk friable samples were submitted to ALS Environmental on December 5, 2016 and analyzed using Polarized Light Microscopy (PLM) via the US Environmental Protection Agency (EPA) 600/R-93/116 methodology

## 3.0 RESULTS

### 3.1 LEAD PAINT

As of 1976, the *Hazardous Product Act* restricted the level of lead in consumer paint to 5,000 mg/kg. In April 2005, the allowable level of lead in consumer paint as per the *Surface Coatings Materials Regulations* of the *Hazardous Products Act* was further reduced to 600 mg/kg. The regulation (now part of the *Canada Consumer Product Safety Act*) was further amended in 2011 to 90 mg/kg as the allowable level of lead in consumer paint.

Three of the four paint samples tested had concentrations above the allowable level of lead in paint (90 mg/kg) as per the federal *Surface Coatings Materials Regulation*. Paints which are

lead-based include the red paint on the piping (622 mg/kg), the grey paint on the generator (1510 mg/kg), and the deep red paint on the floor and generator base (155 mg/kg). The white paint on the walls was found to have a lead content of 11.4 mg/kg, well below the allowable level of lead in paint. A summary of the laboratory results with comparison to applicable criteria is included in Table 1 (attached).

### 3.2 RESULTS - ASBESTOS

Building materials in structures constructed in the early 1980s may contain asbestos-containing materials. Asbestos was typically added to insulating materials due to its non-combustibility and flame-retardant properties and was also used as a reinforcing agent due to its strength and flexibility. Materials containing asbestos present a potential exposure risk if the asbestos fibres are released and inhaled.

According to the *Manitoba Regulation 217/2006 Workplace Safety and Health Regulation* and the *Manitoba Guideline for Working with Asbestos (March 2008)*, asbestos-containing materials are defined as: (a) "a friable material containing 0.1% or greater asbestos"; and (b) "a non-friable material containing 1.0% or greater asbestos by weight." Laboratory analytical methods used sufficient detection limits (0.1% for PLM) to ensure compliance with this guideline. Asbestos waste in Manitoba can only be accepted by authorized Waste Disposal Grounds. Specific disposal criteria including handling, labelling, and transport applies to asbestos waste (*Manitoba Guideline for Working with Asbestos (March 2008)*).

Two layers of pipe wrap insulation near the ceiling were sampled and analyzed for asbestos content. Triplicate sample of each of the inner layer and the outer layer were sampled and submitted for laboratory analysis (total of six samples). No asbestos was found in any of the samples submitted at a detection limit of 0.1%. A summary of the laboratory results is included in Table 2.

### 4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the laboratory results, paint present on the pipes, generator unit, and the floor are considered to be lead-based. Materials coated with lead-based paints (>90 mg/kg) can be disposed of at any regular landfill as construction waste. Should the paint be disturbed during the renovation (i.e. sanded), proper precautions must be taken protect worker health and safety by using personal protection equipment such as goggles, gloves, and a good quality breathing mask.

No asbestos was present in the pipe wrap insulation. Therefore, there is no concern regarding asbestos for the current project.

Prepared By:



Dan Leitch, M.Sc.  
Environmental Scientist

Approved By:



Bonnie Hoffensetz, M.Sc.  
Senior Environmental Scientist

Attachments  
DL/nf

## TABLES

**TABLE 1  
LEAD PAINT SAMPLING  
LARCHDALE FPS GENERATOR REPLACEMENT PROJECT**

Sample ID	Location	Colour	Comments	Total Lead (mg/kg)
<b>RDL</b>				0.20 / 20 <sup>(1)</sup>
LD-LP-01	Piping	Red	Covered piping. Very good condition.	<b>622</b>
LD-LP-02	Generator	Grey	Covered generator. Average/poor condition.	<b>1510</b>
LD-LP-03	Wall	White	Concrete walls. Very good condition.	11.4
LD-LP-04	Floor / Generator Base	Deep Red	Much has worn off. Poor condition	<b>155</b>
<b>Federal Surface Coating Materials Regulations (SOR/2005-109)</b>				90 <sup>(2)</sup>

**Notes:**

RDL = Reportable Detection Limits

1. Detection limit 0.20 mg/kg for LD-LP-01, LD-LP-03, LD-LP-04 and 20 mg/kg for LD-LP-02.

2. Minimum concentration of lead in paint to be considered lead-based is 90 mg per kg under the Surface Coating Materials Regulations (SOR/2005-109)

 - Lead-based paint

**TABLE 2  
ASBESTOS SAMPLING  
LARCHDALE FPS GENERATOR REPLACEMENT PROJECT**

Sample ID	Location	Colour	Comments	Asbestos Content
<b>RDL</b>				0.1%
LD-ACM-01A	Inner Pipe Wrap Insulation	White	Good condition	<0.1%
LD-ACM-01B	Inner Pipe Wrap Insulation	White	Good condition	<0.1%
LD-ACM-01C	Inner Pipe Wrap Insulation	White	Good condition	<0.1%
LD-ACM-02A	Outer Pipe Wrap	Grey	Good condition	<0.1%
LD-ACM-02B	Outer Pipe Wrap	Grey	Good condition	<0.1%
LD-ACM-02C	Outer Pipe Wrap	Grey	Good condition	<0.1%
<b>Manitoba Guidelines for Working With Asbestos</b>				0.1%/1.0% <sup>(1)</sup>

**Notes:**

RDL = Reportable Detection Limits

1. Friable asbestos >0.1% and non-friable asbestos >1.0% is considered hazardous materials as per Manitoba Guidelines for Working With Asbestos.

## SITE PHOTOGRAPHIC LOG

**SITE PHOTOGRAPHIC LOG**  
**Larchdale FPS**



Photo 1. Red lead-based paint on piping (Sample ID: LD-LP-01).



Photo 2. Grey lead-based paint on generator (Sample ID: LD-LP-02).



Photo 3. White non-lead-based paint on wall (Sample ID: LD-LP-03).



Photo 4. Deep red lead-based paint on floor and generator base (Sample ID: LD-LP-04).



Photo 5. Pipe wrap insulation sampled and analyzed for asbestos content.

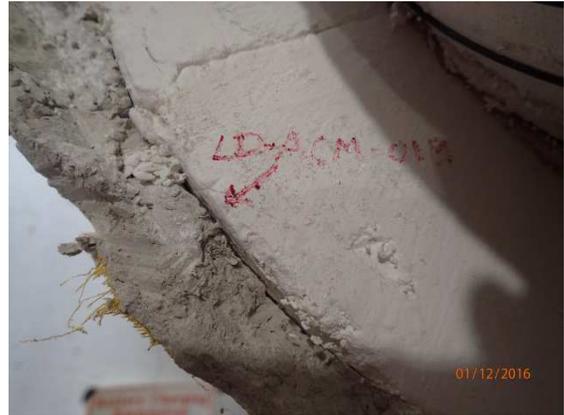


Photo 6. Close-up view of inner and outer layer of pipe wrap.

**LABORATORY CERTIFICATE OF ANALYSIS**



KGS Group Consultants (Winnipeg)  
ATTN: DAN LEITCH  
865 Waverly Street - 3rd Floor  
Winnipeg MB R3T 5P4

Date Received: 05-DEC-16  
Report Date: 12-DEC-16 12:26 (MT)  
Version: FINAL REV. 2

Client Phone: 204-896-1209

## Certificate of Analysis

Lab Work Order #: L1866007  
Project P.O. #: NOT SUBMITTED  
Job Reference: 16-0107-025  
C of C Numbers:  
Legal Site Desc:

Comments: Analyte changed to ASBESTOS BY POINT COUNT  
12-DEC-2016 AMENDED REPORT - Asbestos Point Count DL corrected to <0.1%

Hua Wo  
Chemistry Laboratory Manager

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ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1866007-1 LD-ACM-01 (LD-ACM-01A ON BAG) Sampled By: DAN LEITCH on 01-DEC-16 @ 14:30 Matrix: PIPE WRAP  <b>Quantitation of asbestos by point count</b> Asbestos By Point Count Other Fibres: Glass Other Non Fibrous: Filler Note: No asbestos fibres were observed.	< .1 PTCT		0.10	%		09-DEC-16	R3614085
L1866007-2 LD-ACM-02 (LD-ACM-01B ON BAG) Sampled By: DAN LEITCH on 01-DEC-16 @ 14:30 Matrix: PIPE WRAP  <b>Quantitation of asbestos by point count</b> Asbestos By Point Count Other Fibres: Cellulose and Glass Other Non Fibrous: Filler Note: No asbestos fibres were observed.	< .1 PTCT		0.10	%		09-DEC-16	R3614085
L1866007-3 LD-ACM-03 (LD-ACM-01C ON BAG) Sampled By: DAN LEITCH on 01-DEC-16 @ 14:30 Matrix: PIPE WRAP  <b>Quantitation of asbestos by point count</b> Asbestos By Point Count Other Fibres: Glass Other Non Fibrous: Filler Note: No asbestos fibres were observed.	< .1 PTCT		0.10	%		09-DEC-16	R3614085
L1866007-4 LD-ACM-04 (LD-ACM-02A ON BAG) Sampled By: DAN LEITCH on 01-DEC-16 @ 14:30 Matrix: PIPE WRAP  <b>Quantitation of asbestos by point count</b> Asbestos By Point Count Other Fibres: Glass and Synthetic Other Non Fibrous: Filler Note: No asbestos fibres were observed.	< .1 PTCT		0.10	%		09-DEC-16	R3614085
L1866007-5 LD-ACM-05 (LD-ACM-02B ON BAG) Sampled By: DAN LEITCH on 01-DEC-16 @ 14:30 Matrix: PIPE WRAP  <b>Quantitation of asbestos by point count</b> Asbestos By Point Count Other Fibres: Glass and Synthetic Other Non Fibrous: Filler Note: No asbestos fibres were observed.	< .1 PTCT		0.10	%		09-DEC-16	R3614085
L1866007-6 LD-ACM-06 (LD-ACM-02C ON BAG) Sampled By: DAN LEITCH on 01-DEC-16 @ 14:30 Matrix: PIPE WRAP  <b>Quantitation of asbestos by point count</b> Asbestos By Point Count Other Fibres: Synthetic Other Non Fibrous: Filler Note: No asbestos fibres were observed.	< .1 PTCT		0.10	%		09-DEC-16	R3614085

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1866007-7 LD-LP-01 Sampled By: DAN LEITCH on 01-DEC-16 @ 14:00 Matrix: PAINT  <b>Lead In Paint</b> <b>Metals</b> Lead (Pb)	622		0.20	mg/kg	08-DEC-16	08-DEC-16	R3613524
L1866007-8 LD-LP-02 Sampled By: DAN LEITCH on 01-DEC-16 @ 14:00 Matrix: PAINT  <b>Lead In Paint</b> <b>Metals</b> Lead (Pb)	1510		20	mg/kg	08-DEC-16	08-DEC-16	R3613524
L1866007-9 LD-LP-03 Sampled By: DAN LEITCH on 01-DEC-16 @ 14:00 Matrix: PAINT  <b>Lead In Paint</b> <b>Metals</b> Lead (Pb)	11.4		0.20	mg/kg	08-DEC-16	08-DEC-16	R3613524
L1866007-10 LD-LP-04 Sampled By: DAN LEITCH on 01-DEC-16 @ 14:00 Matrix: PAINT  <b>Lead In Paint</b> <b>Metals</b> Lead (Pb)	155		0.20	mg/kg	08-DEC-16	08-DEC-16	R3613524

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ASBESTOS-PTCT-WP	Bulk	Quantitation of asbestos by point count	EPA/600/R-93/116
Bulk samples are examined under a stereoscopic microscope. Individual fibers or fibre bundles are mounted in refractive index liquids and are observed under a polarized light microscope with a special dispersion staining objective. The dispersion staining colours are compared to reference samples of known asbestiforms.			
Polarized microscopy is not a definitive technique for negative results for non-friable organically bound material (i.e. floor tiles).			
MET-200.2-MS-WP	Soil	Metals	EPA 200.2/6020A
Samples for analysis are homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested by block digester (EPA 200.2). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.			

\*\* 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 ENVIRONMENTAL - 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: L1866007

Report Date: 12-DEC-16

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Client: KGS Group Consultants (Winnipeg)  
865 Waverly Street - 3rd Floor  
Winnipeg MB R3T 5P4

Contact: DAN LEITCH

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-200.2-MS-WP</b>	<b>Soil</b>							
<b>Batch</b>	<b>R3613524</b>							
<b>WG2448313-7</b>	<b>CRM</b>	<b>CANMET TILL-1</b>						
Lead (Pb)			90.6		%		70-130	08-DEC-16
<b>WG2448313-8</b>	<b>CRM</b>	<b>CANMET TILL-1</b>						
Lead (Pb)			91.6		%		70-130	08-DEC-16
<b>WG2448313-6</b>	<b>LCS</b>							
Lead (Pb)			99.3		%		80-120	08-DEC-16
<b>WG2448313-5</b>	<b>MB</b>							
Lead (Pb)			<0.20		mg/kg		0.2	08-DEC-16

# Quality Control Report

Workorder: L1866007

Report Date: 12-DEC-16

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## Legend:

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

## 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.

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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 pre-determined 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.

