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**MANAGEMENT AREA 1 ADJACENT TO 6055 MONTEREY ROAD,  
PRINCE GEORGE, BC**

**Performance Verification Plan**

**April 2016**  
**SLR Project No.: 201.03502.00016**



**PERFORMANCE VERIFICATION PLAN  
MANAGEMENT AREA 1 ADJACENT TO 6055 MONTEREY ROAD,  
PRINCE GEORGE, BC  
SLR Project No.: 201.03502.00016**

Prepared by  
SLR Consulting (Canada) Ltd.  
200 - 1620 West 8<sup>th</sup> Avenue  
Vancouver, BC V6J 1V4

for

Suncor Energy Products Partnership  
PO Box 100, 1155 Glenayre Drive  
Port Moody, BC V3H 3E1

April 2016

Prepared by:

**Barbara Glijer, B.Sc, G.D. Ecotoxicology, PChem**  
Senior Risk Assessor

**CONFIDENTIAL**

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## DRAWING

Drawing 1: Management Area 1 and Property Plan

## 1.0 INTRODUCTION

SLR Consulting (Canada) Ltd. (SLR), on behalf of Suncor Energy Products Partnership (Suncor), prepared this Performance Verification Plan (PVP) for the Management Area 1 impacted by contaminant releases from the former service station/current automotive repair facility at 6055 Monterey Road, Prince George, BC (the "Property").

This PVP presents risk management controls to be implemented at Management Area 1 to ensure that risk-based Certificate of Compliance (CoC) will remain valid. This report was prepared in accordance with BC Ministry of Environment (MOE) Administrative Guidance 14: *Performance Verifications Plans, Contingency Plans, and Operations and Maintenance Plans* (BC MOE, 2014).

## 2.0 BACKGROUND

Management Area 1 is an area immediately adjacent to north-western Property boundary which has been affected by historical releases of petroleum hydrocarbon (PHC)-related contamination from the Property. The size of the Management Area is 67.4 m<sup>2</sup> and it encompasses a landscaped area adjacent to Monterey Road. Management Area 1 is owned by the City of Prince George.

Investigations conducted by SLR and other consultants between 1993 and 2016 at the Property and adjacent areas identified PHC-related contamination in soil and groundwater associated with the historical use of the Property. Most of the soil contamination from the Property has been removed through remedial excavation as part of the facility decommissioning and through operation of vapour extraction system (VES) and nutrient injection. No remediation was performed at Management Area 1.

The Human Health and Ecological Risk Assessment (HHERA) was completed by SLR in April 2016 to estimate potential risk to human and ecological receptors from potential exposure to residual contamination (SLR, 2016). This HHERA was conducted under the assumption that the current industrial land (IL) use designation for Management Area 1 will remain unchanged in the future. In addition, potable water use by commercial workers employed at local enterprises was assessed under hypothetical future water use scenario. Based on the future hypothetical groundwater use scenario, the following exposure pathways were quantified for commercial worker:

- Ingestion of groundwater;
- Dermal exposure to groundwater; and
- Inhalation of volatile organic compounds (VOCs) from groundwater.

Potential exposures to dissolved arsenic and benzene, identified as contaminants of potential concern (COPCs) for the protection of human health in groundwater within Management Area 1, were quantified for the commercial worker receptor. The results indicated unacceptable risk to the commercial worker receptor from exposure to dissolved arsenic in groundwater through ingestion and dermal contact with groundwater.

Groundwater from the Management Area 1 may discharge to surface water, McMillan Creek, located 445 m east of the Management Area. Volatile petroleum hydrocarbons in water (VPH<sub>w</sub>), light extractable petroleum hydrocarbons in water (LEPH<sub>w</sub>) and naphthalene were identified as

COPCs in groundwater for the protection of aquatic ecological receptors. However, potential exposure to aquatic receptors through contact with groundwater is considered an incomplete and insignificant pathway as these COPCs were vertically and horizontally delineated within the Management Area 1 and are at stable and/or decreasing concentrations. As such, they are not expected to reach receiving environment at concentrations exceeding applicable water standards.

### **3.0 REQUIRED RISK CONTROLS**

The required risk controls to manage potential risk identified in the HHERA included the following:

- The groundwater at the Management Area 1 must not be used as a source of potable water.

### **4.0 REQUIRED ACTIONS TO IMPLEMENT THE REQUIRED RISK CONTROLS**

Based on consideration of current/future land use at the Management Area 1 and the results of HHERA (SLR, 2016), the following performance verification actions are recommended and will be the responsibility of City of Prince George:

1. Inclusion of an advisory (as item (a) in clause 2 of Schedule B of any Certificate of Compliance issued for the site) that “The groundwater at the Management Area 1 must not be used as a source of potable water”.

Notification to the Director is required if the subject of this advisory is breached. The listing of the risk management measure in Schedule B of the CoC meets this requirement.

### **5.0 SUMMARY RATIONALE FOR SELECTING REQUIRED PVP ELEMENTS**

The Management Area 1 is classified as a Risk-Based Remediation Type 2 Site on the basis that risk management measures are required but failure of risk management measures will not result in the imminent exposure of site contaminants to humans, or discharge of contaminants to the aquatic receiving environment at concentrations above BC water quality guidelines, or imminent exposure of contaminants to terrestrial ecological receptors at levels 10 times site-specific risk-based concentrations, or contaminant spreading at concentrations above upper cap concentrations.

The excess cancer risk (ECR) derived for the commercial worker receptor through combined exposure (ingestion and dermal contact) to dissolved arsenic in groundwater assumed to be used as a potable water source in the future was 1.3E-04. Based on the derived risk estimates in excess of the CSR risk-based standard of 1E-05, protection of commercial workers by restricting the installation of potable water well within Management Area 1 was included as a risk management measure in Schedule B of the CoC.

## 6.0 REFERENCES

BC MOE. 2014. British Columbia Ministry of the Environment. Administrative Guidance 14: Performance Verification Plans, Contingency Plans, and Operations and Maintenance Plans. Version 1.0. February, 2014.

SLR, 2016. Human Health and Ecological Risk Assessment. Suncor Energy Products Partnership. 6055 Monterey Road, Prince George, BC. MOE Identification No: 3218. April 22, 2016.

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1\_PVP\_Management Area 1\2\1. PVPManagement Area 1rev.docx

## **DRAWING**

Performance Verification Plan  
Management Area 1 Adjacent to 6055 Monterey Road,  
Prince George, BC  
SLR Project No.: 201.03502.00016

**Metes and Bounds description**

**Area 1**

A portion of land lying over a portion of Monterey Road in the vicinity of 6055 Monterey Road within District Lot 4039 Cariboo District, more particularly described as follows:

From a standard iron post at the most easterly corner of Parcel B (S35060) District Lot 4039 Plan 28088, in a north westerly direction, along the north easterly boundary of Parcel B (S35060) District Lot 4039 Plan 28088, on a curve to the left with a radius of 440.000 metres, and a starting azimuth of 232°05'37", having an arc length of 53.280 metres, more or less, to a point thence;

On an azimuth of 315° 02' 24", in a north westerly direction, along the north easterly boundary of Parcel B (S35060) District Lot 4039 Plan 28088, a distance of 2.181 metres, more or less, to a point, thence;

On an azimuth of 269° 17' 08", in a westerly direction, along the northerly boundary of Parcel B (S35060) District Lot 4039 Plan 28088, a distance of 6.961 metres, more or less, to a point, thence;

On an azimuth of 223° 24' 20", in a south westerly direction, along the north westerly boundary of Parcel B (S35060) District Lot 4039 Plan 28088, a distance of 8.124 metres, more or less, to the Point Of Commencement 1, thence;

On an azimuth of 223° 24' 20", in a south westerly direction, along the north westerly boundary of Parcel B (S35060) District Lot 4039 Plan 28088, a distance of 15.511 metres, more or less, to a point, thence;

On an azimuth of 315° 33' 54" a distance of 4.616 metres, more or less, to a point, thence;

On an azimuth of 45° 23' 41" a distance of 15.500 metres, more or less, to a point, thence;

On an azimuth of 135° 33' 54" a distance of 4.078 metres, more or less, to the Point Of Commencement 1, containing 67.4 square metres, more or less.

**Area 2**

A portion of land lying over a portion of Hartway Drive in the vicinity of 6055 Monterey Road within District Lot 4039 Cariboo District, more particularly described as follows:

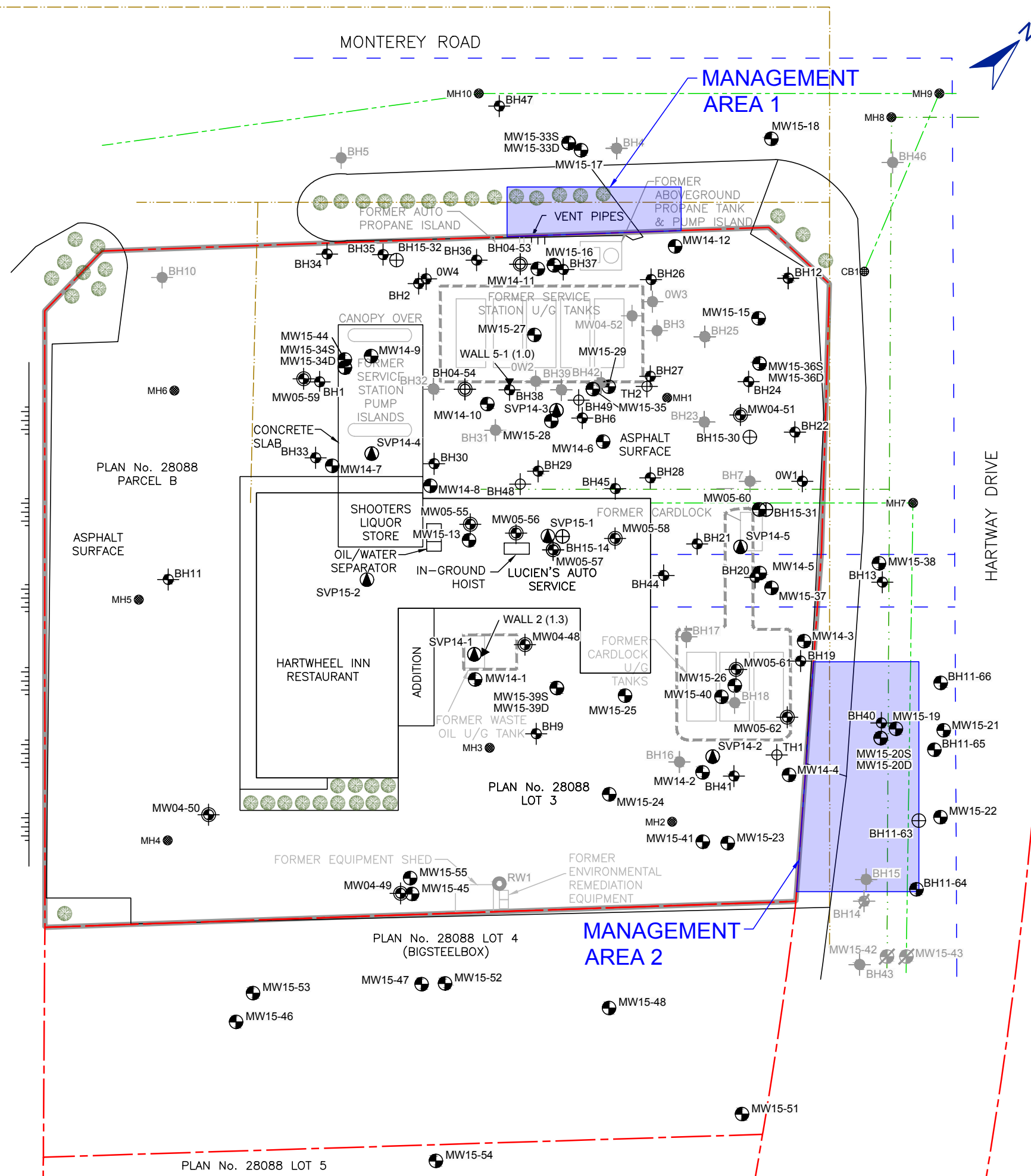
From a standard iron post at the most easterly corner of Parcel B (S35060) District Lot 4039 Plan 28088, in a north westerly direction, along the north easterly boundary of Parcel B (S35060) District Lot 4039 Plan 28088, on a curve to the left with a radius of 440.000 metres, and a starting azimuth of 232°05'37", having an arc length of 0.896 metres, more or less, to the Point Of Commencement 2, thence;

On a curve to the left with a radius of 440.000 metres, and a starting azimuth of 231°58'37", having an arc length of 20.089 metres, more or less, in a northwesterly direction, along the north easterly boundary of Parcel B (S35060) District Lot 4039 Plan 28088, to a point, thence;

On an azimuth of 45° 20' 01" a distance of 9.068 metres, more or less, to a point, thence;

On an azimuth of 134° 57' 23" a distance of 20.000 metres, more or less, to a point, thence;

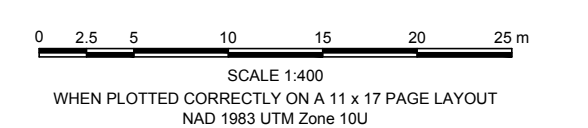
On an azimuth of 225° 20' 01" a distance of 11.067 metres, more or less, to the Point Of Commencement 2, containing 199.8 square metres, more or less.



**NOTES:**  
 REFERENCED FROM: WORLEYPARSONS KOMEX DRAWING, PROJECT No. B2025 FIGURE 2, WORLEYPARSONS KOMEX DRAWING: UST REMOVAL PLAN AND SOIL EXCEEDANCES SUMMARY, PROJECT No. B2025 FIGURE 3 (DATE: 07/27/03), WORLEYPARSONS KOMEX DRAWING: WASTE OIL TANK EXCAVATION DETAIL AND SOIL EXCEEDANCES SUMMARY, PROJECT No. B2025 FIGURE 3 (DATE: 07/18/12), O'CONNOR ASSOCIATES DRAWING: VAPOUR CONCENTRATIONS IN SHALLOW PROBE HOLES OCTOBER 1993, PROJECT No. 10-3055 LOCATIONS AND SOIL EXCEEDANCES SUMMARY, PROJECT No. 10-3055 FIGURE 1.4 (DATE: 93/11/02), O'CONNOR ASSOCIATES DRAWING: SOIL SAMPLE LOCATIONS AND VAPOUR CONCENTRATION MEASUREMENTS, PROJECT No. 10-3055 FIGURE 1.5 (DATE: 93/11/02), AND SITE RECONNAISSANCE INFORMATION.

**LEGEND:**

- PROPERTY BOUNDARY
- PREOPRTY LOCATION
- METES AND BOUNDS / MANAGEMENT AREA
- FORMER FACILITY/FEATURE
- FORMER LIMITS OF EXCAVATION
- BOREHOLE LOCATION (SLR)
- BOREHOLE LOCATION (OTHERS)
- BOREHOLE LOCATION WORLEY PARSONS KOMEX
- BOREHOLE LOCATION COMPLETED AS A MONITORING WELL (SLR)
- BOREHOLE LOCATION COMPLETED AS A MONITORING WELL (OTHERS)
- BOREHOLE LOCATION COMPLETED AS A MONITORING WELL (WORLEY PARSONS KOMEX)
- BOREHOLE LOCATION COMPLETED AS A MONITORING WELL (DESTROYED)
- BOREHOLE LOCATION COMPLETED AS A MONITORING WELL (OTHERS) (DECOMMISSIONED)
- SOIL VAPOUR POINT
- RECOVERY WELL (OTHERS) (DECOMMISSIONED)
- TREE
- UTILITIES AND SYMBOLS**
- CATCH BASIN
- MANHOLE
- U/G NATURAL GAS
- U/G SANITARY SEWER
- U/G STORM SEWER
- U/G WATER LINE



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

**SUNCOR ENERGY PRODUCTS PARTNERSHIP  
 6055 MONTEREY ROAD  
 PRINCE GEORGE, BC**

**PERFORMANCE VERIFICATION PLAN  
 MANAGEMENT AREA ADJACENT TO 6055  
 MONTEREY ROAD, PRINCE GEORGE, BC**

**MANAGEMENT AREA 1 AND PROPERTY PLAN**

Date: April 15, 2016	Drawing No. 1
Project No. 201.03502.00016	







global environmental solutions

**Calgary, AB**

1185-10201 Southport Rd SW  
Calgary, AB T2W 4X9  
Canada  
Tel: (403) 266-2030  
Fax: (403) 263-7906

**Edmonton, AB**

6940 Roper Road  
Edmonton, AB T6B 3H9  
Canada  
Tel: (780) 490-7893  
Fax: (780) 490-7819

**Grande Prairie, AB**

10015 102 Street  
Grande Prairie, AB T8V 2V5  
Canada  
Tel: (780) 513-6819  
Fax: (780) 513-6821

**Kamloops, BC**

8 West St. Paul Street  
Kamloops, BC V2C 1G1  
Canada  
Tel: (250) 374-8749  
Fax: (250) 374-8656

**Kelowna, BC**

200-1475 Ellis Street  
Kelowna, BC V1Y 2A3  
Canada  
Tel: (250) 762-7202  
Fax: (250) 763-7303

**Markham, ON**

200 - 300 Town Centre Blvd  
Markham, ON L3R 5Z6  
Canada  
Tel: (905) 415-7248  
Fax: (905) 415-1019

**Nanaimo, BC**

9-6421 Applecross Road  
Nanaimo, BC V9V 1N1  
Canada  
Tel: (250) 390-5050  
Fax: (250) 390-5042

**Prince George, BC**

1586 Ogilvie Street  
Prince George, BC V2N 1W9  
Canada  
Tel: (250) 562-4452  
Fax: (250) 562-4458

**Regina, SK**

1048 Winnipeg Street  
Regina, SK S4R 8P8  
Canada  
Tel: (306) 525-4690  
Fax: (306) 525-4691

**Saskatoon, SK**

620-3530 Millar Avenue  
Saskatoon, SK S7P 0B6  
Canada  
Tel: (306) 374-6800  
Fax: (306) 374-6077

**Vancouver, BC (Head Office)**

200-1620 West 8<sup>th</sup> Avenue  
Vancouver, BC V6J 1V4  
Canada  
Tel: (604) 738-2500  
Fax: (604) 738-2508

**Victoria, BC**

6-40 Cadillac Avenue  
Victoria, BC V8Z 1T2  
Canada  
Tel: (250) 475-9595  
Fax: (250) 475-9596

**Winnipeg, MB**

1353 Kenaston Boulevard  
Winnipeg, MB R3P 2P2  
Canada  
Tel: (204) 477-1848  
Fax: (204) 475-1649

**Whitehorse, YT**

6131 6<sup>th</sup> Avenue  
Whitehorse, YT Y1A 1N2  
Canada

**Yellowknife, NT**

Unit 44, 5022 49 Street  
Yellowknife, NT X1A 3R8  
Canada  
Tel: (867) 765-5695



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