FINAL

Facilities Assessment and Demolition Cost Estimate

MS4 & MS5 – Waste Material Storage & Garbage Incinerator Building, Sable Island, Nova Scotia

Prepared for:

Royal Military College of Canada,
Environmental Sciences Group
P.O. Box 17000 Station Forces
Kingston, ON K7K 7B4

Attn: Dr. Kela Weber and Mr. Darren White

March 2015

Pinchin File: 01-02-00968

Issued to:	**Royal Military College of Canada, Environmental Sciences Group**
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Issued on:	**March 2015**
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APPENDICES

1.0 INTRODUCTION

Facility MS4 & MS5 is an attached one-storey structure used as Waste Material Storage & Garbage Incinerator (facility). Building construction consists of wood construction/floor deck with a partial area with concrete slab-on-grade. The facility has a total footprint of approximately ninety-eight square metres. Photographs of items/materials of interest are presented in Appendix I. A site drawing is presented in Appendix II.

Refer to the Facilities Assessment and Demolition Cost Estimate Overview Report for Sable Island National Park Sable Island, Nova Scotia (Overview Report) for details regarding the assessment scope, methodology, assessment criteria, regulatory requirements, and limitations. The Overview Report must be read in conjunction with this report.

This facility was assigned a Priority 1 (assessed for hazardous materials), Intrusive assessment by Royal Military College of Canada.

2.0 ASBESTOS-CONTAINING MATERIALS (ACM)

Building materials and/or equipment suspected of containing asbestos were observed in the facility at the time of the assessment. The locations where samples were collected are identified on the site drawing presented in Appendix II. Sample numbers containing MS5-SXXXY (where X represents a number and Y represents a letter) referenced below correspond to the asbestos analysis report presented in Appendix III.

2.1 ACM Findings

Sampling and investigation of building materials identified the presence of ACM in the facility at the time of the assessment. Detailed quantities, along with cost estimates for removal/disposal, of identified ACM are presented in Appendix V.

2.1.1 Asbestos Sample Summary

The following table summarizes the results of the bulk samples collected.

Table 1 – Bulk Asbestos Sample Summary Table

Sample	Location/Description	Asbestos Content
MS5-S001A	Location 02, Incinerator Room, incinerator door gasket	50-75% Chrysotile
MS5-S001B	Location 02, Incinerator Room, incinerator door gasket	Not Analyzed

Table 1 – Bulk Asbestos Sample Summary Table

Sample	Location/Description	Asbestos Content
MS5-S001C	Location 02, Incinerator Room, incinerator door gasket	Not Analyzed
MS5-S002A	Location 02, Incinerator Room, incinerator fire brick	None Detected
MS5-S002B	Location 02, Incinerator Room, incinerator fire brick	None Detected
MS5-S002C	Location 02, Incinerator Room, incinerator fire brick	None Detected
MS5-S003A	Location 04, Building Exterior, tar and roof material	a) 10-25% Chrysotile b) None Detected
MS5-S003B	Location 04, Building Exterior, tar and roof material	Not Analyzed
MS5-S003C	Location 04, Building Exterior, tar and roof material	Not Analyzed

3.0 LEAD-CONTAINING MATERIALS (LCM)

Surface coatings suspected of containing lead were observed in the facility at the time of the assessment. The locations where samples were collected are identified on the site drawing presented in Appendix II. Sample numbers containing an L (i.e. MS5-LXXX) referenced below correspond to the lead analysis report presented in Appendix IV.

3.1 LCM Findings

Sampling and investigation of surface coatings identified the presence of lead in the facility at the time of the assessment.

3.1.1 Lead Sample Summary

The following table summarizes the results of the surface coating samples collected.

Table 2 – Lead Sample Summary Table

Sample	Location/Description	Color	Surface/ Substrate	Lead Content (mg/kg)
MS5-L001	Location 02, Incinerator Room	Black	Steel	86
MS5-L002	Location 02, Incinerator Room	Yellow	Masonry Block	19

Table 2 – Lead Sample Summary Table

Sample	Location/Description	Color	Surface/ Substrate	Lead Content (mg/kg)
MS5-L003	Location 04, Exterior	White	Vinyl	8.6
MS5-L004	Location 03, Garbage Room	White	Wood	18
MS5-L005	Location 03, Garbage Room	Grey	Wood	19
MS5-L006	Location 03, Garbage Room	Brown	Wood	54

Reportable Detection Limit (RDL) is 5.0 mg/kg.

All of the surface coatings were identified to contain <1,000 mg/kg of lead.

4.0 POLYCHLORINATED BIPHENYLS (PCB)

Equipment suspected of containing PCB was not observed in the facility at the time of the assessment.

5.0 MERCURY

Equipment suspected of containing mercury was not observed in the facility at the time of the assessment.

6.0 OZONE DEPLETING SUBSTANCES (ODS)

Equipment suspected of containing ODS was not observed in the facility at the time of the assessment.

7.0 FOAM INSULATIONS

Building materials suspected of containing urea-formaldehyde foam insulation were not observed in the facility at the time of the assessment.

8.0 RADIOACTIVE MATERIALS

Equipment suspected of containing sources of radiation was not observed in the facility at the time of assessment.

9.0 DEMOLITION COST ESTIMATE

Estimated quantities of identified hazardous materials, as well as non-hazardous materials, were tabulated. Detailed quantities, along with Class B cost estimates for removal/disposal, of identified hazardous and non-hazardous materials are presented in Appendix V.

Assumptions on cost breakdowns and material volumes used in determining cost estimates of non-hazardous materials, as provided in this report, are described in Section 10.0 of the Facilities Assessment and Demolition Cost Estimate - Overview Report for Sable Island National Park.

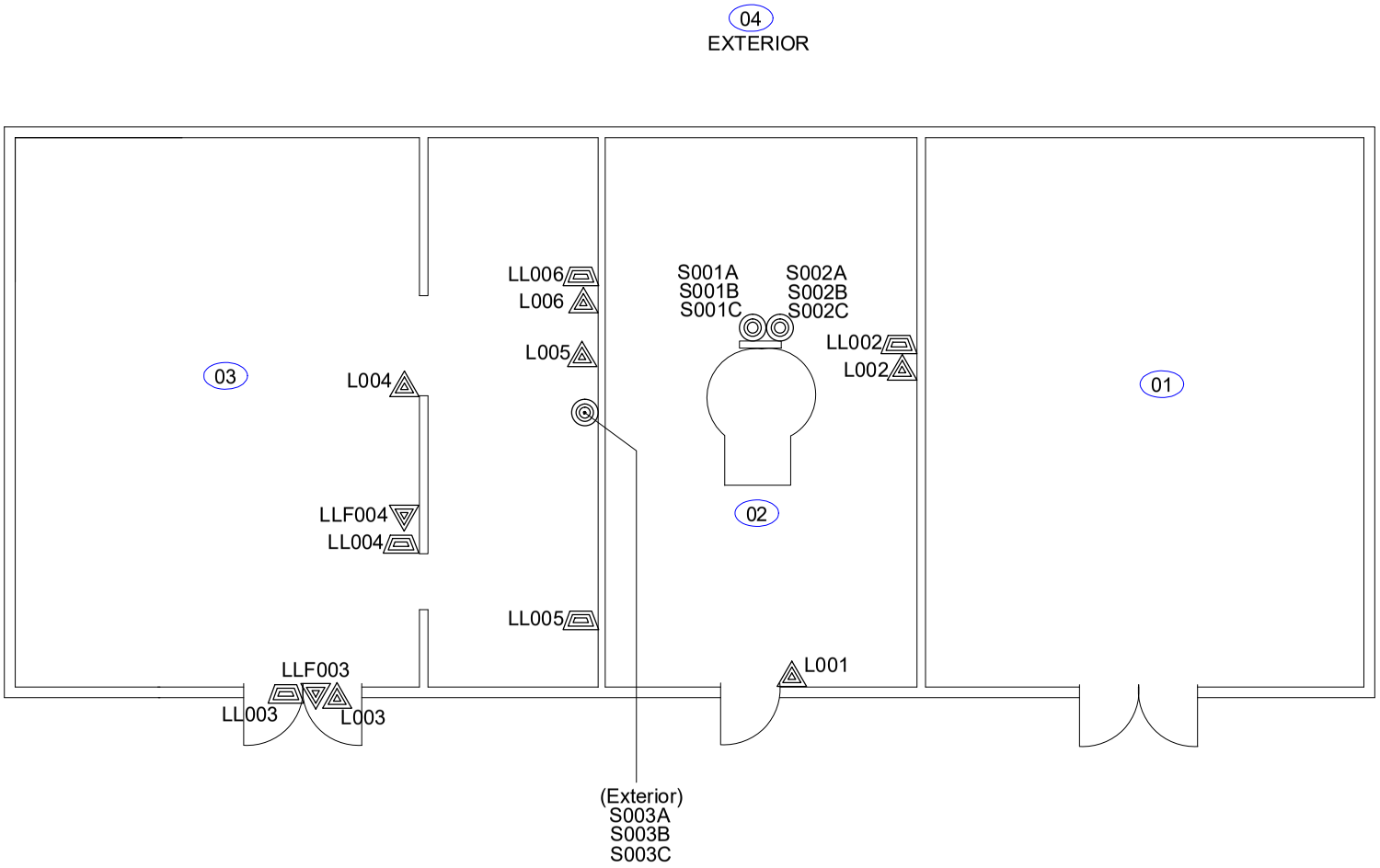
The overall cost for the demolition and disposal of hazardous and non-hazardous waste for the facility is estimated at $149,880.00.

APPENDIX I
Photographs

Photograph 1 – Asbestos-containing incinerator door gasket.

Photograph 2 – Asbestos-containing roofing materials.

APPENDIX II
Assessment and Sample Location Drawing



NOTE: ALL SAMPLE LOCATION IDENTIFIERS HAVE PREFIX MS4&MS5-

PINCHIN LEBLANC ENVIRONMENTAL

LEGEND:

- XX — PINCHIN LOCATION NUMBER
- ASBESTOS SAMPLE ID NUMBER
- LEAD SAMPLE ID NUMBER
- LEACHATE ON PAINT AND SUBSTRATE SAMPLE ID NUMBER
- LEACHATE ON FLAKING SAMPLE ID NUMBER

CLIENT:
ROYAL MILITARY COLLEGE OF CANADA

PROJECT:
FACILITIES ASSESSMENT AND DEMOLITION COST ESTIMATE
SABLE ISLAND, NOVA SCOTIA

SITE ADDRESS:
MS4 & MS5
WASTE MATERIAL STORAGE GARBAGE INCINERATOR BUILDING

DRAWING NAME:
HAZARDOUS MATERIALS SAMPLE LOCATIONS

REFERENCE:
PLEL SITE ASSESSMENT

DATE:	PROJECT #:
FEBRUARY 2015	01 - 02 - 00968
SCALE: N.T.S.	FIGURE #: 1
DRAWN BY: A. ANISCIKLI	
CHECKED BY: J. STAPLETON	

APPENDIX III
Asbestos Analytical Results

Pinchin LeBlanc Environmental Asbestos Laboratory

Certificate of Analysis

December 9, 2014

Pinchin LeBlanc Environmental Ltd.
42 Dorey Avenue
Dartmouth, NS, B3B 0B1

Attention:	**Adam Aulenback**
Lab Reference No.:	**Db6679-2014**
Project Name:	**Sable Island NS Professional Engineering Services Facility MS5 - Garbage Incinerator Building**
Project No.:	**01-02-00968**
Date Received:	**December 8, 2014**
Date Analyzed:	**December 9, 2014**
Analyst(s):	**Jason Stapleton**
# Samples submitted:	**9**
# Phases analyzed:	**6**

Method of Analysis:

EPA 600/R-93/116 - Method for the Determination of Asbestos in Bulk Building Materials dated July, 1993

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared with representative portions of material and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence, and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold (see chart below) indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with all provincial regulatory requirements (NIOSH 9002, I.R.S.S.T. 244-3). Multiple phases within a sample are analyzed and reported separately.

Provincial Jurisdiction	Regulatory Threshold	Provincial Jurisdiction	Regulatory Threshold
Nova Scotia, Ontario, British Columbia	0.5%	Newfoundland and Labrador, PEI and New Brunswick	1%
Quebec	0.1%	Saskatchewan	0.1% friable 1% non-friable
Alberta, NWT, Yukon, Nunavut	1%	Manitoba	0.1% friable 1% non-friable

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin LeBlanc Environmental Limited is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 201032-0) for the 'EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples' and 'EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials.

This report relates only to the items tested. If you have any questions, please feel free to contact me.

Yours truly,

Digital Signed by Jason Stapleton
jstapleton@pinchinleblanc.com
Laboratory Manager, Environmental Asbestos Services
Pinchin LeBlanc Environmental Limited

Pinchin LeBlanc Environmental Asbestos Laboratory

Certificate of Analysis

Project Name: **Sable Island NS Professional Engineering Services**
Facility MS5 - Garbage Incinerator Building
Project No.: **01-02-00968**
Prepared For: **Adam Aulenback**

Lab Reference No.: **Db6679-2014**
Date Analyzed: **December 9, 2014**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
MS5-S001A Location 02, Incinerator Room, incinerator door gasket	Homogenous, red, deteriorated, woven, fibrous material	Chrysotile 50-75%	Non-fibrous material 25-50%
MS5-S001B Location 02, Incinerator Room, incinerator door gasket		Not analyzed	
Comment: Sample was not analyzed due to a previous positive result.			
MS5-S001C Location 02, Incinerator Room, incinerator door gasket		Not analyzed	
Comment: Sample was not analyzed due to a previous positive result.			
MS5-S002A Location 02, Incinerator Room, incinerator fire brick	Homogenous, yellow, hard, granular, cementitious material	None detected	Non-fibrous material >75%
MS5-S002B Location 02, Incinerator Room, incinerator fire brick	Homogenous, yellow, hard, granular, cementitious material	None detected	Non-fibrous material >75%
MS5-S002C Location 02, Incinerator Room, incinerator fire brick	Homogenous, yellow, hard, granular, cementitious material	None detected	Non-fibrous material >75%

ANALYST

Pinchin LeBlanc Environmental Asbestos Laboratory

Certificate of Analysis

Project Name: **Sable Island NS Professional Engineering Services**
Facility MS5 - Garbage Incinerator Building
Project No.: **01-02-00968**
Prepared For: **Adam Aulenback**

Lab Reference No.: **Db6679-2014**
Date Analyzed: **December 9, 2014**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
MS5-S003A Location 04, Building Exterior, tar and roof material	2 phases: a) Homogenous, red,	Chrysotile 50-75%	Non-fibrous material 25-50%
	a) Homogenous, black tar	Chrysotile 10-25%	Tar and other non-fibrous material >75%
	b) Homogenous, black, tar impregnated paper	None detected	Cellulose 50-75% Tar and other non-fibrous material 25-50%
MS5-S003B Location 04, Building Exterior, tar and roof material		Not analyzed	
Comment: Sample was not analyzed due to a previous positive result.			
MS5-S003C Location 04, Building Exterior, tar and roof material		Not analyzed	
Comment: Sample was not analyzed due to a previous positive result.			

ANALYST

APPENDIX IV
Lead Analytical Results

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: 01-02-00968
Site Location: MS5
Your C.O.C. #: n/a

Attention:Adam Aulenback

Pinchin Leblanc Environmental
Dartmouth - Standing Offer
42 Dorey Ave
Dartmouth, NS
B3B 0B1

Report Date: 2014/12/04
Report #: R3245808
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4M5359
Received: 2014/11/27, 13:07

Sample Matrix: Paint
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Metals Paint Acid Extr. ICPMS	6	2014/12/03	2014/12/03	ATL SOP 00058	EPA 6020A R1 m

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

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Leonard Muise, Project Manager
Email: LMuise@maxxam.ca
Phone# (902)420-0203 Ext:236
==========
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 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com

Maxxam Job #: B4M5359
Report Date: 2014/12/04

Pinchin Leblanc Environmental
Client Project #: 01-02-00968
Site Location: MS5

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		YQ5760	YQ5761	YQ5762	YQ5762	YQ5763	YQ5764	YQ5765		
Sampling Date		2014/11/27	2014/11/27	2014/11/27	2014/11/27	2014/11/27	2014/11/27	2014/11/27		
COC Number		n/a	n/a	n/a	n/a	n/a	n/a	n/a		
	Units	MS5-L001	MS5-L002	MS5-L003	MS5-L003 Lab-Dup	MS5-L004	MS5-L005	MS5-L006	RDL	QC Batch
Metals										
Acid Extractable Lead (Pb)	mg/kg	86	19	8.6	7.0	18	19	54	5.0	3844770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B4M5359
Report Date: 2014/12/04

Pinchin Leblanc Environmental
Client Project #: 01-02-00968
Site Location: MS5

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	20.0°C

Results relate only to the items tested.

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Maxxam Job #: B4M5359
Report Date: 2014/12/04

Pinchin Leblanc Environmental
Client Project #: 01-02-00968
Site Location: MS5

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3844770	DLB	Matrix Spike [YQ5762-01]	Acid Extractable Lead (Pb)	2014/12/03		94	%	75 - 125
3844770	DLB	Spiked Blank	Acid Extractable Lead (Pb)	2014/12/03		98	%	75 - 125
3844770	DLB	Method Blank	Acid Extractable Lead (Pb)	2014/12/03	ND, RDL=5.0		mg/kg	
3844770	DLB	RPD [YQ5762-01]	Acid Extractable Lead (Pb)	2014/12/03	NC		%	35

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.

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).

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Maxxam Job #: B4M5359
Report Date: 2014/12/04

Pinchin Leblanc Environmental
Client Project #: 01-02-00968
Site Location: MS5

VALIDATION SIGNATURE PAGE

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

Kevin G. MacDonald

Kevin MacDonald, Inorganics Supervisor

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.

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