



**BC Geological Survey
Assessment Report
37696**



Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: GEOCHEMICAL TOTAL COST: \$ 17,678

AUTHOR(S): ERIC FONTAINE M.Sc SIGNATURE(S): [Signature]

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): MX-3-215 YEAR OF WORK: 2018

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5710739, 5721364

PROPERTY NAME: WK GROUP OF CLAIMS

CLAIM NAME(S) (on which the work was done): TENURES 510619 AND 522150

COMMODITIES SOUGHT: POZZOLAN AND BENTONITE

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 092 NW 035

MINING DIVISION: KAMLOOPS NTS/BCGS: MAP 921094

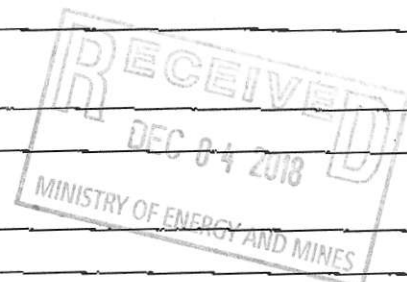
LATITUDE: 50° 56.3' N LONGITUDE: 121° 23.7' W (at centre of work)

OWNER(S):
1) TILAVA MINING CORPORATION 2) _____

MAILING ADDRESS: Box 372
CLINTON, B.C. V0K1K0

OPERATOR(S) (who paid for the work):
1) LA FARGE CANADA INC. 2) _____

MAILING ADDRESS: SUITE 300 - 115 QUARRY PARK ROAD SE
CALGARY, ALBERTA T2C 5G9



PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Volcanic and Marine sedimentary rocks of the Permian-age Cache Creek Group, intruded by sill-like ultramafic bodies which hosts Ferguson and Scottie Creek mineralization. Both older rocks are overlain by extensive cover of volcanic flows and breccia's of Eocene-age, Kamloops Group. Large deposits of volcanic ash (industrial minerals Pozzolan, zeolite and Bentonite)

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 25927, 255710, 18458, 33, 260

**REPORT ON PRELIMINARY ASSESSMENT OF THE FERGUSON CREEK
VOLCANIC ASH DEPOSIT AS A CEMENTITIOUS MATERIAL
(NATURAL POZZOLAN)**

**WK GROUP OF CLAIMS
KAMLOOPS MINING DIVISION
British Columbia**

**Location: NTS Map 92I 094
50° 56.3' N, 121° 23.7' W**

**Claim owner: Tilava Mining Corporation
Name of Operator: Lafarge Canada Inc**

**REPORT PREPARED BY:
Eric Fontaine M.Sc.
Raw Materials and Mining Expert – Cement Division
Lafarge Canada Inc
Suite 300 – 115 Quarry Park Road SE
Calgary, Alberta, T2C 5G9**

**PREPARED FOR:
Tilava Mining Corporation**

November 15, 2018

37,696



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Confirmation

Recorder: TILAVA MINING CORPORATION (136967)
Recorded: 2018/DEC/01
D/E Date: 2018/DEC/01

Submitter: TILAVA MINING CORPORATION (136967)
Effective: 2018/DEC/01

Confirmation

If you have not yet submitted your report for this work program, your technical work report is due in 90 days. The Exploration and Development Work/Expiry Date Change event number is required with your report submission. **Please attach a copy of this confirmation page to your report.** Contact Mineral Titles Branch for more information.

Event Number: 5721364

Work Type: Technical Work
Technical Items: Geochemical, Preparatory Surveys

Work Start Date: 2017/OCT/20
Work Stop Date: 2018/MAY/29
Total Value of Work: \$ 6846.00
Mine Permit No: n/a

Summary of the work value:

Title Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date	# of Days Forward	Area in Ha	Applied Work Value	Submission Fee
521739	WK4	2005/NOV/01	2019/SEP/30	2020/mar/20	172	40.72	\$ 382.76	\$ 0.00
521666	WK 3	2005/OCT/31	2019/SEP/30	2020/mar/20	172	122.19	\$ 1148.42	\$ 0.00
522313	WK 6	2005/NOV/15	2019/SEP/30	2020/mar/20	172	81.47	\$ 765.71	\$ 0.00
522312	WK 5	2005/NOV/15	2019/SEP/30	2020/mar/20	172	40.73	\$ 382.86	\$ 0.00
522150		2005/NOV/09	2020/SEP/30	2021/mar/20	171	203.70	\$ 1908.60	\$ 0.00
839404		2010/DEC/01	2020/SEP/30	2021/mar/20	171	61.11	\$ 572.61	\$ 0.00
510619		2005/APR/12	2019/SEP/30	2020/mar/20	172	101.82	\$ 957.03	\$ 0.00
1044256	WK 10	2016/MAY/21	2019/SEP/30	2020/mar/20	172	61.10	\$ 287.13	\$ 0.00
1044258	WK11	2016/MAY/21	2019/SEP/30	2020/mar/29	181	20.37	\$ 100.73	\$ 0.00

Financial Summary:

Total applied work value: \$ 6505.85

PAC name: Tilava Mining Corporation
Debited PAC amount: \$ 0.0
Credited PAC amount: \$ 340.15

Total Submission Fees: \$ 0.0

Total Paid: \$ 0.0

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Confirmation

Recorder: TILAVA MINING CORPORATION (136967)
Recorded: 2018/SEP/06
D/E Date: 2018/SEP/06

Submitter: TILAVA MINING CORPORATION (136967)
Effective: 2018/SEP/06

Confirmation

If you have not yet submitted your report for this work program, your technical work report is due in 90 days. The Exploration and Development Work/Expiry Date Change event number is required with your report submission. **Please attach a copy of this confirmation page to your report.** Contact Mineral Titles Branch for more information.

Event Number: 5710739


Work Type: Technical Work
Technical Items: Geochemical, PAC Withdrawal (up to 30% of technical work required)

Work Start Date: 2017/OCT/20
Work Stop Date: 2018/MAY/29
Total Value of Work: \$ 10832.00
Mine Permit No: n/a

Summary of the work value:

Title Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date	# of Days Forward	Area in Ha	Applied Work Value	Submission Fee
521739	WK4	2005/NOV/01	2018/SEP/30	2019/SEP/30	365	40.72	\$ 703.56	\$ 0.00
521666	WK 3	2005/OCT/31	2018/SEP/30	2019/SEP/30	365	122.19	\$ 2110.93	\$ 0.00
522313	WK 6	2005/NOV/15	2018/SEP/30	2019/SEP/30	365	81.47	\$ 1407.46	\$ 0.00
522312	WK 5	2005/NOV/15	2018/SEP/30	2019/SEP/30	365	40.73	\$ 703.73	\$ 0.00
522150		2005/NOV/09	2019/SEP/30	2020/SEP/30	366	203.70	\$ 4079.04	\$ 0.00
839404		2010/DEC/01	2019/SEP/30	2020/SEP/30	366	61.11	\$ 1223.78	\$ 0.00
510619		2005/APR/12	2018/SEP/30	2019/SEP/30	365	101.82	\$ 1759.13	\$ 0.00
1044256	WK 10	2016/MAY/21	2018/SEP/30	2019/SEP/30	365	61.10	\$ 415.37	\$ 0.00
1044258	WK11	2016/MAY/21	2018/SEP/30	2019/SEP/30	365	20.37	\$ 138.47	\$ 0.00

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Financial Summary:**Total applied work value:** \$ 12541.47**PAC name:** Tilava Mining Corporation**Debited PAC amount:** \$ 1709.47**Credited PAC amount:** \$ 0**Total Submission Fees:** \$ 0.0**Total Paid:** \$ 0.0

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Figure 9: Resistance to sulphate. Tested sample (Ferguson tuff) represent a composite of WK Sample 1 to 4.

INTRODUCTION

The WK property was previously investigated for chromite, copper, bentonite and pozzolan occurrences. The objective of this report is to assess the potential of the Tertiary volcanic ash (tuff) as a natural pozzolan. Three exploration campaigns between October 2017 and May 2018 were done to collect surface samples and to determine the location where the bulk sample will be collected for a potential industrial trial.

LOCATION AND ACCESS

The WK group of claims is located on the Ferguson Creek, approximately 15 kilometres North-Northwest of the town of Cache Creek in south central British Columbia. The geographic coordinates of the center of the area investigated is 612,850 E; 5,644,330 N (UTM, NAD83, Zone 10N). The Ferguson Creek divides the work area into two separate locations; North area and South area (Fig.: 1).

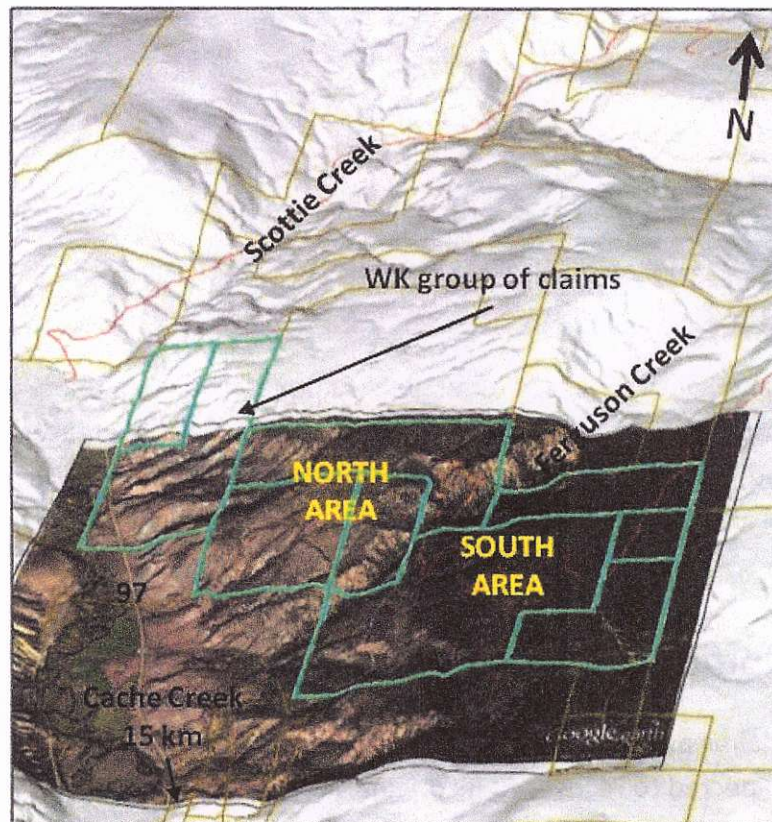


Figure 1: WK group of claims (cyan outline) showing both investigated area (North & South) divided by the Ferguson Creek.

The North and South Area are accessible by gravel surface private roads intersecting with highway 97 (Fig.: 2). The South area is also accessible via a 28 km forestry road that is also intersecting with highway 97 (Scottie Creek road). From the South area, the North area can be reached by foot without crossing the private properties.

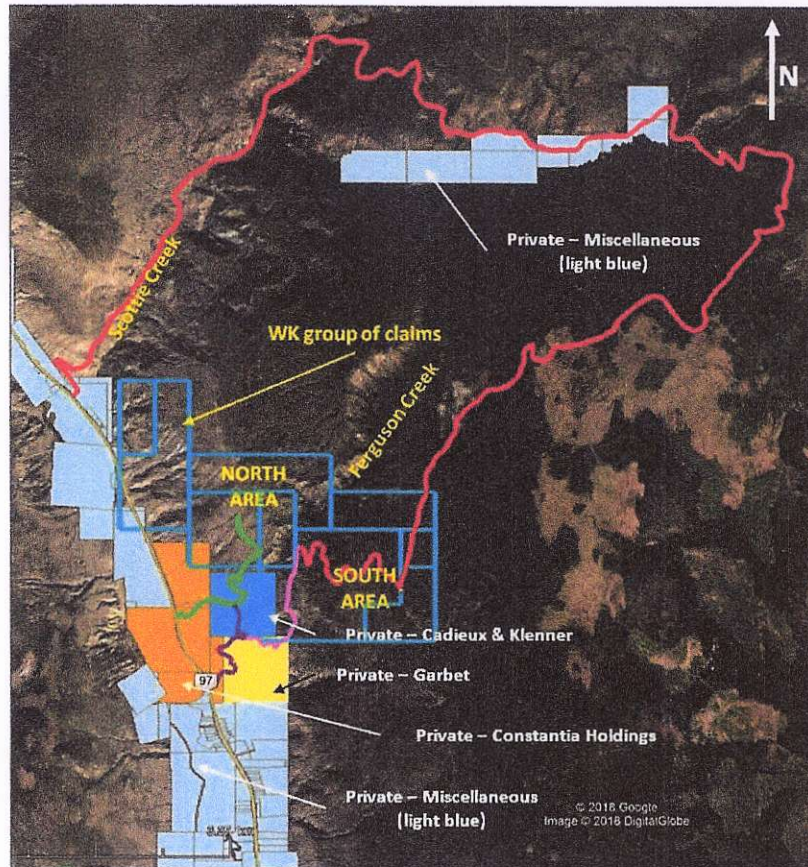


Figure 2: North and South areas are accessible via privately owned roads (green, pink, purple) intersecting with highway 97. The South area could also be reached via a 28 km forestry road (red). The North area could also be reached by foot from the South area without crossing any private lands.

PRESENT CONDITION OF THE LAND AND PHYSIOGRAPHY

The WK Group claims area is recovering from the Elephant Hill Fire of 2017. Land conditions are expected to recover to its original condition, which ranges from open grazed grass lands to open stands of interior Douglas fir, intermix with other tree and bush species. Areas appear to have been selectively cut and contain 2nd growth in varying levels of health.

The elevation of the work sites range from 850 to 1150 meters (asl). The area is dry with no visible surface flows other than the Ferguson Creek. The annual temperature average 8.1°C, with temperature averaging 25°C in summer and -15°C in winter. Annual precipitation is averaging 309 mm.

PROPERTY AND OWNERSHIP

The WK Group of claims described in this report consists of 9 Tenures (Table 1 and Fig.: 3). The total area represents 733.21 ha. All the Tenures are 100% owned by Tilava Mining Corporation.

Table 1: WK Group of claims. Mineral Tenures

Tenure #	Tenure Name	Tenure type	Area (ha)	Expiry*
521739	WK4	Mineral claim	40.72	Sept. 30, 2019
521666	WK3	Mineral claim	122.19	Sept. 30, 2019
522313	WK6	Mineral claim	81.47	Sept. 30, 2019
522312	WK5	Mineral claim	40.73	Sept. 30, 2019
522150		Mineral claim	203.70	Sept. 30, 2020
839404		Mineral claim	61.11	Sept. 30, 2020
510619		Mineral claim	101.82	Sept. 30, 2019
1044256		Mineral claim	61.10	Sept. 30, 2019
1044258		Mineral claim	20.37	Sept. 30, 2019

* pending assessment report approval

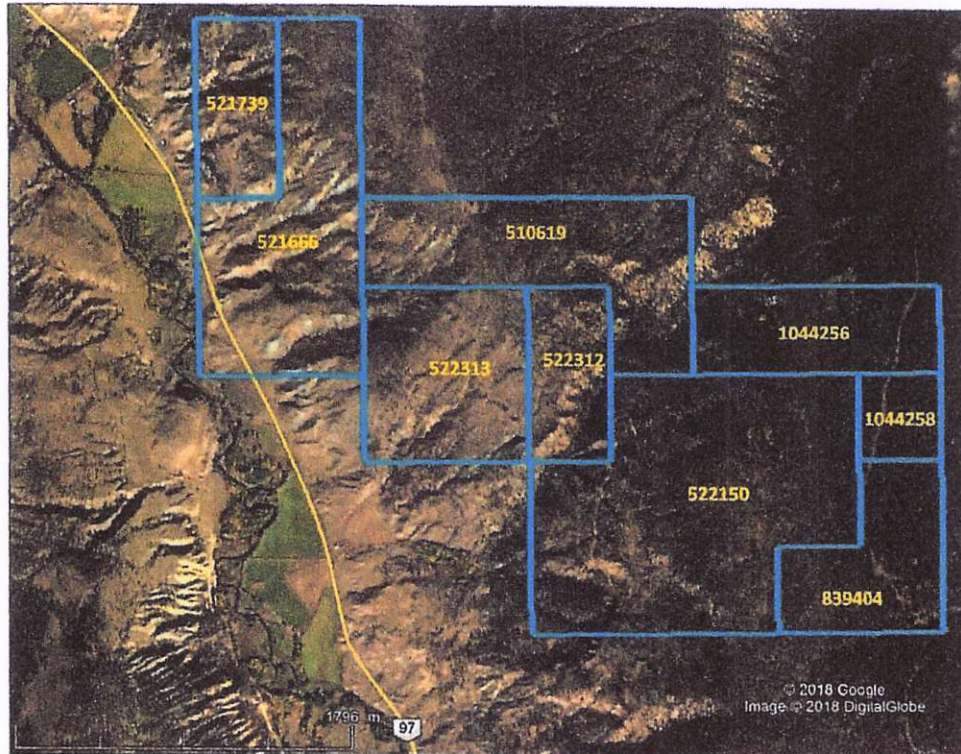


Figure 3: Mineral Tenures forming the WK Group of claims

HISTORY

Tilava Mining Corporation owns the WK Group of claims since 1993. Previous works on the claims were concentrated on chromium and platinum group. From 1994, Tilava started to explore the potential of the property for natural pozzolan and zeolites. Since 1994, man-made trenches and one 50-meter diamond drill hole in 1998 were done to assess the extent of the pozzolan and for geochemical assessment (Kovacevic, 1999). An exploration permit (MX-3-215) was issued in 2001 and amended in 2013 to extract a 10 kt bulk sample of bentonite. New exploration permit amendment was submitted and is currently under review with BC Mines.

GEOLOGY

The WK group of claims are underlain by volcanic and sedimentary rocks of the Permian-age of the Cache Creek Group. These rocks were intruded by sill like ultramafic bodies which host the Ferguson Creek and the nearby Scottie Creek chromite mineralization (Kovacevic, 1999). Later, during the Eocene, the area was overlain by a thick sequence of

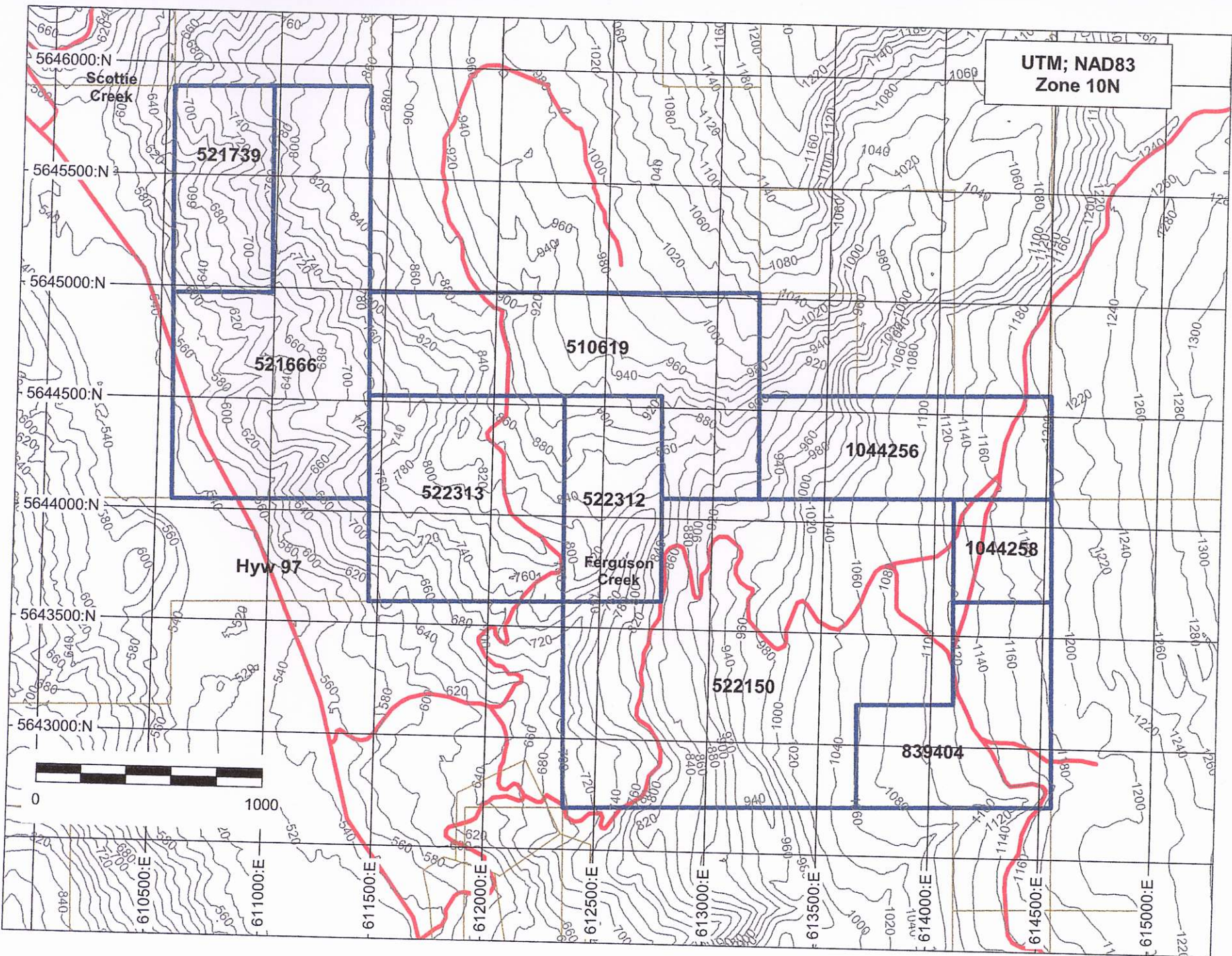


Fig. 3-A

volcanic deposits of the Kamloops Group. The mineral of interest (tuff) lies at or near the base of the Kamloops Group (Read, 1988). It consists of cream-weathering dacitic tuff and volcanic breccias composed of andesitic clasts (Fig.: 4). The observed bedding of the tuff on the North side of the Ferguson Creek is sub-horizontal.

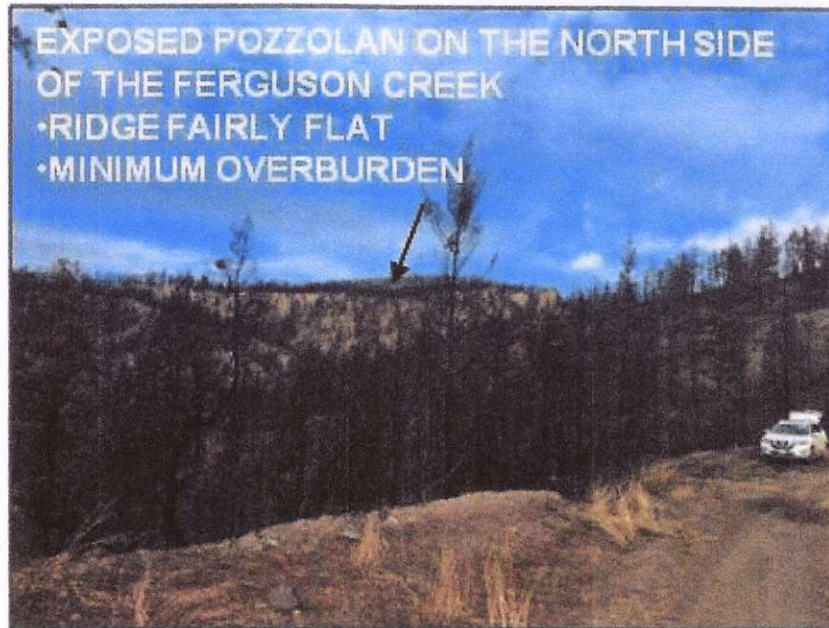


Figure 4: Buff (cream) colour tuff exposed on the North side of the Ferguson Creek.

TECHNICAL DATA AND INTERPRETATION

A total of five samples were collected during two site visits, the first visit on October 30, 2017 and the second on May 29, 2018. The samples were tested at the Lafarge's lab facilities in Seattle, USA and Montréal, Québec. The samples were tested to determine the preliminary suitability of the Tertiary tuff as a cementitious material to be added to the cement. The samples were tested on their Strength Activity Index, their potential to counteract the Alkali-Silica Reaction (ASR) and their resistance to sulphates.

Location of the samples

Three samples were collected from the North area along the Northern slope of the Ferguson creek where the main outcrop of tuff is located (Figs.: 4 and 5). The two other samples were collected from the South area along the old logging road (5100) (Fig.: 5).

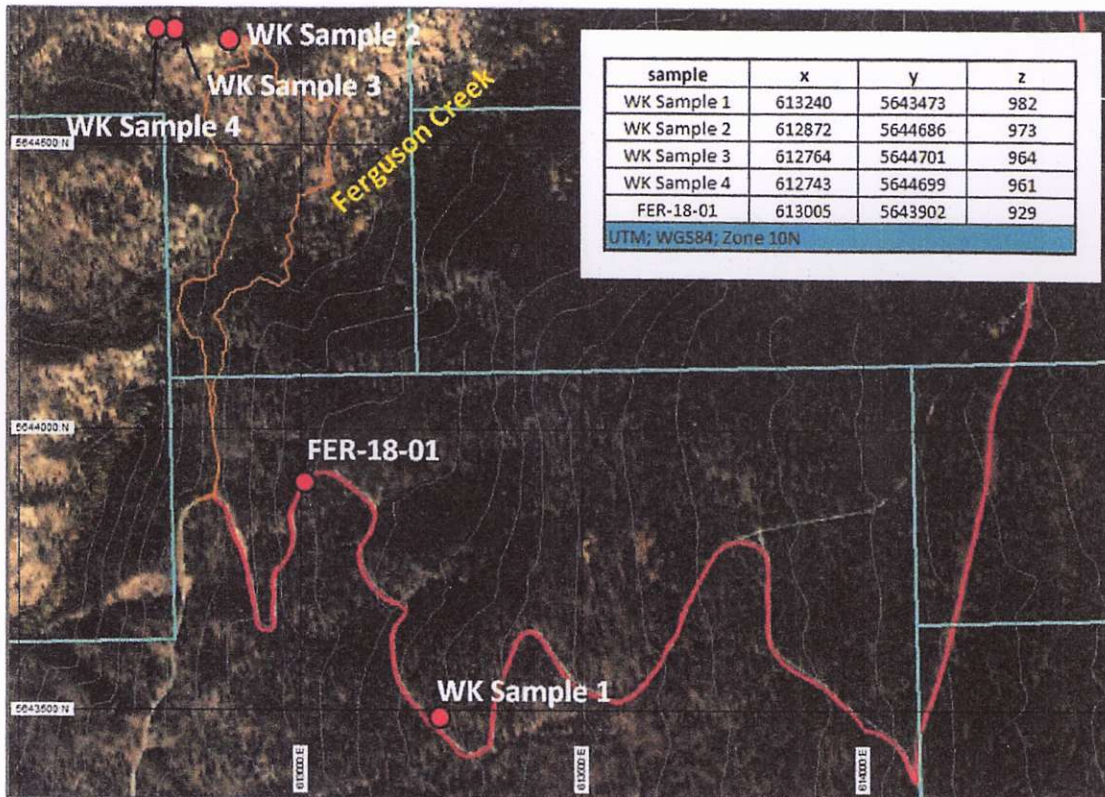


Figure 5: Location of the tested samples. Three samples on the North side of the Ferguson Creek and two on the South side

Chemical composition and physical properties

Based on the chemical composition of the tuff samples, they would classify as dacitic in composition and would fall on the side of the Tholeiitic Field on the Jensen cation plot (Jensen, 1976) (Fig.: 6 and Table 2)

Table 2: Chemical composition, % moisture, density and absorption.

Property	Sample Name	SiO ₂	Al ₂ O ₃	TiO ₂	P ₂ O ₅	Fe ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	SO ₃	Mn ₂ O ₃	Total	LOI	% moisture	C-127 Density	C-127 Absorption
WK Group of claims (Ferguson Creek)	WK Sample 1	59.45	17.45	0.57	0.14	6.03	5.10	2.33	1.58	1.44	0.00	0.10	99.04	4.85	4.75	1.82	24.70
	WK Sample 2	58.79	16.28	0.62	0.35	6.94	5.29	2.62	2.17	1.10	0.00	0.06	99.23	5.01	5.14	1.92	22.60
	WK Sample 3	61.63	17.22	0.70	0.22	4.39	4.59	2.07	1.85	1.70	0.00	0.08	99.43	4.98	9.61	1.68	33.30
	WK Sample 4	60.23	17.32	0.70	0.45	5.13	4.88	2.04	1.75	1.60	0.00	0.08	99.05	4.90	10.01	1.77	26.70
	FER-18-01	61.81	18.01	0.70	0.18	7.35	4.80	2.94	1.83	1.34	0.01	0.16	99.13	5.51	9.80	-	-

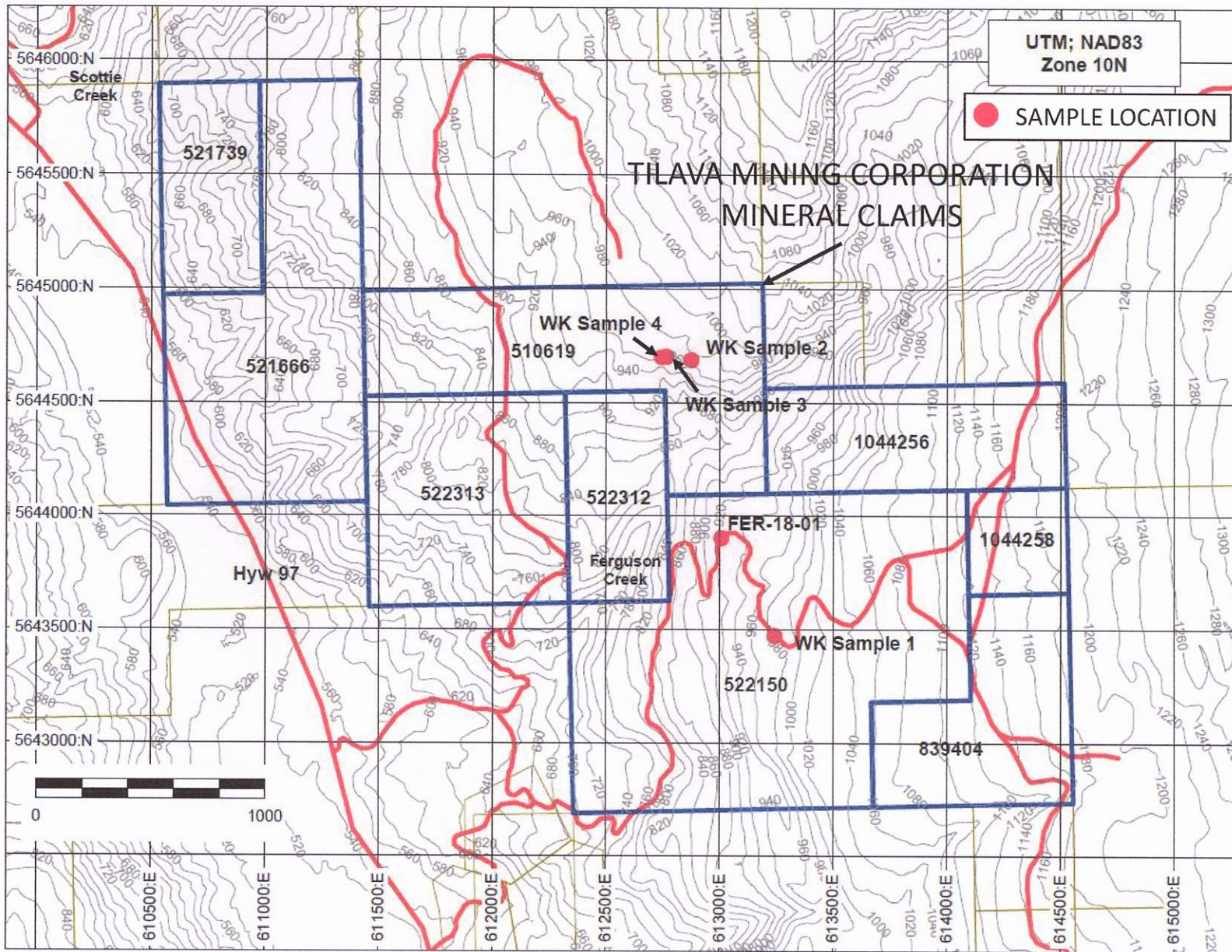


Fig. 5-A

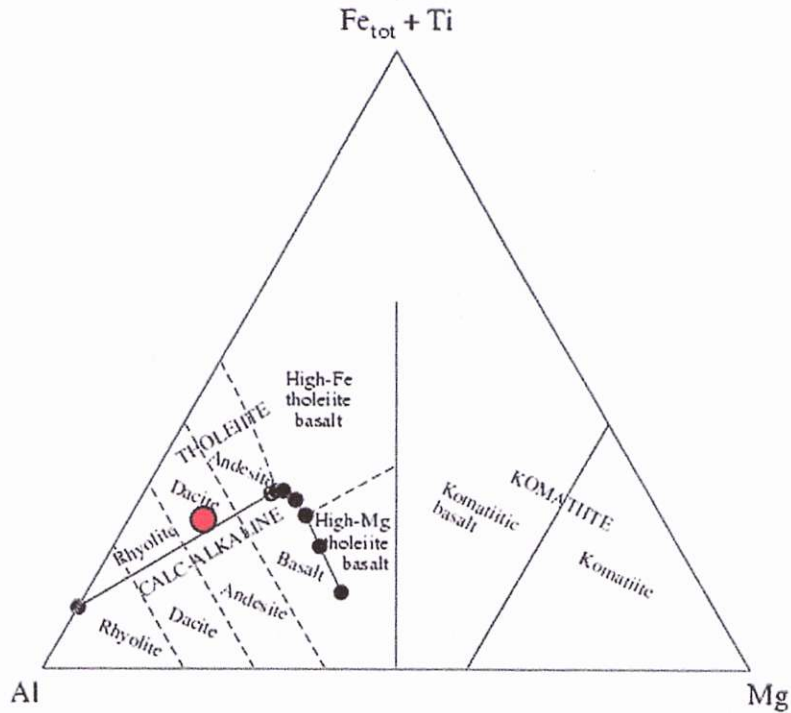


Figure 6: Jensen Cation Plot. Based on the chemical composition of the tuff samples (red dot), it would classify as a dacite from the Tholeiitic Field.

Strength Activity Index (ASTM C-618)

The strength Activity Index test was done on all five samples. When finely ground and blended with cement, the pozzolan reacts with calcium hydroxide that is liberated as concrete hardens, forming compounds with cementitious properties. The Strength Activity Index test assesses the capability of a material to form those compounds with cementitious properties. As shown in figure 7, the five tested samples were meeting the minimum requirement of 75% of the strength at 28 days.

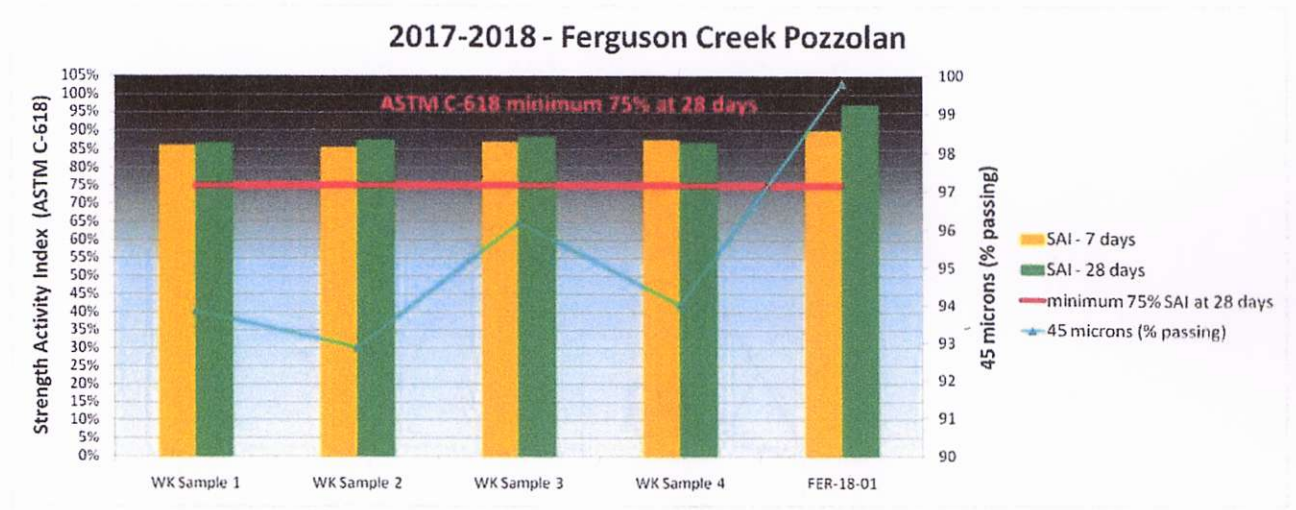


Figure 7: Strength Activity Index test results. The five samples, at a targeted fineness of 95% passing 45 microns, are meeting the minimum strength requirement of 75% at 28 days.

Potential to control Alkali – Silica – Reaction (ASR)

Some aggregates in the concrete could react with the alkalis from the cement and cause deleterious reactions in the concrete and therefore negatively affecting the life expectancy and physical and chemical characteristics of the concrete. Pozzolan are also known to counteract the adverse effects or some aggregates in the concrete. Two ASR tests were started with the sample FER-18-01; one on mortar (CSA-A23.2-28A) and the other on concrete (ASTM C-1293). The test on mortar was completed in July and successfully meeting the maximum expansion of 0.10% at 16 days (Fig.: 8). The test on concrete prism was started in June 2018 and will be completed in June 2020 (2-year test).

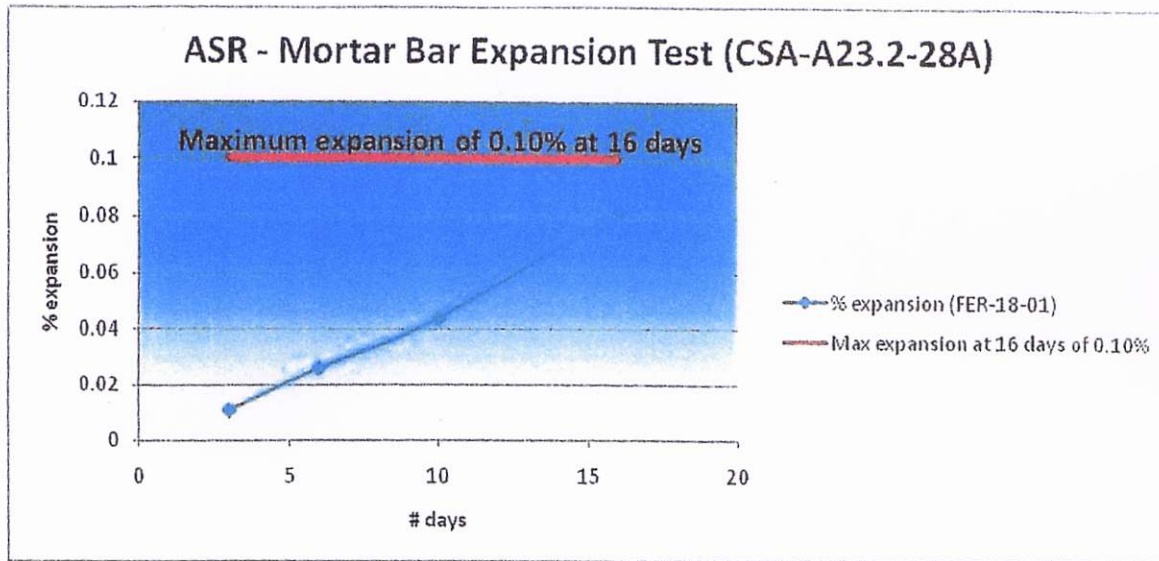


Figure 8: Suitability of the pozzolan to control the Alkali-Silica- Reaction (ASR)

Resistance to sulphates

A composite sample from the WK Sample 1 to 4 was created to evaluate the resistance to sulphates. The blended sample was tested with different cements and at different proportions. All tests were meeting the limit to qualify as high sulphate resistance (Fig.: 9).

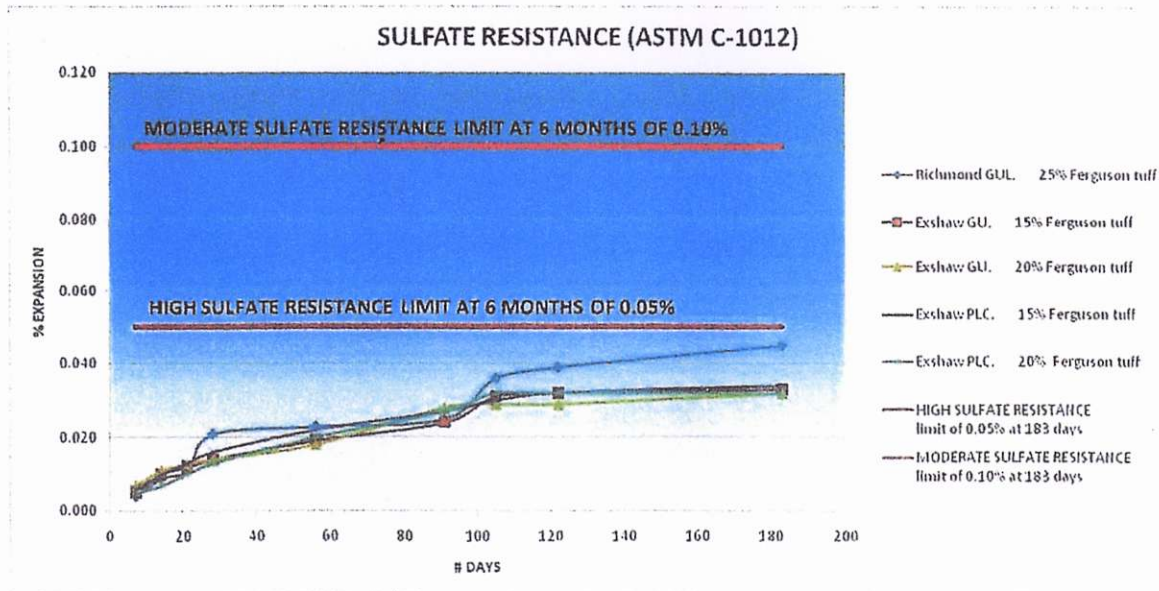


Figure 9: Resistance to sulphate. Tested sample (Ferguson tuff) represent a composite of WK Sample 1 to 4.

CONCLUSIONS

Preliminary assessment of the dacitic tuff as a natural pozzolan would qualify the material as suitable, meeting the minimum Strength Activity Index (SAI), capable of counteracting the deleterious ASR reactions, and resistance to sulphates.

COST STATEMENT

FERGUSON CREEK - EXPLORATION EXPENSES

FIELD WORK

DATE	PURPOSE	CATEGORY	PERSON	TITLE	RATE (\$/day)	DAYS	TOTAL
October 30, 2017	exploration & sampling campaign	Wages	Eric Fontaine	geologist	650 \$	1	650 \$
			Mark Wilson	helper	400 \$	1	400 \$
		Travel Calgary to Kamloops	Eric Fontaine	geologist			413 \$
		Room and board	Eric Fontaine	geologist	200 \$	1	200 \$
		car rental	Eric Fontaine	geologist	110 \$	1	110 \$
May 29, 2018	exploration & sampling campaign (South side of Ferguson Creek)	Wages	Eric Fontaine	geologist	650 \$	1	650 \$
		Travel Calgary to Kamloops (car; 800km X \$0.50/km X 2)	Eric Fontaine	geologist			800 \$
		Room and board	Eric Fontaine	geologist	200 \$	1	200 \$
TOTAL							3 423 \$

TESTING

TEST	STANDARD	UNIT COST (\$/SCAN)	SAMPLE TESTED	TOTAL
% moisture	ASTM C-566	55 \$	5	275 \$
XRF Fused Beads + SO3 leco	ASTM C-114	325 \$	5	1 625 \$
Loss on Ignition (LOI)	ASTM C-114	30 \$	5	150 \$
Density / absorption	ASTM C-127	90 \$	4	360 \$
Blaine	ASTM C-204	50 \$	5	250 \$
% passing 45 microns	ASTM C-430	50 \$	5	250 \$
Expansion on mortar bar (ASR)	CSA-A23.2-28A	795 \$	1	795 \$
Expansion on concrete prism (ASR)	ASTM C-1293	2 650 \$	1	completed June 2020
Sulfate test	ASTM C-1012	1 325 \$	5	6 625 \$
Strength Activity Index	ASTM C-618	525 \$	5	2 625 \$
TOTAL				12 955 \$

REPORTING

2 DAYS @ \$650/DAY	1 300 \$
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TOTAL EXPLORATION EXPENSES FROM OCTOBER 2017 TO NOVEMBER 2018 **17 678 \$**

Filed on September 6, 2018 \$10,832.00

Event Number **5710739**

Total expenses \$17,678.00

Less filed 10,832.00

Available for filing \$ 6,846.00

AUTHOR'S QUALIFICATIONS

I, Eric Fontaine, of Calgary, Alberta, do hereby certify:

That I am a graduate in geology from the University of Montreal, B.Sc, 1991.

That I am a graduate in geology from the University of Montreal, M.Sc, 1995.

That I have been actively involved in the cement and aggregate industry since 1995 as a consultant and as an employee of Lafarge Canada Inc with the main responsibilities in raw materials and mining.

REFERENCES

Kovacevic, W. (1999) – Diamond drilling report on the WK Group, Kamloops Mining Division, British Columbia (Assessment report 25927).

Read, P.B. (1988) – Tertiary Stratigraphy and Industrial Minerals: Cache Creek Map Area, Southwestern British Columbia (NTS 092I/14).

Jensen, L.S. (1976) – A New Cation Plot for Classifying Subalkalic Volcanic Rocks. Ontario Geological Survey Miscellaneous Paper 66.