ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Technical Report of Satellite-Based Structural Analysis JB Mineral Tenures

TOTAL COST: $4200

AUTHOR(S): Farshad Shirvani, Erik Ostensoe, Jonathan Pokotylo
SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):
STATEMENT OF WORK EVENT NUMBER(S)/DATE(S): Event No 4820504 dated Dec 22, 2010
YEAR OF WORK: 2010

PROPERTY NAME: JB Project

CLAIM NAME(S) (on which work was done): JB1 – 689663, JB2 – 689683, JB3 – 689684, JB4 – 689685, JB5 – 689703

COMMODITIES SOUGHT: Copper, Gold, Silver
MINERAL INVENTORY MINFILE NUMBER(S),IF KNOWN:

MINING DIVISION: Omineca
NTS / BCGS: 094C/06W
LATITUDE: _____ ° _____ ' _____ "
LONGITUDE: _____ ° _____ ' _____ " (at centre of work)
UTM Zone: 10N EASTING: 380000m E NORTHING: 6237500m N

OWNER(S): Farshad Shirvani

MAILING ADDRESS:
310-675 West Hastings St
Vancouver, BC
V6B 1N2

OPERATOR(S) [who paid for the work]: As above

MAILING ADDRESS: As Above

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**)
Mid-Mesozoic age volcanic and volcaniclastic bedded rocks are intruded by outliers (?) of the Hogan Batholith. Structure between Cache Creek terrane to east and Quesnellia terrane passes through or close to JB tenures

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
Aris Report
Bowen, B. K., 1992, Report of Work, Prospecting Surveys on the JB Property, Assessment Report. ARIS #22489
Bowen, B. K., 2007, Prospecting Survey of the NEWJB 1 – 6 Claims, Tutizika River Area, Northern British Columbia, Assessment Report, ARIS #29429

TYPE OF WORK IN THIS REPORT Satellite imagery and Aster analysis	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS All	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for …)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres, number of holes, size, storage location)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling / Assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale/area)			
PREPATORY / PHYSICAL			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
Road, local access (km)/trail			
Trench (number/metres)			
Underground development (metres)			
Other			
		TOTAL COST	$4200

TECHNICAL REPORT OF SATELLITE-BASED STRUCTURAL ANALYSIS

JB MINERAL TENURES

BC Geological Survey
Assessment Report
32169

OMINECA MINING DIVISION

NORTH-CENTRAL BRITISH COLUMBIA

NTS 094 C/06W

BCGS 094C/023

UTM Zone 10, 380000E, 6237500N

Mineral Tenures: JB 1 – 689663, JB 2 – 689683, JB 3 – 689684, JB 4 – 689685, JB 5 – 689703

Tenure Owner: Farshad Shirvani

Report Prepared by: Terracad Geoscience Services Ltd.

Farshad Shirvani, MSc.

Jonathan Pokotylo, BSc., AD GIS

Erik Ostensoe, P. Geo.

Date of Report: March 30, 2011.

EVENT No. 4820504.

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1.0 INTRODUCTION

The JB 1 – 5 mineral tenures (Figures 1, 2), Table 1, with total area 2246.35 hectares, are located 8 km southwest of the confluence of Tutizika and Mesilinka Rivers in northcentral British Columbia. They are 300 km northwest of Prince George, B. C., and 195 km north-northwest of Ft. St. James. Access is provided by the Ft. St. James – Germansen Road to the Mesilinka River Bridge and thence, if river conditions are suitable, by river boat upstream following the Tutizika River.

The JB 1 – 5 mineral tenures were acquired in an area that had previously been identified as having iron sulphide and magnetite mineralization (Bowen, ARIS # 29429, 2007) in what was determined to be a porphyry-style alkalic copper-gold environment. Previous prospecting work had located finely disseminated sulphide mineralization in exposures along newly built logging roads, including a float sample of hornfelsed argillite that assayed 2150 ppb gold and 950 ppm copper (Bowen, ARIS #22489, 1991).

The tenures (Table 1) were located on December 25, 2009 and are held by Farshad Shirvani, MSc. Mr. Shirvani and Terracad Geoscience Services Ltd. conducted a regional study of the Quesnel terrain in the interval from the Mt. Milligan copper-gold deposit in the southeast, to the Kemess North/South deposits in the northwest and after acquiring the JB 1 – 5 tenures completed computer-aided analyses of those tenures and nearby areas. This report is a presentation of resulting data and includes a lineament study and graphic depiction of structural features and an ASTER-based spectrometric study.

2.0 MINERAL TENURES

The JB 1 – 5 mineral tenures are listed in Table 1. Area is 2246.35 hectares. The tenures are located in Omineca Mining Division (Figures 1, 2), immediately south of the Tutizika River and north of Tenakihi Creek and 4 km southwest of the confluence of Tutizika River and Mesilinka River. Access to the area is from Windy Point at the south end of Williston Lake by the Kemess access road (250 km) or from Ft. St. James by the Omineca Mining Road (270 km) to the Osilinka Logging camp and then southerly by logging roads to the tenures.

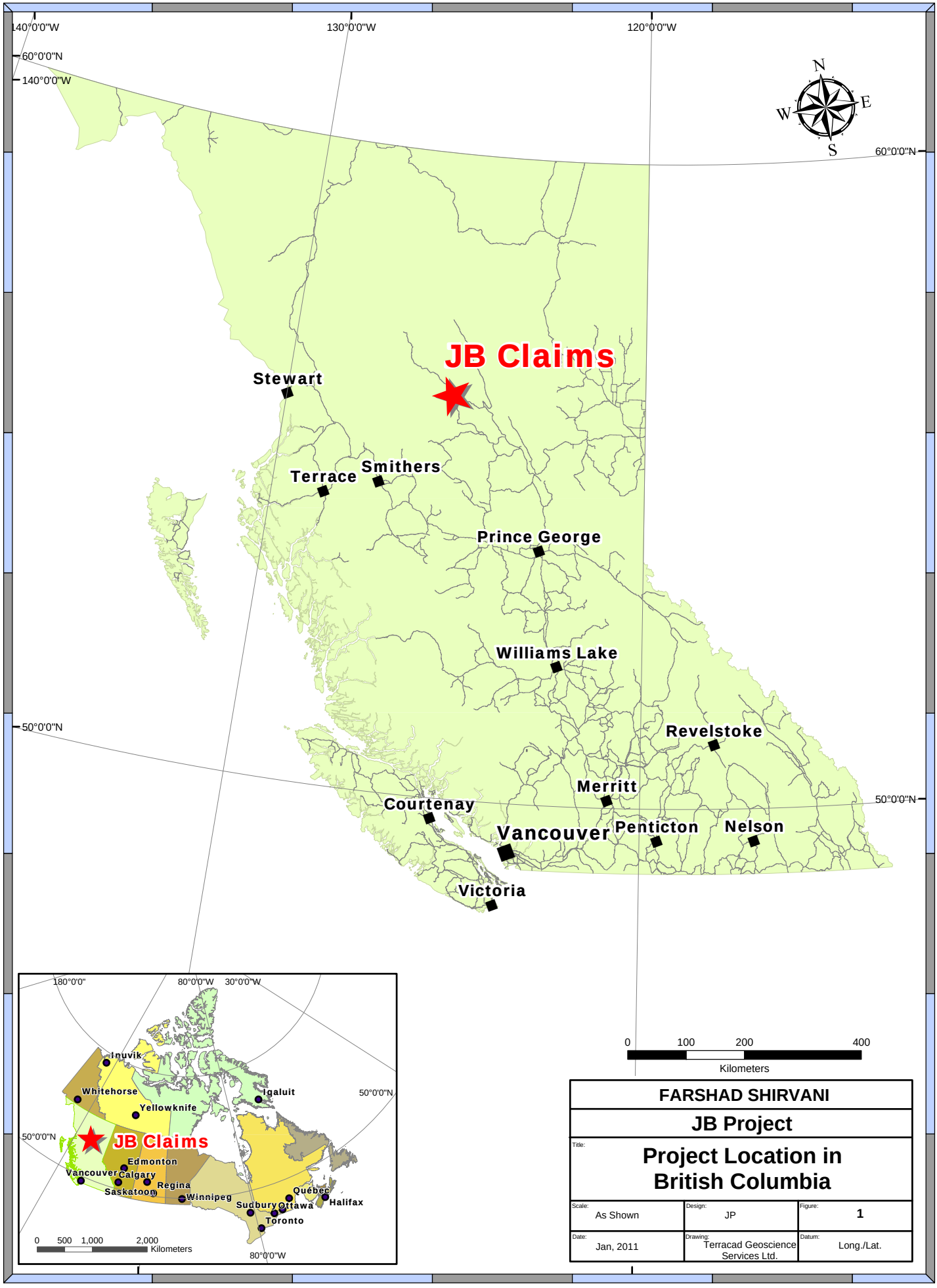
Name	Tenure No.	Acquired	Expiry Date	Area (hectares)	Owner (100%)
JB 1	689663	25/12/2009	15/06/2011	449.39	F. Shirvani
JB 2	689683	25/12/2009	15/06/2011	449.57	F. Shirvani
JB 3	689684	25/12/2009	15/06/2011	449.40	F. Shirvani
JB 4	689685	25/12/2009	15/06/2011	449.24	F. Shirvani
JB 5	689703	25/12/2009	15/06/2011	449.15	F. Shirvani

TABLE 1. Mineral Tenures.

A Statement of Work, dated December 22, 2010, aka Event No. 4820504, recorded $3300 work and $934.97 PAC credits to extend the expiry date of all tenures to June 15, 2011.

3.0 2010 PROGRAM OF WORK

Terracad Geoscience Services Ltd., a mineral exploration industry service company that specializes in GIS and related computer-aided work and also provides field work, supervision and reporting services to clients, using computer generated satellite imagery, analysed structural features using Global Mapper, v. 9, AutoCAD, and ArcGIS



FARSHAD SHIRVANI

JB Project

Title: **Project Location in British Columbia**

Scale:	Design:	Figure:
As Shown	JP	1
Date:	Drawing:	Datum:
Jan, 2011	Terracad Geoscience Services Ltd.	Long./Lat.

TUTIZIKA RIVER

689703

689685

689663

689684

689683

TENAKIHI LAKES

N

W E

S

347500

350000

352500

6315000

6312500

6310000

500 250 0 500 1,000 1,500 2,000

Meters

Legend

Claim Boundary

FARSHAD SHIRVANI

JB PROJECT

Title: Detailes Claim Map

Scale:	Design:	Figure:
As Shown	JP	2
Date:	Drawing:	Datum:
Jan, 2011	Terracad Geoscience Services Ltd.	NAD 83/Zone 10

v. 9.3, software. Spectrographic data were characterized using ASTER* techniques based on ENVI 4.7 program. Principal operators were Farshad Shirvani, MSc., and Jonathan Pokotylo, BSc., AD GIS.

4.0 GEOLOGICAL SETTING

The JB 1 – 5 mineral tenures are located in the northern part of Quesnel terrane, close to the east side of the Hogem batholith (Figure 3a, 3b). Quesnel terrane is a structurally defined Cordilleran feature that extends from southern British Columbia almost to the Yukon border. It is host to most of the province's important porphyry-style copper-gold and copper-molybdenum deposits, many of which are associated with mid-Mesozoic age volcaniclastic formations in proximity to alkalic or calcalkalic intrusions of similar or younger age. The east side of the terrane is formed by a continental-scale suture that likely is a legacy feature of one or more accretionary events and that separates older, largely sedimentary, Cache Creek Group formations of Paleozoic to early Mesozoic age, from the younger Quesnellian volcaniclastic rocks, particularly Takla Formation units of andesitic composition. The Hogem Batholith lies further west, is intrusive into the Takla and is described (Armstrong, 1941, Roots, 1954) as an evolved member of the Omineca Intrusions of Upper Jurassic to Lower Cretaceous age: in part it comprises granodiorite and quartz diorite, and in the parts proximal to the JB 1 – 5 tenures, melanocratic quartz deficient hornblendite and hornblende diorite.

The JB 1 – 5 tenures in part occupy a broad valley that is the locus of the transition from the sedimentary formations largely of Paleozoic age, easily assigned to the Cache Creek Group, that lie to the east, and Takla Group volcanic, et al. units. The valley has been greatly modified by Pleistocene glacial and post-glacial events that included deposition of large volumes of glacial-fluvial and fluvial gravels. Logging roads built in recent decades have exposed Takla Group formations in the southwest parts of the tenures and Cache Creek members in the northeast parts.

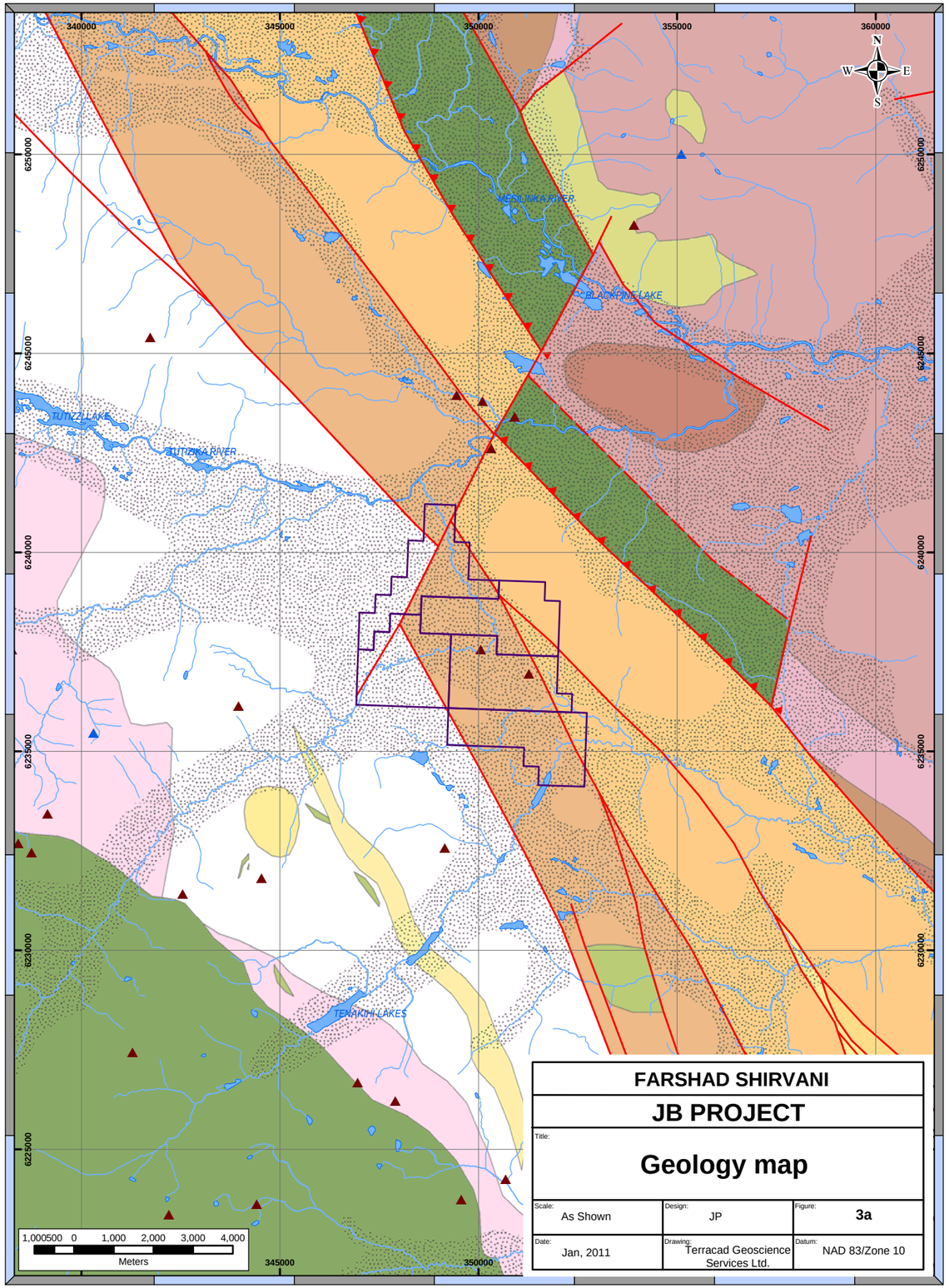
By analogy, the quartz-poor phases of the Hogem Batholith have similarities to the small intrusive bodies found in and close to the Mt. Milligan copper-gold deposits and are of interest to mineral explorers. Historic prospectors and mineral explorers had access to scattered outcroppings whereas recent work has the advantages of better access via newly built logging roads, a broader geologic data base, including airborne geophysical data, and satellite imagery. Figure 4 illustrates the location of Minfile-recorded mineral occurrences, including two sites inside the JB 1 – 5 tenures.

The provincial geoscience database and ARIS report #29429, includes data from an airborne magnetic survey of the area being studied.

5.0 SATELLITE-BASED STRUCTURAL ANALYSIS

Figure 5, Lineaments, is a structural study of the JB 1 – 5 mineral tenures and nearby areas. The underlying imagery extends from the Hogem Batholith in the lower left part, to the dominantly sedimentary formations in the upper third of the area being studied. Bowen (ARIS #29429) identified from airborne data a discrete magnetic "high" centrally located to the present tenures and attempted to locate the source of mineralized hornfelsic argillite that he believed had a local provenience. He drew attention to "...an elongate, northwest-trending aeromagnetic high located in the central and northwestern portions of the map area that is, for the most part, directly coincident with the map unit labelled 'TrJTvb' " and noted that residual total field aeromagnetic highs within Quesnel Terrane are often indicative of the presence of alkalic intrusive rocks which could be associated with copper-gold mineralization. The unit labelled 'TrJTvb" is further described as "Triassic to Jurassic Takla Group basalt breccia, agglomerate, tuff and flows" (Legend to Bowen's figure 6). Bowen recommended "...further prospecting, conventional geochemical or mobile metal ion geochemistry and geological mapping".

The Terracad study was an attempt to use computer-based methods to expand upon the work of Bowen.



FARSHAD SHIRVANI		
JB PROJECT		
Title: **Geology map**		
Scale: As Shown	Design: JP	Figure: **3a**
Date: Jan, 2011	Drawing: Terracad Geoscience Services Ltd.	Datum: NAD 83/Zone 10

Legend

Claim Boundary

Geology

Geological Unit

- DPBC - Paleozoic - Big Creek Group mudstone, siltstone, shale fine clastic sedimentary rocks
- EJHqm - Mesozoic - Hogem Plutonic Suite quartz monzonitic intrusive rocks
- EJqm - Mesozoic - Unnamed quartz monzonitic intrusive rocks
- KTgr - Mesozoic to Cenozoic - Unnamed granite, alkali feldspar granite intrusive rocks
- LTrJTe - Mesozoic - Tenakihi Intrusive Complex dioritic intrusive rocks
- LTrJqm - Mesozoic - Unnamed quartz monzonitic intrusive rocks
- MPnLus - Paleozoic - Lay Range Assemblage serpentinite ultramafic rocks
- MPnLvb - Paleozoic - Lay Range Assemblage basaltic volcanic rocks
- PL - Paleozoic - Lay Range Assemblage volcaniclastic rocks
- TrJTvb - Mesozoic - Takla Group basaltic volcanic rocks
- lKcg - Mesozoic - Unnamed conglomerate, coarse clastic sedimentary rocks
- uPrIE - Proterozoic - Ingenika Group - Espee Formation limestone, marble, calcareous sedimentary rocks
- uPrIS - Proterozoic - Ingenika Group - Stelkuz Formation mudstone, siltstone, shale fine clastic sedimentary rocks
- uPrISwst - Proterozoic - Ingenika Group - Swannell Formation argillite, greywacke, wacke, conglomerate turbidites
- uPrIT - Proterozoic - Ingenika Group - Tsaydiz Formation mudstone, siltstone, shale fine clastic sedimentary rocks
- uTrTca - Mesozoic - Takla Group calc-alkaline volcanic rocks
- uTrTmd - Mesozoic - Takla Group mudstone/laminite fine clastic sedimentary rocks
- Quaternerary

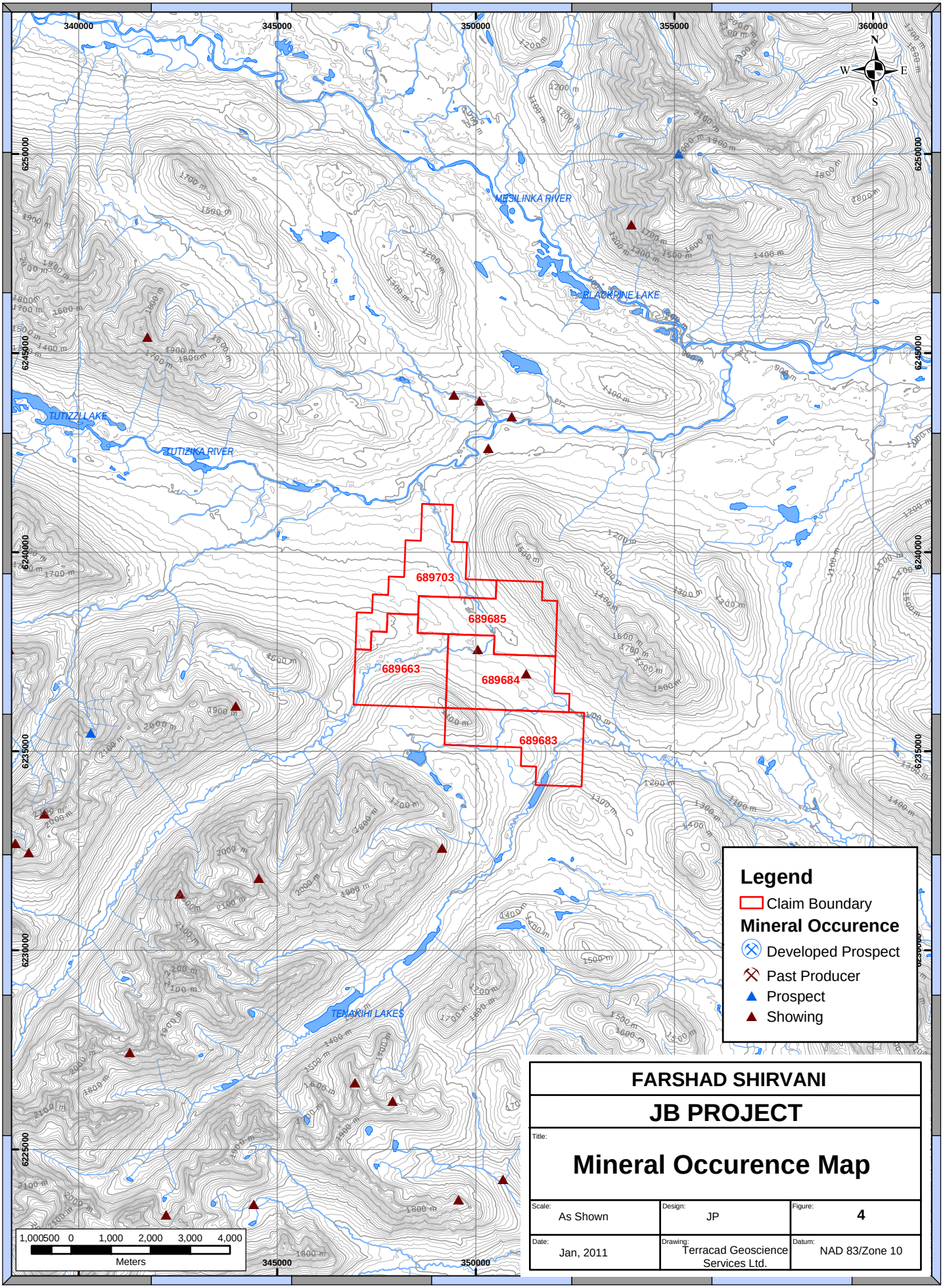
Fault Type

- Fault
- Normal Fault
- Thrust

Mineral Occurence

- Developed Prospect
- Past Producer
- Prospect
- Showing

FARSHAD SHIRVANI		
JB PROJECT		
Title: **Legend To Geology Map**		
Scale: As Shown	Design: JP	Figure: **3b**
Date: Jan, 2011	Drawing: Terracad Geoscience Services Ltd.	Datum: NAD 83/Zone 10



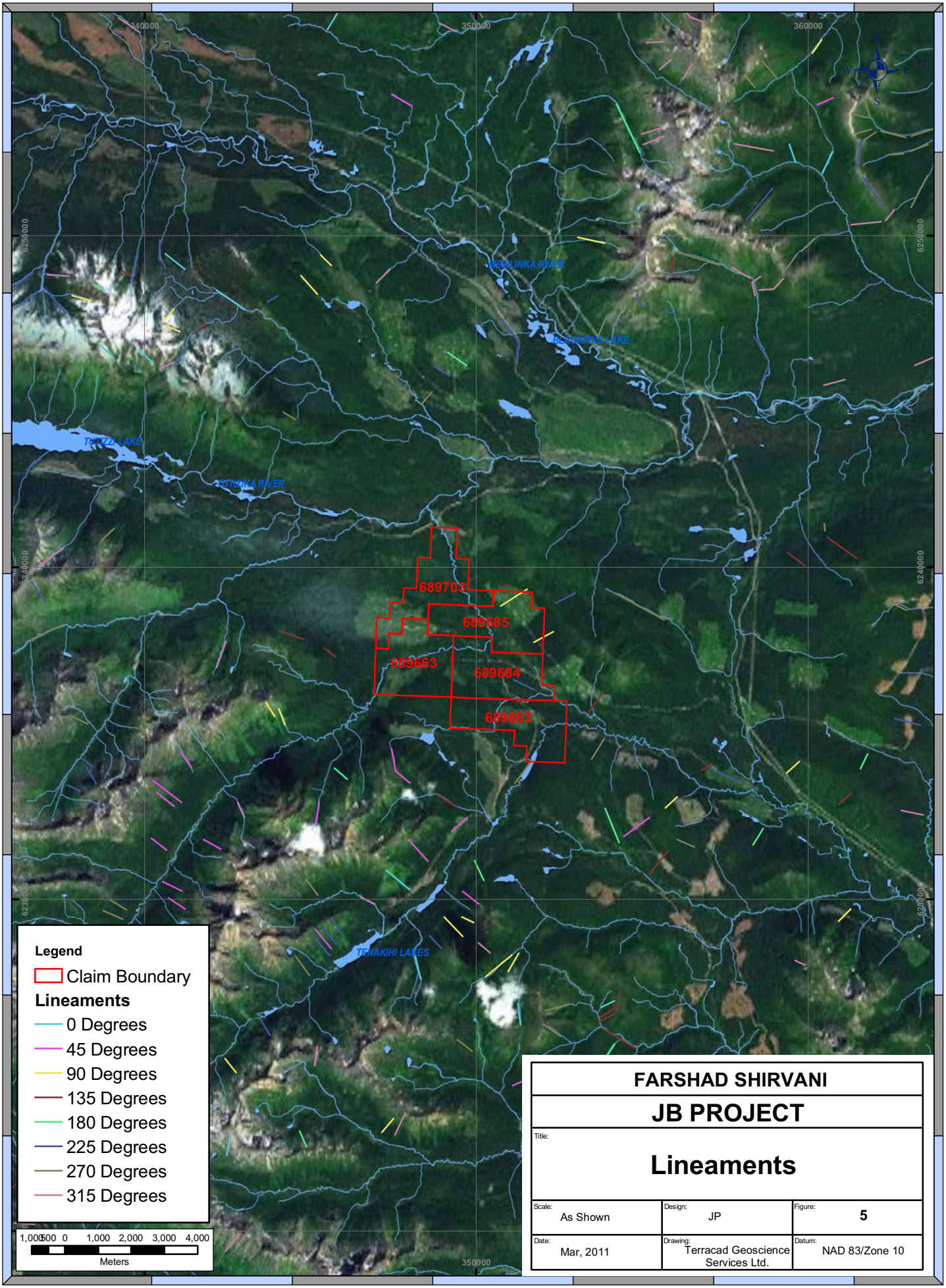
FARSHAD SHIRVANI

JB PROJECT

Title:

Mineral Occurence Map

Scale:	Design:	Figure:
As Shown	JP	4
Date:	Drawing:	Datum:
Jan, 2011	Terracad Geoscience Services Ltd.	NAD 83/Zone 10


340000
350000
360000
6250000
6240000
6230000
MESILINKA RIVER
BLACKPINE LAKE
TUZZI LAKE
TOTSUKA RIVER
689703
689685
689663
689684
689683
TENAKIHI LAKES
Legend
Claim Boundary
Lineaments
0 Degrees
45 Degrees
90 Degrees
135 Degrees
180 Degrees
225 Degrees
270 Degrees
315 Degrees
1,000 500 0 1,000 2,000 3,000 4,000
Meters
FARSHAD SHIRVANI
JB PROJECT
Title:
Lineaments
Scale: As Shown
Design: JP
Figure: 5
Date: Mar, 2011
Drawing: Terracad Geoscience Services Ltd.
Datum: NAD 83/Zone 10

The regional scale lineament study (Figures 6a, 6b, 6c) showed two orthogonal fracture/lineament sets: (1) northwest (+/- 315°) and (2) northeast (50°). Set (1) is the predictable Cordilleran trend; Set (2), is not readily identified with any previously mapped structures.

Terracad also applied ASTER imagery analysis to locate high and moderate potential SAM (spectral angle mapper) spectral match data indicative of buddingtonite alteration. Buddingtonite is a clay mineral component of some advanced argillic alteration systems, in particular of alteration related to major silver deposits. Recognized in relatively recent times, i.e. 1964, buddingtonite is described as a colourless ammonium feldspar ($(NH_4)AlSi_3O_8$) with sub-vitreous to earthy texture, hardness 5 1/2, and is usually found in a very fine grained form. High grade metal values are commonly found at considerable depth below the buddingtonite "zone", leading to exploration models that incorporate vertical zonation.

Hyperspectral analysis is applied to ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) satellite data obtained from a multi-sensor scanning system. Data are corrected to remove extraneous atmospheric interference and to obtain accurate ground reflectance data, followed by extraction of spectral end members using the SMACC (sequential maximum convex cone) procedure. USGS spectral library reference bands are compared to the resulting data in order to determine the presence of particular alteration minerals that are of interest in mineral exploration, including, for instance, alunite, buddingtonite, kaolinite, and illite.

Figures 7 and 8 of this report are presentations of the buddingtonite analysis of the JB 1 – 5 mineral tenures and surrounding areas. The analysis is most effective in areas of bare ground, i.e. desert or above treeline conditions and the widespread distribution of "high potential SAM spectral match" data in the buddingtonite range as shown in Figure 7 and 8 is due in part to interference from vegetation.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Satellite imagery and related computer-based studies did not yield compellingly definitive clues that can be applied in the field. The ASTER-based buddingtonite analysis supplements the recommendation by Bowen (ARIS #29429, 2007), that MMI-type soil geochemistry methods may be effective in localizing the search for Mt. Milligan-style mineral deposits. A program of MMI sampling, comprising perhaps 300 samples, is recommended: that work should be directed to the red-shaded areas located in the north halves of tenures no. 689663 and 689684.

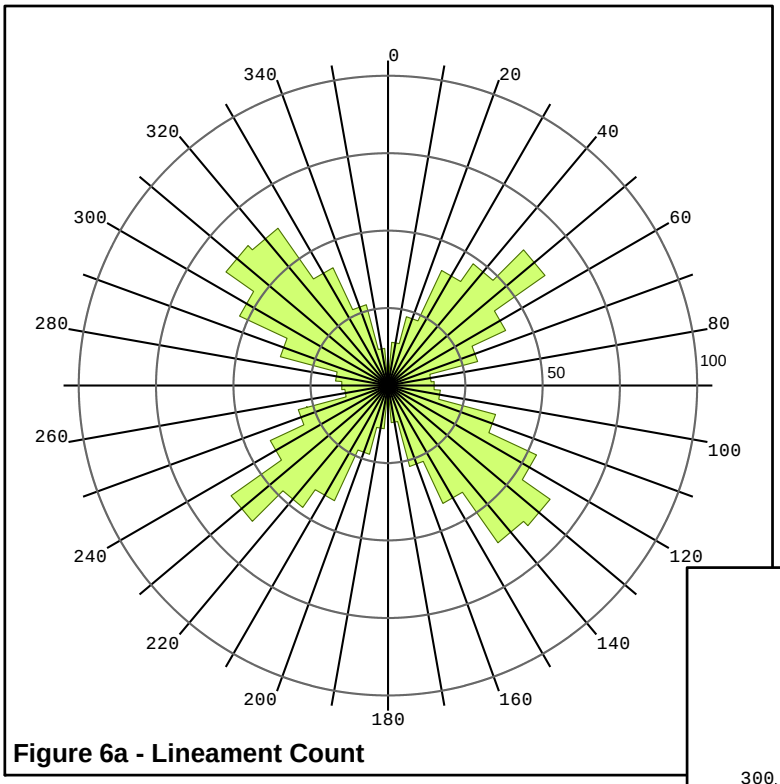


Figure 6a - Lineament Count

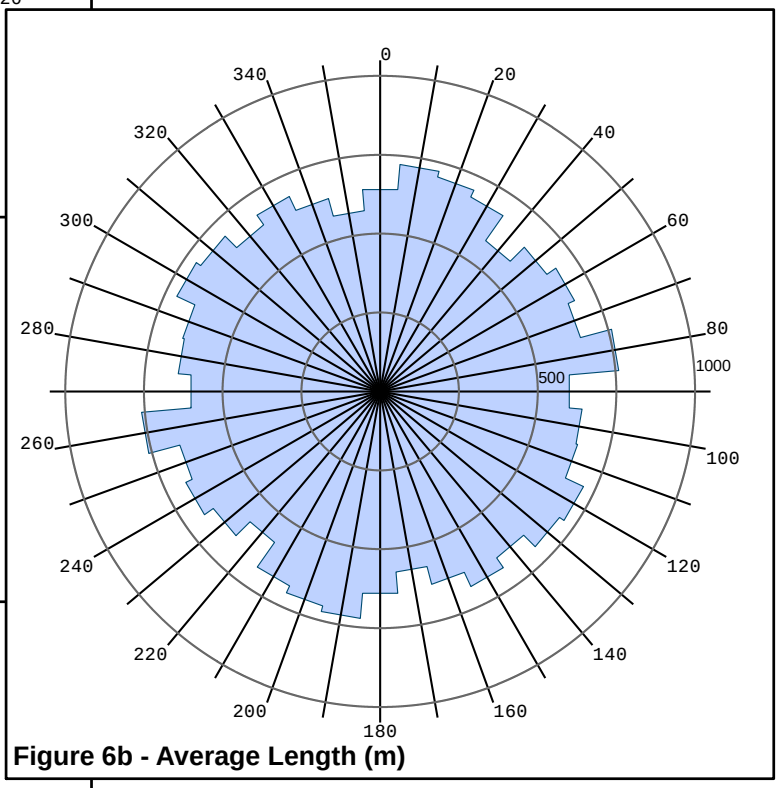


Figure 6b - Average Length (m)

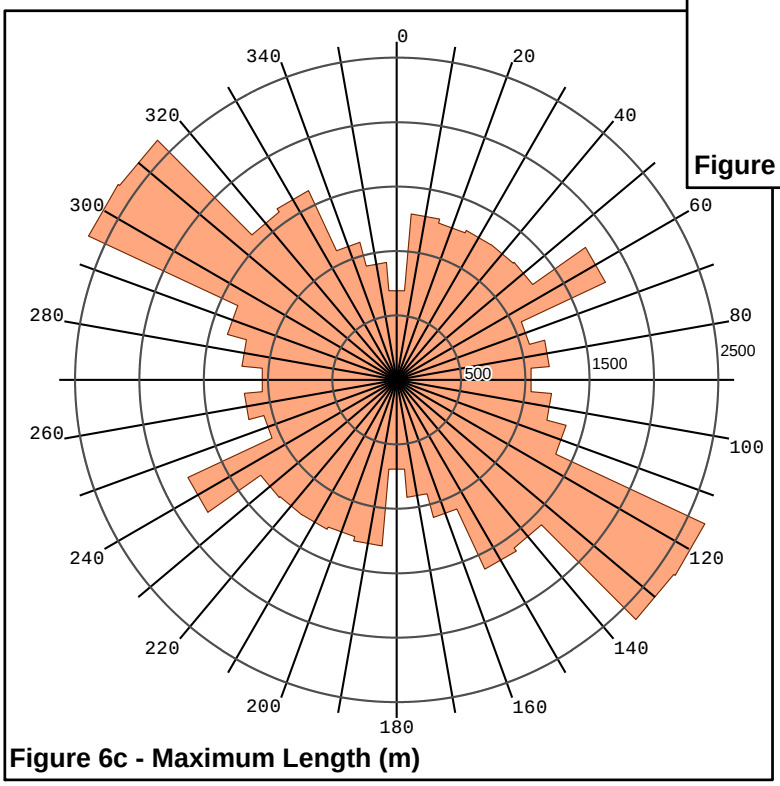
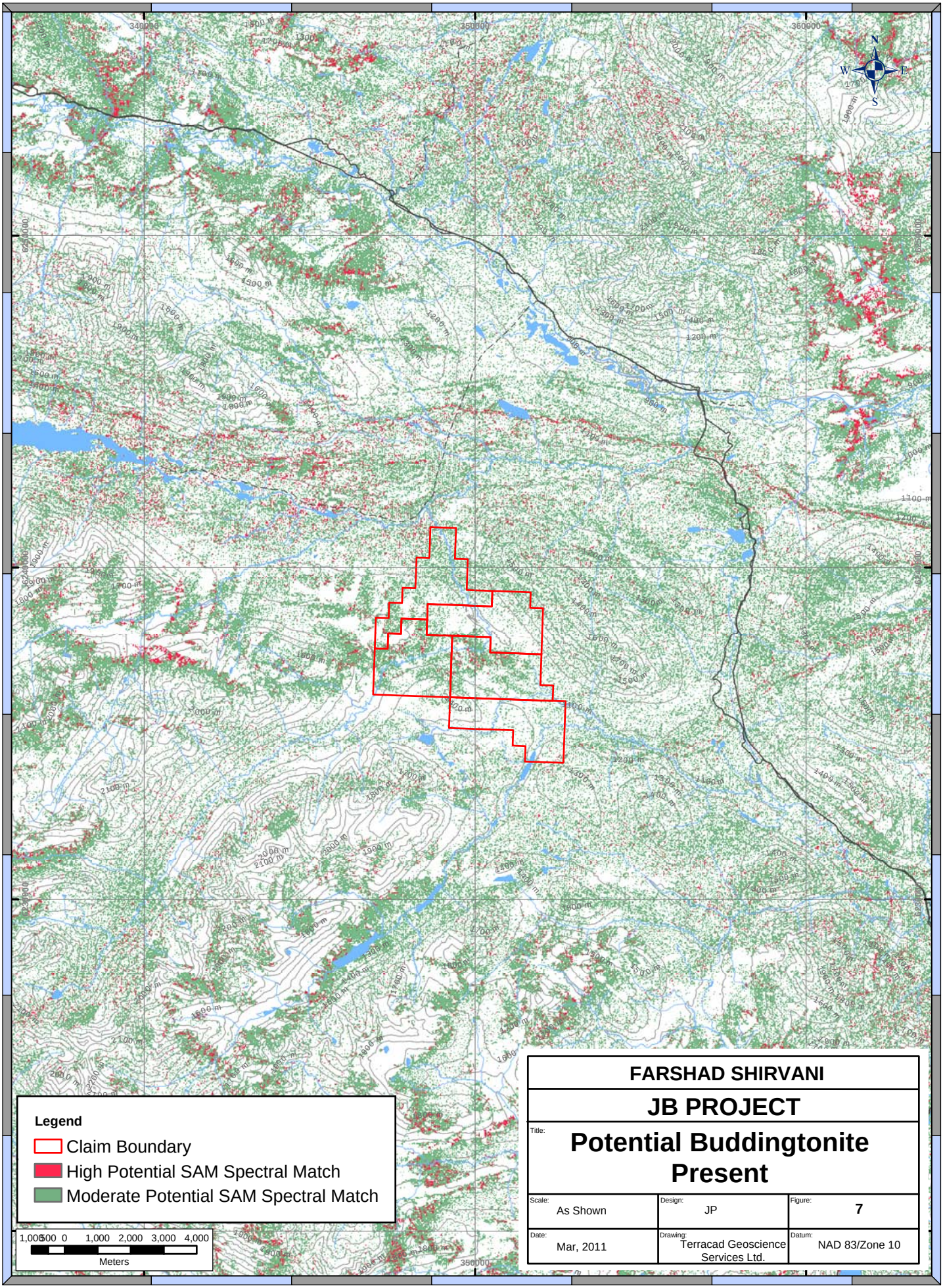


Figure 6c - Maximum Length (m)

FARSHAD SHIRVANI		
JB PROJECT		
Title: **Rose Diagrams**		
Scale: As Shown	Design: JP	Figure: **6a, 6b, 6c**
Date: Jan, 2011	Drawing: Terracad Geoscience Services Ltd.	Datum: NAD 83/Zone 10

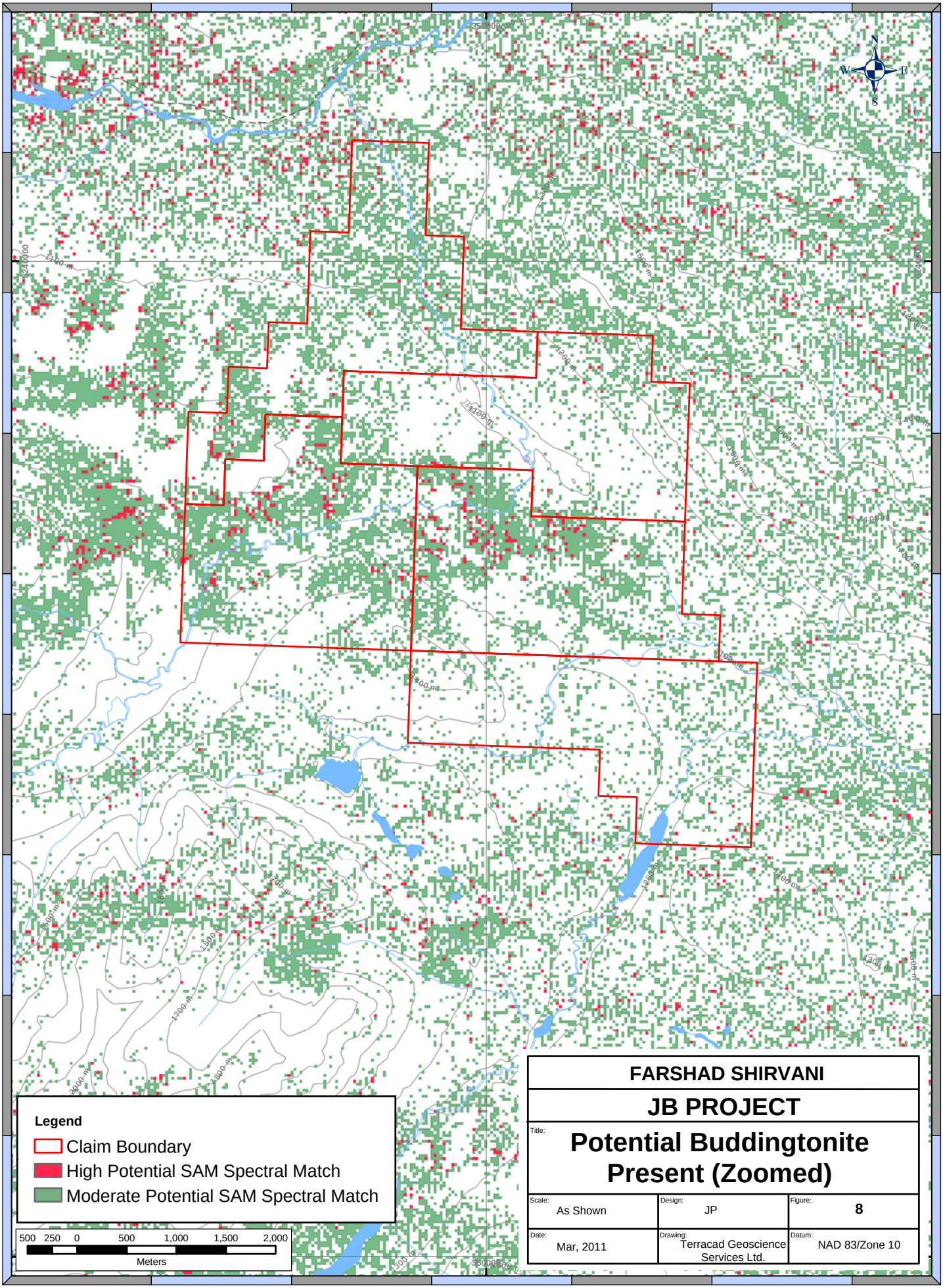


FARSHAD SHIRVANI

JB PROJECT

Title: **Potential Buddingtonite Present**

Scale:	Design:	Figure:
As Shown	JP	7
Date:	Drawing:	Datum:
Mar, 2011	Terracad Geoscience Services Ltd.	NAD 83/Zone 10



FARSHAD SHIRVANI

JB PROJECT

Title: **Potential Buddingtonite Present (Zoomed)**

Scale:	Design:	Figure:
As Shown	JP	8
Date:	Drawing:	Datum:
Mar, 2011	Terracad Geoscience Services Ltd.	NAD 83/Zone 10

7.0 REFERENCES

The following publications were the sources of parts of the information included in the accompanying report:

Bowen, B. K., 1992, Report of Work, Prospecting Surveys on the JB Property, Assessment Report. ARIS #22489

Bowen, B. K., 2007, Prospecting Survey of the NEWJB 1 – 6 Claims, Tutizika River Area, Northern British Columbia, Assessment Report, ARIS #29429

Kilby, W.E. and Kilby, C.E., 2007, ASTER Multispectral Satellite Imagery and Product Coverage, B. C., Geol. Fieldwork 2006, Paper 2007-1, publication of British Columbia Geol. Surv. Branch

mindat.org - the mineral and locality database, accessed from Google.ca

Roots, E. F. (1954), Geology and Mineral Deposits of Aiken Lake Map-Area, British Columbia, Geol. Surv. Canada, Memoir 274

8.0 STATEMENT OF EXPENDITURES

Terracad Geoscience Services Ltd. prepared the illustrations and text of the accompanying technical report using “in-house” resources, including employees and associates, various software packages and computer-related hardware, and included the difficult downloading process of acquiring ASTER-related programs. The cost of those services attributed to the JB 1 - 5 Claims Project analyses has been determined as $4200.

9.0 STATEMENTS OF QUALIFICATIONS

Farshad Shirvani, MSc.

Principal of Terracad Geoscience Services Ltd., holds BSc. (1983) and MSc. (1986) degrees from Shiraz University (Iran). He worked eight years in Iran in mineral exploration, engineering geology and hydrogeology and as Project Manager of the Malayer Reservoir Dam and City pipeline to Hamadan. Resident of Canada since 1996. Citizen of Canada since 2002. Has worked in Canada as a geologist, web designer, AutoCAD specialist, 3D modeler and GIS specialist. Principal owner of Terracad since 1998.

Jonathan Pokotylo, BSc., AD-GIS.

GIS specialist employed by Terracad Geoscience Services Ltd. He obtained a BSc. Degree in Geography from University of British Columbia in 2008 and an Advanced Degree in Geographic Information Systems from British Columbia Institute of Technology in 2010. He is a computer hardware and software specialist, with special skills in data acquisition, compilation and processing, AutoCAD systems, modeling, graphic presentations and photographic and satellite imaging.

Erik Ostensoe, P. Geo.

Consulting geologist. BSc. (Hons.) University of British Columbia. More than 40 years experience in mineral exploration in British Columbia and elsewhere.