

BERSCH & ASSOCIATES LTD.

July 15, 2013

City of Saskatoon

Infrastructure Services Department
1101 Avenue P North
Saskatoon, Sk.
S7L 7K6

ATTENTION: Brent Anderson

SUBJECT: A.L. Cole Pumphouse - Asbestos Registry Report

Please find attached our laboratory's results for the bulk material samples taken from the A.L. Cole Pumphouse located at 145 Spadina Crescent West, Saskatoon, SK. The samples were analyzed in our laboratory for the identification of asbestos.

The results for the samples submitted were obtained by examination in accordance with the current USEPA 600/R-93/116 Method for the analysis of asbestos in building materials using polarized light microscopy and dispersion staining techniques. The detection limit of this method is listed as less than 1% by volume.

This test report relates only to the materials sent for examination and any use or extension of the information by the client of these results is the responsibility of the client. If any questions arise on the results of the attached information please contact our office. Thank you for this opportunity of service to your firm.

Sincerely,

Dustin Fraess
Bersch & Associates Ltd.
File: B67BLE13

Bersch & Associates Ltd.

Box 3568

Humboldt, Sask. S0K 2A0

PROJECT NO. B67.13

CLIENT: City of Saskatoon

Infrastructure Services - Facilities Branch

Contact: Brent Anderson

Location: A.L. Cole Site Pumphouse - 145 Spadina Crescent West, Saskatoon, SK.

B67BAE13

BULK SAMPLE ANALYSIS REPORT

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
B1	13-May-13	Lower Level - Large flange gasket	None detected		WB

BULK SAMPLE PHOTOS

#1) Gasket Material



#1) Gasket Material





**P. MACHIBRODA
ENGINEERING
LTD.**

CONSULTING
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GEOENVIRONMENTAL
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GEOSCIENTISTS

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**HAZARDOUS MATERIALS ASSESSMENT
RIVER LANDING PHASE II
PUMP HOUSE BUILDING
SASKATOON, SASKATCHEWAN
PMEL FILE NO. S06-5711
JANUARY 31, 2006**

PREPARED FOR:

**CROSBY HANNA & ASSOCIATES
504 QUEEN STREET
SASKATOON, SASKATCHEWAN
S7K 0M5**

ATTENTION: MR. ROB CROSBY
PROJECT SUPERVISOR

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1.0 INTRODUCTION

As requested, P. Machibroda Engineering Ltd. (PMEL) has performed a Hazardous Materials Assessment for the River Landing Pump House Building, located as shown on Drawing No. S06-5711-1, at Saskatoon, Saskatchewan. The purpose of this investigation was to as follows:

1. To identify if hazardous materials (i.e., Asbestos, Lead, and/or Polychlorinated Biphenyls) were present within the subject building; and
2. Determine if the water within the subject building contains elevated concentrations of metals, Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs) and/or petroleum hydrocarbon constituents.

The Terms of Reference for this project were detailed in PMEL Proposal No. 1215-3679, dated December 16, 2005 and expanded to include water sampling on January 19, 2006 (personal communication, Mr. Rob Crosby, January 19, 2006). Verbal authorization to conduct this investigation was provided on January 10, 2006.

2.0 VISUAL REVIEW AND DESIGNATED SUBSTANCE SAMPLING

2.1 Asbestos Containing Materials (ACMs)

On January 16, 2006, a visual site review was conducted to determine if major quantities of friable ACMs were present in the subject building.

2.2 Lead

On January 16, 2006, 5 paint samples were collected and submitted to EnviroTest Laboratories (ETL) for analyses of Lead. Each sample location was documented and photographed (refer to Drawing No. S06-5711 and Appendix A).

2.3 Polychlorinated Biphenyls (PCBs)

On January 16, 2006, 2 samples of sludge (oil or grease) were collected and submitted to ETL for analyses of PCBs. Each sample location was documented and photographed (refer to Drawing No. S06-5711 and Appendix A).

2.4 Moulds/Biological Hazards

No evidence of major sources of mould was apparent during the visual site review conducted on January 16, 2006. However, animal faeces were noted in several locations within the subject building.

2.5 Water Contamination

A water sample was collected on January 16, 2006 from the tank (i.e., cistern) located on the lower level of the Pump House Building. The sample was submitted to ETL for analyses of Polycyclic Aromatic Hydrocarbons (PAHs); PCBs; Benzene, Toluene, Ethylbenzene and Xylenes (BTEX); inorganics (Metals); and Routine Water Constituents (i.e., major ions, Total Dissolved Solids, pH etc.).

3.0 RESULTS OF LABORATORY ANALYSIS

3.1 Asbestos Containing Materials (ACMs)

No major sources of Asbestos Containing Materials (ACMs) such as spray on insulation, mechanical insulation, etc. were apparent during the visual site review conducted on January 16, 2006. As such, no samples were collected for laboratory analysis of ACMs. It is likely that minor quantities of ACMs such as gaskets, caulking etc. exist at the site.

3.2 PCB and Lead Testing

3.2.1 Sample Locations

The locations of the paint samples are presented on Drawing No. S06-5711-1. The results of the bulk paint and material analysis for lead and/or PCBs are summarized in Table I, while complete laboratory reports, including a listing of the laboratory methods, are presented in Appendix B. Photographs of the sample locations have been presented in Appendix A.

3.2.2 PCBs

The PCB Waste Storage Regulations (The Minister of Environment and Public Safety, 1989) for Saskatchewan defines a "PCB solid" as any material or substance other than PCB liquid that contains or is contaminated with chlorobiphenyls at a concentration of five (5) parts per million (ppm) or more by weight of chlorobiphenyls. As such, according to Saskatchewan Regulations, neither of the two sludge/grease samples (i.e., Sample Nos. 9 and 12) were considered to be a PCB solid.

3.2.3 Lead

Recent amendments to the *Hazardous Product Act Liquid Coating Regulations* state that the maximum total lead concentration for paint and other liquid coating materials used for exterior and/or interior surfaces of any building frequented by children is 600 mg/kg (i.e., 0.06 % by dry weight). This is the same standard prescribed by the U.S. Consumer Product Safety Regulation **16 CFR Part 1303**, for paint and other liquid coating from residential use, toys and furniture. This limit was determined on the basis of a risk assessment which calculated that 600 mg/kg of lead in paint was the threshold level, at or below which there would be no significant lead exposure to a child consuming a one inch square (i.e., 645 mm²) paint chip per day.

The CCME (2002) Commercial criterion for lead has been shown in Table II for comparison purposes. All five samples laboratory tested have been determined to exceed both criteria. Based on the visual site review and the laboratory test results, it is our recommendation that all paint within the building be considered to contain lead in concentrations higher than the referenced criteria.

Information provided by Saskatchewan Environment, revealed the following:

1. Saskatchewan Environment has no specific regulations requiring that lead paint be removed prior to demolition.
2. If a building is demolished, the demolition debris (including lead painted materials) can be disposed of at a landfill.
3. If paint is removed prior to demolition, the paint must be analysed (i.e., leachate testing) to determine if it is a waste dangerous good.

Table I. Summary of Bulk Analysis – Pump House

Room. Description	Sample No.	Description/Location of Sample	Lead (mg/kg)	PCBs (mg/kg)
Entrance Room	1	Light Green Paint/ Metal housing in front of doorway.	29800	-
Entrance Room	2	Dark Green Paint/ Located under Sample #1.	80400	-
Entrance Room	3	White Paint/ East wall.	5190	-
Tank Room	6	Red Paint/ Three large tanks.	5930	-
Tank Room	7	Yellow Paint/ Duct at bottom of stairs in the lower level.	16700	-
Entrance Room	9	Grease-Oil/ Metal housing in front of doorway.	-	2
Entrance Room	12	Grease-Oil/ Container behind metal housing in front of doorway.	-	<1
Criteria:			260 ¹	5 ²

¹CCME(Canadian Council of Ministers of the Environment), 2002. Canadian Environmental Quality Guidelines. Publication No. 1299, Updated 2002.

²Saskatchewan Minister of Environment and Public Safety, 1989. The PCB Waste Storage Regulations. Revised Regulations of Saskatchewan Chapter E-10.2 Reg 6. April 11, 1989.

BOLD – Concentration Exceeds Referenced Criterion.

A solicited interview with Saskatchewan Occupational Health and Safety personnel revealed that Saskatchewan Occupational Health and Safety do not have a specific policy for lead based paint removal other than to protect the worker.

Wet abrasive blasting could be used to effectively remove the lead based paint. Sanding, grinding, drilling and/or demolition activities could generate elevated concentrations of airborne lead (dust).

3.3 Biocontaminants (moulds and faeces)

The visual site review of the Pump House Building did not reveal any obvious mould contamination. However, canine faecal material was present throughout the subject building. Although rodent faecal material was not apparent, it is likely that it exists due to the numerous access points to the outdoors.

3.4 Groundwater Sampling

The results of the water sampling are presented in Table II along with the CCME (2002) Fresh Water Aquatic Life Criteria. The concentrations of Cadmium, Iron and Lead measured in the water sample analyzed exceeded the above referenced criteria. In addition to the above, the detection limits for Chromium measured in the water sample analyzed exceeded the referenced criteria. The concentrations of all other constituents measured in the groundwater sample analyzed were below the referenced criteria.

Table II. Summary of Water Chemical Analysis - Pump House

Sample No.	1	CCME (2002) ¹
Date Sampled	16-Jan-06	
Location	Below Entrance Room. NE corner.	Criteria for Water for Protection of Aquatic Life
PARAMETER		
INORGANIC PARAMETERS		
Silver	<0.0001	0.0001
Aluminum	0.02	0.1
Arsenic	<0.0004	0.005
Boron	0.5	NC
Barium	0.044	NC
Beryllium	<0.001	NC
Cadmium	0.0001	0.000017
Cobalt	<0.002	NC
Chromium	<0.005	0.001
Copper	0.003	0.003
Iron	0.58	0.3
Mercury	<0.0001	0.0001
Lithium	0.022	NC
Molybdenum	<0.005	0.073
Nickel	<0.002	0.11
Lead	0.0081	0.004
Antimony	0.0004	NC
Selenium	<0.0004	0.001
Tin	<0.05	NC
Titanium	<0.001	NC
Thallium	<0.0001	0.0008
Uranium	<0.0001	NC
Vanadium	<0.001	NC
Zinc	0.013	0.03
Calcium	16.1	NC
Potassium	24.2	NC
Magnesium	16.3	NC
Sodium	59.2	NC
Manganese	0.053	NC

Results are expressed in milligrams per litre (ppm)

NC - No Criteria

¹Canadian Council of Ministers of the Environment, 2002. Canadian Environmental Quality Guidelines. Winnipeg, MB.

■ - Concentration Exceeds Referenced Criterion.

▒ - Laboratory Detection Limit Exceeds Referenced Criterion.

Table II. Summary of Water Chemical Analysis - Continued...

Sample No.	1	CCME (2002) ¹
Date Sampled	16-Jan-06	
Location	Below Entrance Room. NE corner.	Criteria for Water for Protection of Aquatic Life
PARAMETER		
PCBs (Total)	<0.00005	NC
PAHs		
Naphthalene	<0.00001	0.0011
Quinoline	<0.00001	0.0034
Acenaphthene	<0.00001	0.0058
Fluorene	<0.00001	0.003
Phenanthrene	<0.00001	0.0004
Anthracene	<0.00001	0.000012
Acridine	<0.00001	0.0044
Fluoranthene	0.00002	0.00004
Pyrene	0.00002	0.000025
Benzo(a)anthracene	<0.00001	NC
Chrysene	<0.00001	NC
Benzo(b)fluoranthene	<0.00001	NC
Benzo(k)fluoranthene	<0.00001	NC
Benzo(a)pyrene	<0.00001	0.000015
Indeno(1,2,3-cd)pyrene	<0.00001	NC
Dibenzo(a,h)anthracene	<0.00001	NC
PETROLEUM HYDROCARBONS		
Benzene	<0.0005	0.37
Toluene	<0.0005	0.002
Ethylbenzene	<0.0005	0.09
Xylenes	<0.002	NC
ROUTINE PARAMETERS		
Alkalinity, Total (CaCO ₃)	133	NC
Bicarbonate (HCO ₃)	163	NC
Hydroxide (OH)	<5	NC
Carbonate (CO ₃)	<5	NC
Chloride (Cl)	66	NC
pH	8.6	NC
Conductivity (EC)	570	NC

Results are expressed in milligrams per litre (ppm)

NC - No Criteria

¹Canadian Council of Ministers of the Environment, 2002. Canadian Environmental Quality Guidelines. Winnipeg, MB.

■ - Concentration Exceeds Referenced Criterion.

▒ - Laboratory Detection Limit Exceeds Referenced Criterion.

4.0 DISCUSSION OF RESULTS

4.1 Hazardous Building Materials

Based on the results of the visual site review and follow-up testing, all painted surfaces at the subject building should be treated as containing elevated concentrations of lead. Sanding, grinding, drilling and/or demolition activities could generate elevated concentrations of airborne lead (dust). As such, it is recommended that all activities requiring disturbance or removal of lead painted surfaces be conducted in accordance with applicable guidelines and/or regulations. If lead painted surfaces are stripped it will require characterization/classification prior to disposal.

No other potentially hazardous building materials were evident on the basis of the visual site review. However, based on the age of the subject building, it is possible that Asbestos Containing Materials (ACMs) are present, but in small quantities (i.e., gaskets, caulking etc.).

4.2 Biological Hazards

Canine faecal material was present throughout the subject building. Although rodent faecal material was not apparent it is likely present due to the numerous openings throughout the subject building. Although testing of the faecal material was not performed during this investigation, it should be assumed that pathogenic/toxigenic fungi are present in all faecal material.

4.3 Water

Cadmium, Iron and Lead at concentrations (i.e., 0.0001, 0.58 and 0.0081 mg/L, respectively) marginally exceeding the CCME (2002) Freshwater Aquatic Life Criteria (i.e., 0.000017, 0.3 and 0.004 mg/L, respectively) were measured in the water sample recovered from the site. In addition, laboratory detection limits for Chromium (0.005 mg/L) in the water sample analyzed marginally exceeded the above referenced criteria (i.e., 0.001 mg/L). The concentrations of all other constituents measured in the groundwater sample analyzed were below the referenced criteria.

Since the measured concentrations were only marginally above the CCME (2002) Freshwater Aquatic Life Criteria, it is likely that the water can be disposed of in the City of Saskatoon sanitary system. However, approval for this disposal method will be required by Saskatchewan Environment and the City of Saskatoon prior to implementation.

The relatively low degree of mineralization in the water sample analyzed suggests that its source may be surface water (i.e., infiltration of rainwater or river water).

5.0 CLOSURE

The presentation of the findings of our investigation has been completed as authorized. It should be recognized that conditions reported here may change with time at any specific test locations and may be different at locations other than the exact sampling locations.

This report has been prepared for the exclusive use of The City of Saskatoon, Crosby Hanna & Associates and their agents for specific application to the Pump House Building at River Landing, Saskatoon, Saskatchewan. It has been prepared in accordance with generally accepted geoenvironmental engineering practices and no other warranty, express or implied, is made.

Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, are the responsibility of such Third Parties. P. Machibroda Engineering Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

We trust that the report fulfills your requirements for this project. Should you have any questions or require additional information, please contact us.

Yours very truly,

P. MACHIBRODA ENGINEERING LTD.




Jason Drury, Engineer-In-Training



Ray Machibroda, P.Eng., M.Sc.

JD:RM:zz;clb

Association of Professional Engineers & Geoscientists of Saskatchewan		
CERTIFICATE OF AUTHORIZATION		
P. MACHIBRODA ENGINEERING LTD.		
Number 172		
Permission to Consult held by:		
Discipline	SK.Reg.No.	Signature
Geoenvironmental	6687	
<hr/>		
06-01-31		



P. MACHIBRODA ENGINEERING LTD.

6.0 REFERENCES

CCME (Canadian Council of Ministers of the Environment). 2002. Recommended Canadian Soil Quality Guidelines. Prepared by the CCME Subcommittee on Environmental Quality Criteria for Contaminated Sites. Winnipeg, Manitoba.

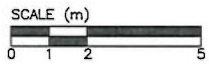
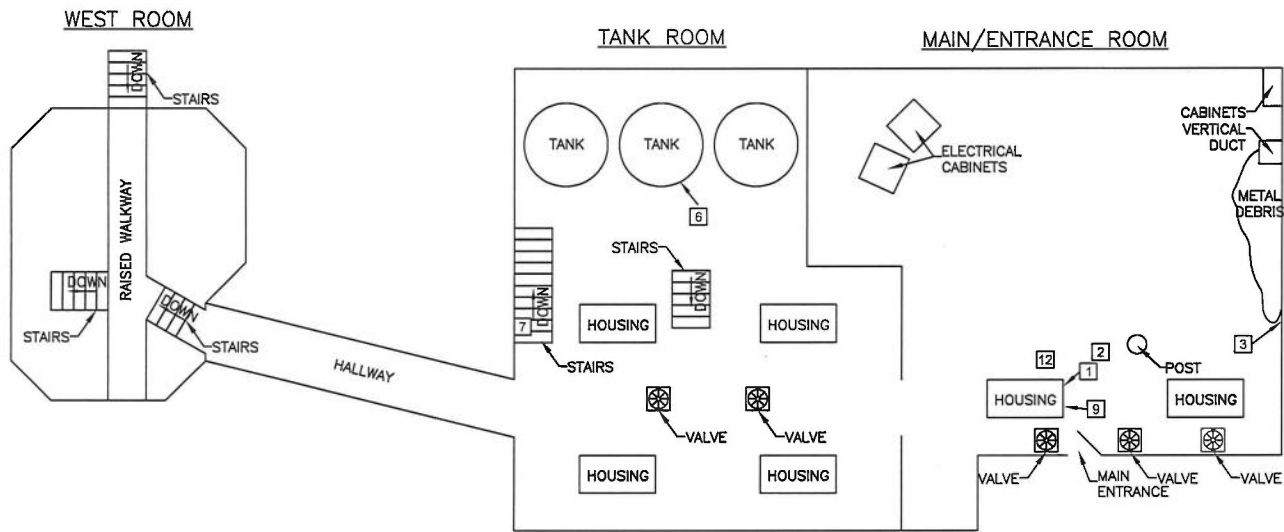
Environment Canada. 1991. Identification of Lamp Ballasts Containing PCBs. Report EPS 2/CC/2(Revised).

Saskatchewan Minister of Environment and Public Safety. 1989. The PCB Waste Storage Regulations. Revised Regulations of Saskatchewan, Chapter E-10.2 Reg 6. Saskatchewan.



**P. MACHIBRODA
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DRAWINGS



SITE PLAN



KEY PLAN

NOTE:
 1. THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY.
 ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES
 ARE SHOWN.

LEGEND	
	-SAMPLE LOCATION
P. MACHIBRODA ENGINEERING LTD.	
CONSULTING GEOTECHNICAL GEOENVIRONMENTAL ENGINEERS 2623 B FAITHFULL AVENUE SASKATOON, SK	
DRAWING TITLE:	
SITE PLAN - SAMPLE LOCATIONS	
PROJECT: PHASE II - HAZARDOUS MATERIALS ASSESSMENT PUMP HOUSE BUILDING, SASKATOON, SK	
SCALE: NOT TO SCALE	DRAWING NUMBER:
DATE: JANUARY, 2006	S06-5711-1

APPENDIX A

Photographs

Pump House Building - River Landing Phase II



SAMPLE No.	1
DESCRIPTION	Light Green Paint
LOCATION	Entrance Room/ Metal Housing Inside Entrance
Lead (mg/kg)	29800



SAMPLE No.	2
DESCRIPTION	Dark Green Paint
LOCATION	Under Sample No. 1
Lead (mg/kg)	80400



SAMPLE No.	3
DESCRIPTION	White Paint
LOCATION	Entrance Room/ East Wall
Lead (mg/kg)	5190



SAMPLE No.	6
DESCRIPTION	Red Paint
LOCATION	Tank Room/ Three Large Tanks
Lead (mg/kg)	5930



SAMPLE No.	7
DESCRIPTION	Yellow Paint
LOCATION	Tank Room/ Duct in Lower Level
Lead (mg/kg)	16700



SAMPLE No.	9
DESCRIPTION	Grease-Oil
LOCATION	Entrance Room/ Metal Housing Inside Entrance
PCBs (mg/kg)	2



SAMPLE No.	12
DESCRIPTION	Grease-Oil
LOCATION	Entrance Room/ Container Beside Metal Housing
PCBs (mg/kg)	<1

APPENDIX B

Laboratory Reports

ANALYTICAL REPORT

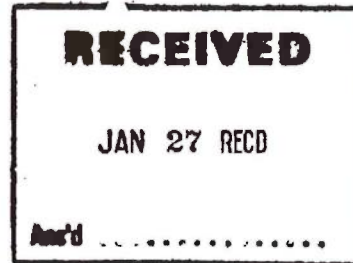
P.MACHIBRODA ENGINEERING LTD
ATTN: RAY MACHIBRODA
2623 B FAITHFULL AVENUE
SASKATOON SK S7K 5W2

DATE: 24-JAN-06 10:39 AM

Lab Work Order #: L356338
Project P.O. #: HAZARDOUS MATERIALS ASSESSMENT
Job Reference: S06-5711
Other Information:

Date Received: 17-JAN-06

Comments:



APPROVED BY:

KAREN BONNIE MALANOWICH
Project Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ANY REMAINING SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU
REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	By	Batch
L356338-1 1								
Sampled By: JD on 16-JAN-06								
Matrix: WATER								
Dissolved Metals - CCME								
Dissolved Trace Metals								
Silver (Ag)	<0.0001		0.0001	mg/L		19-JAN-06	CVE	R365191
Aluminum (Al)	0.02		0.01	mg/L		19-JAN-06	CVE	R365191
Arsenic (As)	<0.0004		0.0004	mg/L		19-JAN-06	CVE	R365191
Boron (B)	0.50		0.05	mg/L		19-JAN-06	CVE	R365191
Barium (Ba)	0.044		0.003	mg/L		19-JAN-06	CVE	R365191
Beryllium (Be)	<0.001		0.001	mg/L		19-JAN-06	CVE	R365191
Cadmium (Cd)	0.0001		0.0001	mg/L		19-JAN-06	CVE	R365191
Cobalt (Co)	<0.002		0.002	mg/L		19-JAN-06	CVE	R365191
Chromium (Cr)	<0.005		0.005	mg/L		19-JAN-06	CVE	R365191
Copper (Cu)	0.003		0.001	mg/L		19-JAN-06	CVE	R365191
Mercury (Hg)	<0.0001		0.0001	mg/L		19-JAN-06	CVE	R365191
Lithium (Li)	0.022		0.003	mg/L		19-JAN-06	CVE	R365191
Molybdenum (Mo)	<0.005		0.005	mg/L		19-JAN-06	CVE	R365191
Nickel (Ni)	<0.002		0.002	mg/L		19-JAN-06	CVE	R365191
Lead (Pb)	0.0081		0.0001	mg/L		19-JAN-06	CVE	R365191
Antimony (Sb)	0.0004		0.0004	mg/L		19-JAN-06	CVE	R365191
Selenium (Se)	<0.0004		0.0004	mg/L		19-JAN-06	CVE	R365191
Tin (Sn)	<0.05		0.05	mg/L		19-JAN-06	CVE	R365191
Titanium (Ti)	<0.001		0.001	mg/L		19-JAN-06	CVE	R365191
Thallium (Tl)	<0.0001		0.0001	mg/L		19-JAN-06	CVE	R365191
Uranium (U)	<0.0001		0.0001	mg/L		19-JAN-06	CVE	R365191
Vanadium (V)	<0.001		0.001	mg/L		19-JAN-06	CVE	R365191
Zinc (Zn)	0.013		0.002	mg/L		19-JAN-06	CVE	R365191
Dissolved Major Metals								
Calcium (Ca)	16.1		0.5	mg/L		18-JAN-06	CVE	R364952
Potassium (K)	24.2		0.1	mg/L		18-JAN-06	CVE	R364952
Magnesium (Mg)	16.3		0.01	mg/L		18-JAN-06	CVE	R364952
Sodium (Na)	59.2		0.5	mg/L		18-JAN-06	CVE	R364952
Iron (Fe)	0.580		0.005	mg/L		18-JAN-06	CVE	R364952
Manganese (Mn)	0.053		0.001	mg/L		18-JAN-06	CVE	R364952
PCBs								
Aroclor 1016	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Aroclor 1221	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Aroclor 1232	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Aroclor 1242	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Aroclor 1248	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Aroclor 1254	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Aroclor 1260	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Aroclor 1262	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Aroclor 1268	<0.00001		0.00001	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Total PCBs	<0.00005		0.00005	mg/L	19-JAN-06	20-JAN-06	AMB	R365442
Surr: Decachlorobiphenyl	95		65-119	%	19-JAN-06	20-JAN-06	AMB	R365442
CCME PAHs								
Naphthalene	<0.00001	RAMB	0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Quinoline	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Acenaphthene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Fluorene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Phenanthrene	<0.00001	RAMB	0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Anthracene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	By	Batch
L356338-1	1							
Sampled By:	JD on 16-JAN-06							
Matrix:	WATER							
CCME PAHs								
Acridine	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Fluoranthene	0.00002	RAMB	0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Pyrene	0.00002	RAMB	0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Benzo(a)anthracene	<0.00001	RAMB	0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Chrysene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Benzo(b)fluoranthene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Benzo(k)fluoranthene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Benzo(a)pyrene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Indeno(1,2,3-cd)pyrene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Dibenzo(a,h)anthracene	<0.00001		0.00001	mg/L	20-JAN-06	20-JAN-06	JME	R365943
Surr: Nitrobenzene d5	92		42-107	%	20-JAN-06	20-JAN-06	JME	R365943
Surr: 2-Fluorobiphenyl	85		48-104	%	20-JAN-06	20-JAN-06	JME	R365943
Surr: p-Terphenyl d14	110		63-132	%	20-JAN-06	20-JAN-06	JME	R365943
BTEX								
Benzene	<0.0005		0.0005	mg/L	18-JAN-06	19-JAN-06	LIW	R365116
Toluene	<0.0005		0.0005	mg/L	18-JAN-06	19-JAN-06	LIW	R365116
Ethylbenzene	<0.0005		0.0005	mg/L	18-JAN-06	19-JAN-06	LIW	R365116
Xylenes	<0.002		0.0015	mg/L	18-JAN-06	19-JAN-06	LIW	R365116
Routine Water Analysis								
Alkalinity, Total								
Alkalinity, Total (as CaCO3)	133		5	mg/L	17-JAN-06	17-JAN-06	HSL	R364675
Bicarbonate (HCO3)	163		5	mg/L	17-JAN-06	17-JAN-06	HSL	R364675
Hydroxide (OH)	<5		5	mg/L	17-JAN-06	17-JAN-06	HSL	R364675
Carbonate (CO3)	<5		5	mg/L	17-JAN-06	17-JAN-06	HSL	R364675
Chloride (Cl)	66		1	mg/L	20-JAN-06	20-JAN-06	BFE	R365482
pH and Conductivity								
pH	8.6		0.1	pH	17-JAN-06	17-JAN-06	MKP	R365250
Conductivity (EC)	570		10	uS/cm	17-JAN-06	17-JAN-06	MKP	R365250
Nitrate, Nitrite and Nitrate+Nitrite-N								
Nitrate-N	<0.1		0.1	mg/L	18-JAN-06	18-JAN-06	BFE	R365219
Nitrite-N	<0.05		0.05	mg/L	18-JAN-06	18-JAN-06	BFE	R365219
Nitrate+Nitrite-N	<0.1		0.1	mg/L	18-JAN-06	18-JAN-06	BFE	R365219
Ion Balance Calculation								
Ion Balance	95.1			%		20-JAN-06		
TDS (Calculated)	304			mg/L		20-JAN-06		
Hardness (as CaCO3)	103			mg/L		20-JAN-06		
ICP Cations								
Calcium (Ca)	15		2	mg/L	20-JAN-06	20-JAN-06	MKP	R365443
Potassium (K)	24		1	mg/L	20-JAN-06	20-JAN-06	MKP	R365443
Magnesium (Mg)	16		1	mg/L	20-JAN-06	20-JAN-06	MKP	R365443
Sodium (Na)	58		1	mg/L	20-JAN-06	20-JAN-06	MKP	R365443
Sulfate (SO4)	45		6	mg/L	20-JAN-06	20-JAN-06	MKP	R365443

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

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
RAMB	Result Adjusted For Method Blank

Methods Listed (if applicable):

ETL Test Code	Matrix	Test Description	Preparation Method Reference(Based On)	Analytical Method Reference(Based On)
ALK-TOT-SK	Water	Alkalinity, Total		APHA 2320 B-Auto-Pot. Titration
BTX-SK	Water	BTEX		EPA 5030/8021B-P&T GC-PID
CL-SK	Water	Chloride (Cl)		APHA 4110B
ETL-ROUTINE-ICP-SK	Water	ICP Cations		APHA 3120 B-ICP-OES
IONBALANCE-SK	Water	Ion Balance Calculation		APHA 1030E
MET1-DIS-CCME-ED	Water	Dissolved Trace Metals		EPA 6020
MET2-DIS-ED	Water	Dissolved Major Metals		EPA 200.7
N2/N3-SK	Water	Nitrate, Nitrite and Nitrate+Nitrite-N		APHA 4500 NO3F
PAH-CCME-ED	Water	CCME PAHs	EPA 3510	EPA 3510/8270-GC/MS
PCB-ED	Water	PCBs		EPA 3510/8082-GC-ECD
PH/EC-SK	Water	pH and Conductivity		APHA 4500-H, 2510

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

Chain of Custody numbers:

L356338

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	Laboratory Definition Code	Laboratory Location
ED	Enviro-Test Laboratories - Edmonton, Alberta, Canada	SK	Enviro-Test Laboratories - Saskatoon, Saskatchewan, Canada

GLOSSARY OF REPORT TERMS

Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.

The reported surrogate recovery value provides a measure of method efficiency. The Laboratory warning units are determined under column heading D.L.

mg/kg (units) - unit of concentration based on mass, parts per million

mg/L (units) - unit of concentration based on volume, parts per million

< - Less than

D.L. - Detection 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.

UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.

Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

Enviro-Test Laboratories has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, Enviro-Test Laboratories assumes no liability for the use or interpretation of the results.



Enviro-Test

LABORATORIES

ANALYTICAL REPORT

P.MACHIBRODA ENGINEERING LTD
ATTN: RAY MACHIBRODA
2623 B FAITHFULL AVENUE
SASKATOON SK S7K 5W2

DATE: 24-JAN-06 02:24 PM

Lab Work Order #: L356674
Project P.O. #: HAZARDOUS MATERIALS ASSESSMENT
Job Reference: S06-5711
Other Information:

Date Received: 18-JAN-06

Comments:



APPROVED BY: _____

[Signature]
KAREN BONNIE MALANOWICH
Project Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ANY REMAINING SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU
REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	By	Batch
L356674-1 #1 Sampled By: JD on 18-JAN-06 Matrix: PAINT Lead (Pb)	29800		5	mg/kg	23-JAN-06	23-JAN-06	MKP	R365880
L356674-2 #2 Sampled By: JD on 18-JAN-06 Matrix: PAINT Lead (Pb)	80400		5	mg/kg	23-JAN-06	23-JAN-06	MKP	R365880
L356674-3 #3 Sampled By: JD on 18-JAN-06 Matrix: PAINT Lead (Pb)	5190		5	mg/kg	23-JAN-06	23-JAN-06	MKP	R365880
L356674-4 #6 Sampled By: JD on 18-JAN-06 Matrix: PAINT Lead (Pb)	5930		5	mg/kg	23-JAN-06	23-JAN-06	MKP	R365880
L356674-5 #7 Sampled By: JD on 18-JAN-06 Matrix: PAINT Lead (Pb)	16700		5	mg/kg	23-JAN-06	23-JAN-06	MKP	R365880
L356674-6 #9 Sampled By: JD on 18-JAN-06 Matrix: GREASE/OIL PCB								
Aroclor 1016	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1221	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1232	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1242	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1248	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1254	2	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1260	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1262	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1268	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Total PCBs	2	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
L356674-7 #12 Sampled By: JD on 18-JAN-06 Matrix: GREASE/OIL PCB								
Aroclor 1016	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1221	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1232	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1242	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1248	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1254	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1260	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	By	Batch
L356674-7 #12								
Sampled By: JD on 18-JAN-06								
Matrix: GREASE/OIL								
PCB								
Aroclor 1262	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Aroclor 1268	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
Total PCBs	<1	DLM	1	mg/kg	20-JAN-06	24-JAN-06	THT	R366432
* Refer to Referenced Information for Qualifiers (if any) and Methodology.								

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjustment For Sample Matrix Effects

Methods Listed (if applicable):

ETL Test Code	Matrix	Test Description	Preparation Method Reference(Based On)	Analytical Method Reference(Based On)
PB-PAINT-SK	Bulk	Lead (Pb) in Paint		SW846-6010
PCB-WP	Man-Made	PCB		EPA SW-846, 3550A, Sep 1994

A 10 gram aliquot of soil sample is extracted with 25 mLs of 50% acetone/hexane using a shaker followed by sonication. An aliquot of the extract is solvent exchanged into hexane, cleaned with sulphuric acid and analyzed by gas chromatography/electron capture detection. The sample is quantitated against commercial Arochlor standards.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

Chain of Custody numbers:

L356674

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	Laboratory Definition Code	Laboratory Location
SK	Enviro-Test Laboratories - Saskatoon, Saskatchewan, Canada	WP	Enviro-Test Laboratories - Winnipeg, Manitoba, Canada

GLOSSARY OF REPORT TERMS

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The reported surrogate recovery value provides a measure of method efficiency. The Laboratory warning units are determined under column heading D.L.

mg/kg (units) - unit of concentration based on mass, parts per million

mg/L (units) - unit of concentration based on volume, parts per million

< - Less than

D.L. - Detection Limit

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

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UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.

Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

Enviro-Test Laboratories has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, Enviro-Test Laboratories assumes no liability for the use or interpretation of the results.