

**YEIP
2015-095**

SE Yukon Nephrite Project Report

Grassroots Module YMEP 15-095

Grassroots Prospecting With a Nephrite Jade Focus in the Frances Lake Area

July 10 - Aug. 4, 2015

Watson Lake Mining District

Report by Van Krichbaum

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Grassroots Module

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Grassroots Exploration of Highly Prospective Areas

Stan Leaming, in “Jade in Canada” (1978), reports that the Frances Lake area has a probable nephrite reserve of 500 tonnes and possible reserves of 1500 tonnes. The Pelly Mountains have 500 tonnes additional possibilities from ultramafic bodies with no known occurrences. He states “The presence of in-situ nephrite in Frances Lake map area (105 H) suggests that prospecting in the serpentinite areas of Yukon should be considered the primary guide to potential nephrite occurrences. All contact reaction zones associated with these rocks should be closely examined for nephrite”.

The Yukon nephrite jade occurrences are an extension of the largest nephrite deposits in B.C. which occur in the Dease lake area. The BC “Minfile Mineral Inventory - Jade” website (<http://www.empr.gov.bc.ca/Mining/Geoscience/MINFILE/Jade/Pages/default.aspx>) states “bedrock occurrences are typically lens shaped and occur at or near contacts of mafic-ultramafic rocks (mainly serpentinite) with metasedimentary or igneous felsic rocks.”

Jade in British Columbia, Information Circular 2012-3 also adds

- It is an alteration product of ultramafic (high magnesium and iron, relatively low silica content) rock that is commonly called serpentinite.
- This alteration reflects the action of heated fluids transferring elements between ultramafic and metasedimentary or felsic igneous rocks.
- Nephrite is found in the Cache Creek, Bridge River, and Slide Mountain geological terranes, which are largely of oceanic affinity.
- Regional faults in these terranes may indicate where ultramafic rocks are exposed.
- In outcrop, nephrite typically forms lenses near contacts between ultramafic and metasedimentary or igneous rocks.
- Loose nephrite in boulder fields, talus, and placers also form commercial deposits.

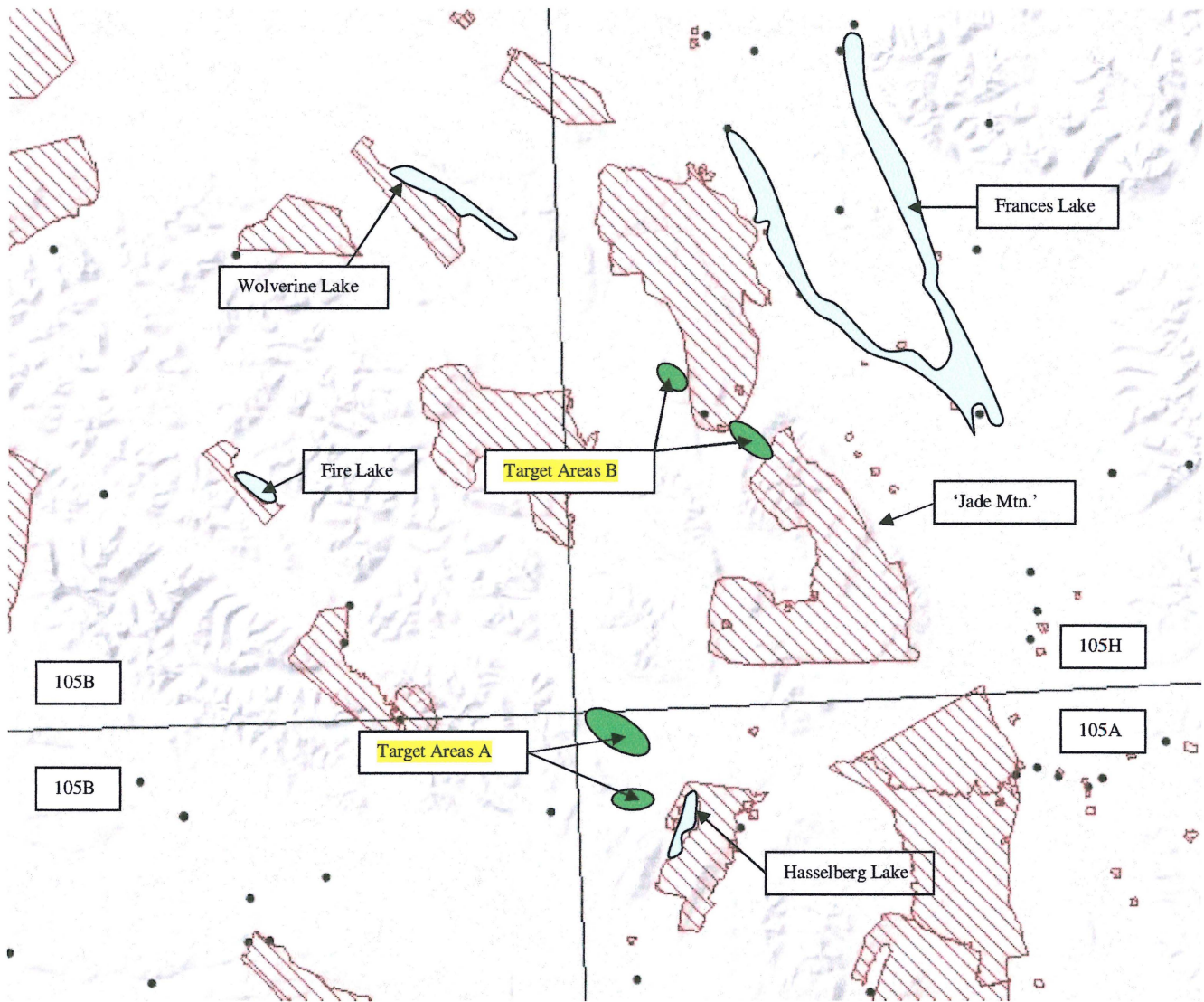
These conditions also exist in SE Yukon in Slide Mountain and YTT ultramafic rock units.

I have discovered nephrite in the past in SE Yukon in such areas as above, and in areas with a particular high/very high aeromag signature. Some of those past nephrite discoveries only received cursory examination (noted but not evaluated) while passing through the area at that time because the jade price was low at that time and also the noted occurrences were claimed for VMS minerals by other companies. Two of the past discoveries occurred in the Ross River Class 1 Notification Area and were not visited for this project due to the ‘no entry - no staking’ Yukon government Order in Council currently in place. These are now open ground and will be revisited if and when the Order in Council is rescinded.

At the start of this Grassroots Project it was predicted that there was a good to very good chance of new discoveries of commercial quality Nephrite in Yukon and also a prediction of an even higher likelihood of finding industrial grade jade based on my past field and research findings. These predictions turned out to be accurate. Nephrite of both higher quality and industrial quality was discovered as a result of this YMEP Grassroots Module.

The choice of the 2 main ‘Target Areas’ was based on 2 main factors;

1. Areas with high probability of having serpentinite or other ultramafic rock types (noted on Yukon geologic maps) and characterized by high/very high residual aeromag field strength areas (noted on Yukon aeromag maps).
2. Where nephrite has been found previously by others. A further restriction was to focus on the Frances Lake nephrite jade prospective area identified by Stan Leaming (1978) which includes the areas west and southwest of Frances lake. This area is shown below with target areas indicated.



Map 1. *Prospected Target Areas ‘A’ and ‘B’ (areas with known serpentinite/ultramafic rock or previously discovered nephrite) are coloured bright green. None of these Target Areas are within the First Nations Interim Protected Lands (in red above) or the Ross River Class 1 Notification Area covered by Order in Council (no entry, no staking). All prospected project areas are within the Watson Lake Mining Division. These are in the Frances Lake Area of Stan Leaming (1978).*

The particular aeromag 'pattern signatures' of the hardrock nephrite sites were a key exploration factor for this project. These, combined with the geology (Slide Mountain and YTT ultramafic rock units, contacts and faults), MinFile reports, past discoveries, etc. determined the individual specific sites prospected.

Both of the Target Areas 'A' and 'B' are familiar terrain I have visited before, some with previous YMIP/YMEP projects. An Argo ATV accessed the areas with routes that have been used before by others to remove nephrite in both general target areas. Camps were set up in each area and many of the prospective sites were traversed on foot between July 7 - Aug. 4, 2015. The Argo was used to haul out a small quantity of nephrite rock for testing the quality using diamond sawing where electricity and water would be more readily accessible.

REGIONAL GEOLOGY

The following excerpt was taken from Devine, et al., 2004, Geological Setting of Retrogressed Eclogite and Jade in the Southern Campbell Range: Preliminary Structure and Stratigraphy, Frances Lake area (NTS 105H), Southeastern Yukon.

"Current tectonic models for the development of Yukon Tanana Terrane - YTT - (e.g., Murphy et al., 2003) describe a western North American marginal crustal fragment which experienced arc growth in the Devonian to Early Permian. This began with eastward-directed subduction of proto-Pacific oceanic crust, and continued again in the middle to Late Permian as the Slide Mountain ocean basin separating the arc from North America closed through westward directed subduction. In the Early Permian, prior to initiation of closure of the Slide Mountain ocean, the arc was shortened by regional-scale northeast-vergent thrusting.

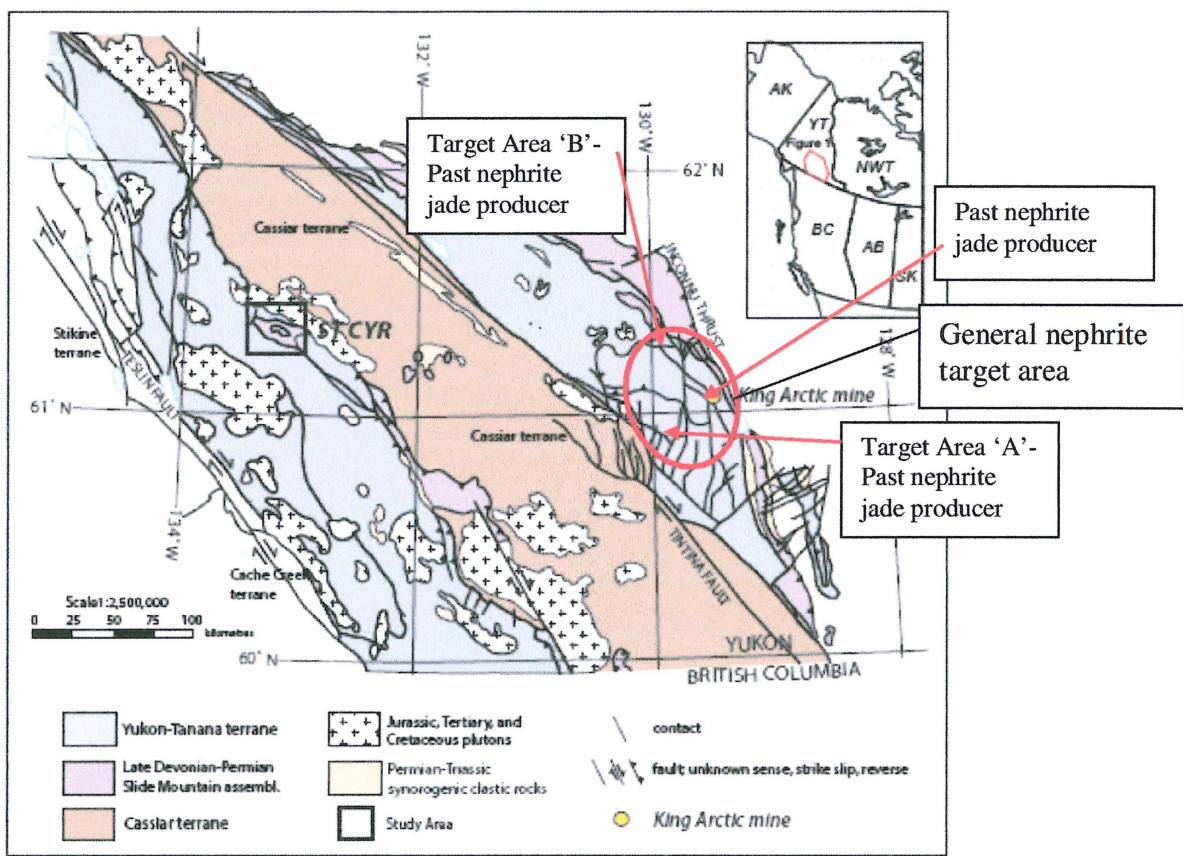
Geology in the Finlayson Lake region shows Early Permian-age displacement along the Money Creek and Cleaver Lake thrusts (Murphy et al., 2003) which resulted in the stacking of Devonian-Mississippian successions that formed in different arc environments (Murphy, this volume). Southwestern Frances Lake map area is underlain primarily by rocks in the hanging wall of the Money Creek thrust fault. The volcanic-dominated Tuchtua River formation rests unconformably on the arc volcanic rocks and metasedimentary rocks of the Waters Creek formation. Two episodes of plutonism coeval with the Waters Creek and Tuchtua River formations are represented by rocks of the Simpson Range plutonic suite. Together, these rocks represent the transitional arc environment between coeval arc (Cleaver Lake group) and backarc rocks (Wolverine Lake group), now stacked together. Clastic rocks of the Money Creek formation sit unconformably above rocks in different thrust sheets and were likely deposited synchronously with the Early Permian thrust-faulting event.

In the Finlayson Lake region, Early Permian thrusting was succeeded by deposition of the Campbell Range formation and emplacement of associated mafic and ultramafic intrusions. As these rocks occur on both sides of the Jules Creek fault near the eastern margin of YTT, Murphy et al. (2003) have suggested that the Jules Creek fault is a lithospheric-scale transform fault with associated plutonism, active during the Middle to Late Permian closure of the Slide Mountain ocean.

The Late Permian and/or Triassic Simpson Lake group (Simpson Lake assemblage of Mortensen et al., 1997, 1999) conglomerate is the forearc, possibly progressive to foreland,

sedimentary deposit resulting from Slide Mountain ocean closure. A Triassic overlap sequence on YTT and North American rocks constrains the timing of terrane-continent amalgamation. Later crustal shortening in Jurassic to Cretaceous time imbricated YTT, and resulted in motion along the eastern YTT/Slide Mountain-bounding Inconnu thrust fault. This was followed by an extensional faulting event in the Cretaceous.

The following map shows the regional geology with the many nephrite prospective regional faults in the general nephrite target area which is encircled below in red.



Map 2. Simplified regional map of southeastern Yukon modified from Colpron et al., 2006 from Isard, S.J. and Gilotti, J.A., 2014. Geology and jade prospects of the northern St. Cyr klippe (NTS 105F/6), Yukon.

The geology of the southern Campbell Range is also excerpted from Devine, et al., 2004 as follows: “Three geological domains have been recognized in the southern Campbell Range. The break in slope along the east side of the range marks the boundary between the two eastern domains and coincides with the southeast-striking, shallowly west-dipping Jules Creek fault, a reactivated fault with most recent east-vergent thrust motion. To the east are basinal rocks of the Fortin Creek group of Slide Mountain Terrane (Murphy et al., 2002) unconformably overlain by the Late Permian and/or Triassic Simpson Lake group (Mortensen et al., 1997, 1999). To the west are Mississippian arc-derived clastic rocks of the Tuchitua River formation and unconformably overlying basinal deposits of the Early Permian Money Creek formation. The third domain occurs along the western edge of the area where poorly exposed metavolcanic and metaintrusive rocks of the Waters Creek formation and Simpson Range plutonic suite occur

in presumed fault contact with adjacent Tuchitua and Money Creek rocks. At least three early folding and two faulting events deform the Tuchitua River and Money Creek formation rocks. Southeast-striking faults imbricate the metasedimentary rocks with sheets of serpentinite, and dominate the structural pattern of the area.

Serpentinite is host to blocks of locally-derived metasedimentary rocks, leucogabbro and coarse-grained metamorphic rocks including retrogressed eclogite. With the exception of the retrogressed eclogite and host rocks, all rocks in the area were metamorphosed under greenschist facies metamorphic conditions”.

Overall Work Plan Objectives for Target Areas ‘A’ and ‘B’

1. To cover as much area as possible along ultramafic/serpentinite contacts within the specific targets identified for nephrite prospecting in Target Area ‘A’ and the time allotted to find hardrock ‘in situ’ nephrite jade or placer boulder deposits.
2. To sample, photograph and field evaluate the quantity and quality of any nephrite occurrences found, whether previously found or newly discovered - ie. inventory any nephrite occurrence encountered. The evaluation technique is explained on pages 7-8.
3. To make and record prospecting observations of significant rock and minerals occurrences to guide future exploration for nephrite jade deposits.
4. Stake claims for any nephrite encountered if the quality is high enough to justify the expense of transport to market, etc.
5. To sample any nephrite deposits found by using chip samples if possible or taking the entire nephrite boulder.

The main part of the grassroots project involved extensive traverses to cover as much prospective ground as possible within the time frame of this Grassroots project. With open terrain (such as above treeline) there were times when the team was split up, but in visual and/or radio contact, never far apart so that emergency help was quickly available if needed. That way more ground was covered. Closer proximity was maintained where the terrain was not open. GPS points for the most prospective ground from the UTM lined residual field strength isogonal lines paper maps were determined in advance and visited on the traverses to search for ‘in situ’ nephrite deposits. A daily journal was kept of work performed and prospecting observations, etc. It is presented in the Appendix.

Field Evaluation Techniques for Nephrite Jade

Field evaluation of nephrite was done by hammering any protrusion to removing a chip portion if possible to obtain a look at the interior of the nephrite and to obtain a thin edge to (sun)shine a light through. This was especially necessary when the nephrite exterior was weathered for a long time or subject to staining by waterborne chemicals in streams, etc. This ‘rind’ makes nephrite identification more difficult, but the scaly textured surface is a recognizable feature for many nephrite boulders.

Placer nephrite boulders are very hard to sample because their rounded nature does not have thinner or angular portions that can be hammered to more easily remove a chip. In addition, the softer portions of the nephrite have been removed by stream or glacial tumbling action which makes the remaining nephrite even tougher to break. Nephrite is already the ‘toughest’ rock to break there is, and very rounded placer boulders are almost impossible to break a piece

off of by hammering. Where conditions warranted the entire nephrite boulder was removed for further quality determination at a later date.

The density (weight per volume) of nephrite is noticeable and somewhat diagnostic and therefore useful when you are familiar with ‘the feel of it’ (heft). Texture, hardness and toughness also aided in identification. Besides colour, translucency is probably the next most important characteristic. Both of these are most easily seen in the thin edges of a chip sample, hence this is the best field technique besides sawing or drilling for initial grading or quality determining. This chip can also reveal inclusions, secondary minerals and fractures. Final grading should be done by sawing and polishing, but this is not a component of the field work for the ‘SE Yukon Nephrite Project’.

The table below is a common concept of nephrite grading for the commercial market to establish a label for a grade, ie. Grade B, etc. In addition each ‘letter grade’ is normally finer graded as a ‘+’ or ‘-’, ie Grade B+. This then basically establishes the monetary value range for the buyer and the seller at the time of sale.

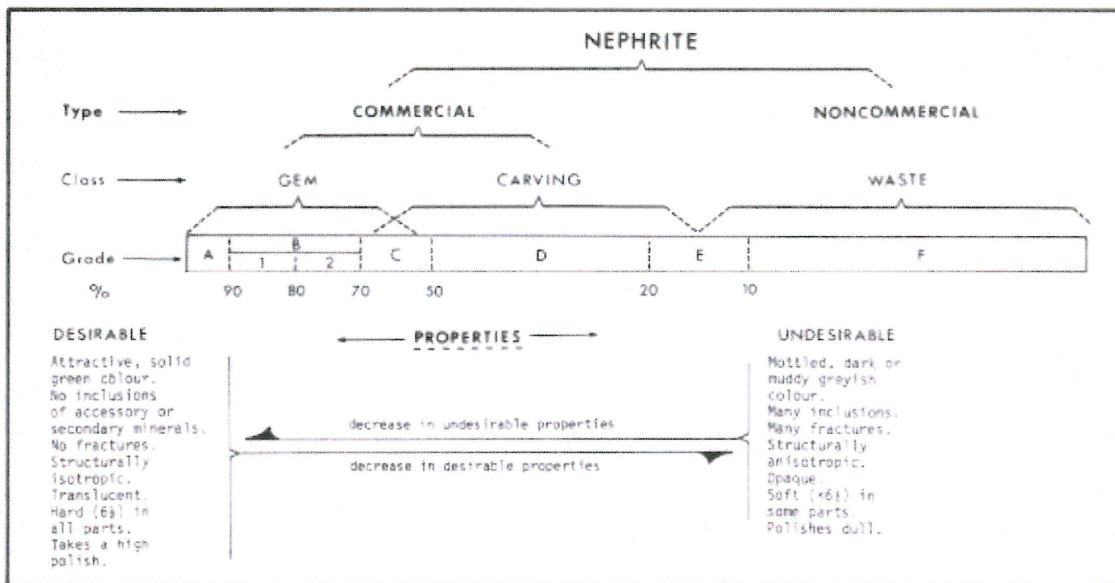


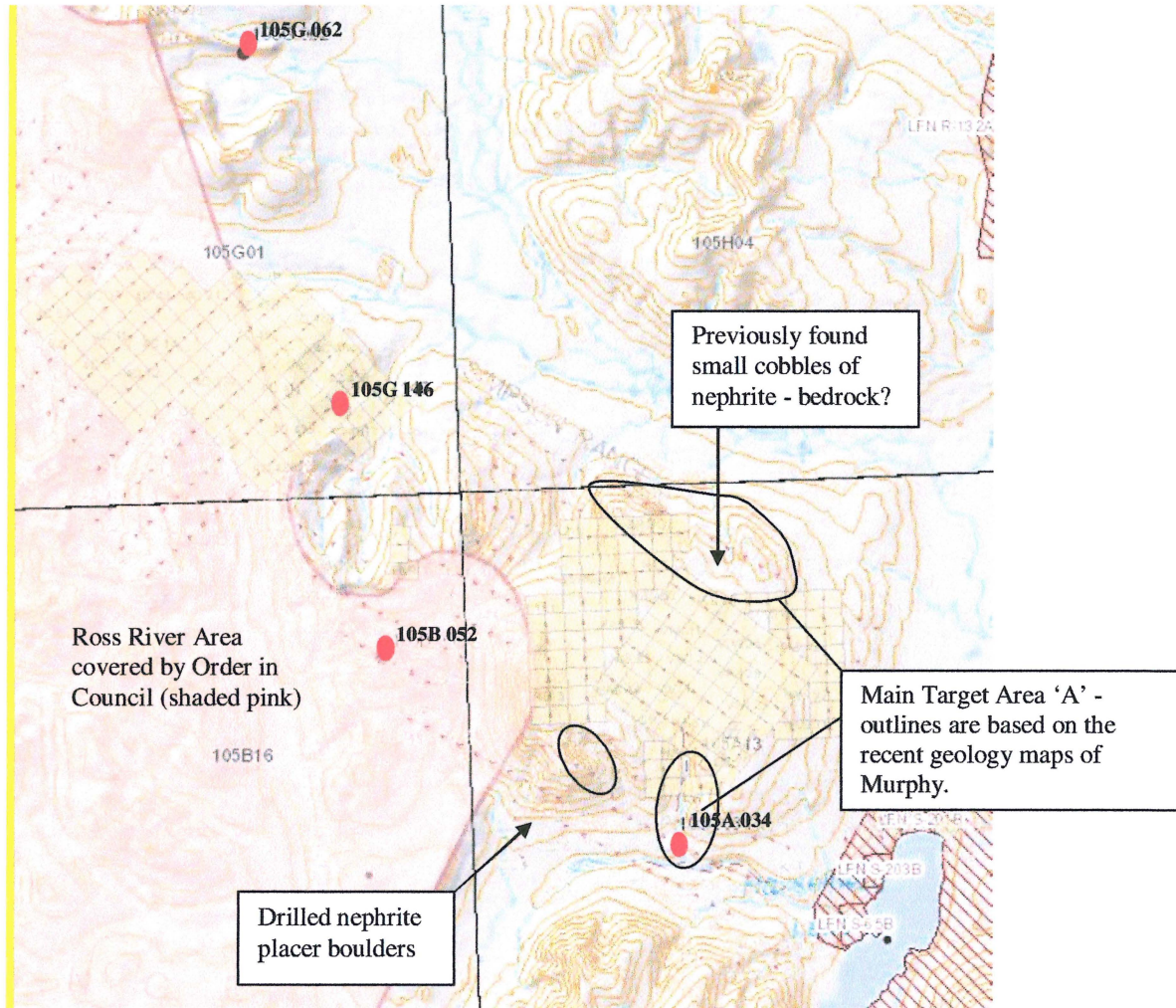
Table 1. Grades of Nephrite. From Stan Leaming’s GSC Paper 78-19, Jade in Canada.

Quantity determinations for a deposit size by weight is more subjective in many cases than quality determinations. The main method I use is to “make measurements” (approximations) in feet, then multiply to get the approximate volume. Then the approximate volume is multiplied by ‘approximately’ 200 pounds to get the approximate weight. For more accuracy I then subtract 5% as the weight for nephrite is ‘more approximately’ 190 lbs./cubic ft. This works well for individual mid to large size boulders, but less so for a large # of smaller boulders.

Nephrite or semi-nephrite blockfields were discovered above or at treeline in both Target Areas ‘A’ and ‘B’ for this Grassroots Program. It is now widely accepted that most mountain top blockfields in areas that have experienced periglacial conditions are primarily a result of frost action. Frost riving is an important process in detaching blocks from bedrock - the size of the blocks moved probably requires frost wedging and the former existence of permafrost.

The growth of lenses of ground ice within joints would promote block detachment (Hall, 2002) (<http://www.landforms.eu/cairngorms>). The quantity of nephrite or semi-nephrite was hard to approximate because the blockfield depth and its composition below the surface was not able to be determined.

TARGET AREA ‘A’ - PREVIOUS WORK HISTORY and CAPSULE GEOLOGY



Map 3. Target Area A Showing Minfile Occurrences. *The prospected Target Area ‘A’ larger ovals are primarily serpentinite/ultramafic rock. The nearby smaller oval was also of interest for this project. The recorded Minfile Occurrences (Deklerk, R. and Traynor, S. (compilers), 2005) are solid red ovals labelled with their Minfile Occurrence Number, and are described on pages 10-13. MinFile 105A 034 contains nephrite as does the area to the west. Both were the subject of prior work. A winter cat road and ATV trails are present already. Claims are small brown squares.*

- MinFile Occurrence 106G 062 was for polymetallic Ag-Pb-Zn+/-Au veins prior to 1972, were never staked and no work was recorded for them. They are un-related to this project's nephrite focus and not mapped as serpentinite or ultramafic rock.
- Minfile Occurrence 105A 034 is the most important nephrite occurrence for this target area proposal. Many tonnes of placer nephrite remain at this site. Other prior work involving drilling tonnes of placer nephrite to the west is not recorded in MinFile Occurrence 105A 034.

Work History

Staked as Howard cl (YA56487) in Sep/80 by Alex Black. Restaked as Tim cl 1-2 (YA91552) by T. Liverton in Sep/86. Jiyu Chen staked a single Chen cl (YB35009) 2 km to the southeast in Aug/92 and trenched in Aug/93.

S. Hearty staked Mayling cl 1-5 (YB35306) to surround the Chen claim in Jan/93, performing bulldozer trenching, prospecting and road building on the claims from July to Sept/93. S.

Hearty then staked Jasper cl 1-8 (YB60248) just north of the occurrence in Aug/95.

In Jul/97 J.P. Ross staked Vivi cl 1-30 (YB89421) 4.5 km to the north and carried out geochemical sampling and prospecting in 1997 and 1998.

In Sep/97 S. Hearty restaked the Chen claim as Mayling cl 6 (YB8984), surrounded the original occurrence with EZ cl 1-71 (YB91288) in Apr/98, added the EZ cl 72-84 (YB91301) 2.5 km to the northeast in May/98 and the Kat cl 1-8 (YB92684) 2 km east in Apr/2000.

During this period the Heartys carried out an ongoing physical work program that included prospecting, geochemical sampling, hand and limited machine trenching. A geological reconnaissance of the EZ and Jasper claims, that included a compilation of previous data was carried out in Sep/2000.

Capsule Geology

The occurrence lies within the Yukon-Tanana Terrane, a middle Paleozoic metamorphosed assemblage, that locally consists of basic and felsic volcanics and associated sediments that are overlain to the northwest by Permian aged diorite, gabbro and pyroxenite of the Campbell Range. Some areas of the ultramafic rocks are strongly serpentinitized and talc altered and nephrite jade has been produced from boulders found in the reworked glacial till on south facing slopes and creeks in the area.

Regional stream sediment geochemical data released in 1996 by the GSC is anomalous for Au and As in the creeks draining the high ground to the north. Prospecting in 1998, of the lower reaches of the main north tributary of Bourget Creek, uncovered steeply dipping, east-west striking quartz veins containing anomalous Au-As values.

The area at Mineral Occurrence 105A 034 has been mined for placer nephrite of variable quality. A considerable quantity of nephrite reportedly remains. This is currently open ground and will be revisited for quality determinations and likely staked. A winter cat road already exists here.

The area to the west of Mineral Occurrence 105A 034 along the NTS 105A 13 -105 B 16 border was previously worked for nephrite, probably in the 1990's. Rounded placer nephrite boulders were drilled but whether any mining was done is unknown. Quality appears low to good based on limited examination of the core holes. This is currently open ground. A winter cat road already exists to this site.

- Mineral Occurrence 105G 146 documents voluminous Late Devonian serpentinitized ultramafic rocks (unit Dum). These also are indicated by the very high residual aeromagnetic responses on mapping from the YGS MapMaker Online website and the geology map of Mortenson and Murphy (2005). This area has not been explored for nephrite to the best of my knowledge.

Work History

Staked as IC cl 1-28 (YB89707) in Aug/97 by Cominco Ltd. The claims were staked to cover airborne geophysical targets identified during a Cominco survey flown in 1995. The company carried out preliminary geological mapping and soil and silt sampling later in the year. In 1998 Cominco continued exploring the claims with special attention given to the area surrounding the IC Creek showing.

In Dec/2002 Strategic Metals Ltd staked 4C cl 1-438 (YC22680) in two large claim blocks; the first (West Block) located directly northwest and the second (East Block) located approximately 5 km southeast of this occurrence. In Jan/2003 Strategic Metals optioned a 50% interest in the claims to Firestone Ventures Inc which carried out a grassroots geological mapping, rock, soil and stream sediment sampling and prospecting program later in the year. In Feb/2004 Firestone Ventures terminated the option and returned the claims to Strategic Metals. In Dec/2004 Strategic Metals allowed the East Block of claims to lapse.

Restaked within 4C claims 439-450 (YC28800) in Jul/2005 by Strategic Metals which immediately carried out geological mapping, prospecting and grid soil sampling on the entire West Block of claims. In the spring of 2006 the company flew an airborne versatile time domain electromagnetic system (VTEM) and cesium magnetometer geophysical survey over the claims.

Capsule Geology

The majority of the two 4C claim blocks straddles the southeast corner of topographic map sheet 105G 01 and the northwest corner of map sheet 105A 13. A small number of outlying claims fall on topographic map sheets 105B 16 and 105H 04. D. Murphy and others (2004) of the Yukon Geological Survey remapped topographic map sheet 105G 01 and 02 as part of Murphy's larger Finlayson Lake District mapping program. J. Mortensen of the University of British Columbia and D. Murphy released a geological compilation in 2005, which included topographic map sheet 105A 13. In addition various geologists employed by Firestone Ventures and Strategic Metals carried out reconnaissance geological mapping over the claim blocks.

Based on geological mapping carried out by the Yukon Geological Survey and various industry geologists the area is underlain by Upper Devonian metaclastic rocks (unit DNR) of the North River formation. The metaclastics are overlain by mafic and felsic metavolcanic rocks (units DF and DFf) assigned to Upper Devonian Fire Lake formation. The Fire Lake formation is intruded by voluminous Late Devonian serpentinitized ultramafic rocks (unit Dum). A large Early Cretaceous granitic intrusion intrudes the sequence west of the claim block but numerous small related granitic intrusions occur throughout the claim block.

Prospecting in 1997 located the IC Showing (this occurrence) described by Cominco as a "stratiform" pyrite showing hosted within very siliceous felsic exhalite and argillite (unit DF). It consists of rusty banded massive pyrite (1 to 15 cm bands) with trace sphalerite and galena. Grab samples collected from the showing returned values up to 0.8% lead and

0.2 % zinc.

Follow-up soil sampling carried out in the vicinity and up slope of the showing identified a 300 m wide by 1 000 m long lead-zinc-silver anomaly that returned values up to 825 ppm lead, 571 ppm zinc and 5.9 ppm silver. Anomalous copper values (up to 393 ppm) also occur locally.

The 4C claims known as the Four Corners option were staked for their potential to host emerald mineralization similar to that discovered in 1998 at Regal Ridge (Minfile Occurrence #105G 147) located approximately 42 km northwest of this occurrence. At Regal Ridge emerald occurs with tourmaline within and alongside quartz veins that cut mafic metavolcanic schists (unit DF) and ultramafic rocks (unit Dum). Fluids responsible for vein formation are related to a nearby granitic stock. The host rocks and granitic stock at Regal Ridge are correlated to units on the Four Corners property.

The majority of work carried out in 2003 was carried out on the West Block of claims. It appears poor results obtained from the East Block in Phase 1 of the exploration program led Firestone to focus their efforts on the West Block of claims. Phase 2 fieldwork outlined 4 zones of anomalous beryllium in soil on the West Block. The most promising area is zone 4 in the Western Ridge area. It measures 200 by 100 m and is defined by beryllium values ranging from 1.5 ppm up to 7.7 ppm and chromium values up to 160 ppm. Rocks in the area consist of rusty golden weathering schist within the Devonian Fire Lake unit, containing abundant black tourmaline and quartz-tourmaline veins. Beryl mineralization was discovered in a tourmaline-bearing pegmatite intruding Devonian Fire Lake chlorite schist in the Central ridge area. One of the beryl crystals is euhedral, opaque to translucent, pale blue-green, 1.3 cm in diameter and 1.7 cm in length. Beryl of this type is characterized as non-gem quality aquamarine. The area is unusual in that there are no significant beryllium or chromium soil anomalies associated with the beryl mineralization.

Exploration also located two areas of anomalous gold values. The first zone consists of a 100 m long gold bearing silica altered talus train that cuts across chlorite schist. A chip sample composed of several chips from two, 70 cm diameter boulders of green chalcedony assayed 4.28 g/t gold and 2.64 g/t silver. The second occurrence consists of disseminated pyrite and arsenopyrite in a 3 to 5m thick dark grey siliceous horizon located within a section of chlorite schist. The horizon was not sampled but rusty soil collected a few metres uphill returned a strongly anomalous value of 591 ppb gold. Firestone also relocated and re-examined the original IC showing.

Strategic Metals 2005 exploration program was focused on the northeast side of the Western Claim block and was aimed at evaluating the volcanogenic massive sulphide (VMS) potential of the claims. In addition to re-examining the IC showing (this occurrence) prospecting led to the discovery of the HS showing. The HS showing is located approximately 750 m north of the IC showing and mineralization consists of limonite boxwork and limonitic chlorite schist float discovered in a small vegetation "kill zone" overlying poorly exposed mafic metavolcanic rocks. The mineralization is also located at the eastern end of a 2 000 m long zone of moderate to strong copper-in soil response. Samples of the strongly oxidized and leached mineralization assayed between 0.58 and 0.97% copper. The best anomalous silver values occur 1 000 m west and parallel to the copper anomaly. The best cobalt values lie immediately west of the silver values. This progressive shift west of anomalous silver and cobalt values may indicate some form of primary metal zoning within the Fire Lake (unit DF) strata.

The 2006 airborne versatile time domain electromagnetic system (VTEM) and cesium

magnetometer geophysical survey outlined four distinct conductor axes all contained within the Fire Lake unit. Two of the conductors occur in the vicinity of the HS and IC showings. The other two conductors occur along the contact between Fire Lake mafic volcanic strata and the ultramafic unit at the western end of the soil grid and are supported by strong copper-in-soil response and a moderately strong but well defined, linear magnetic anomaly.

- MinFile Occurrence 105B 052 also documents massive magnetic serpentinite bodies. The YMIP 95-033 report documented a very large coarse 'nephrite' occurrence on the Sarah-Dawn and Laura-Chris claims. This is currently a 'no entry, no staking' area, and it will not be included in this 'Nephrite in SE Yukon' project.

Work History

Discovered in 1967 by Frances Magun while on a hunting trip. Staked as Mark cl 4-5 (Y22890) in May/68 by B. Studer and examined by Dome Petroleum Ltd the following July during a brief option.

Restaked as Spruce cl 1-2 (YA67222) in Sep/81 by L. Desbiens and as Bill's cl (YB15134) in Aug/88 by V. Krickbaum, who prospected in 1989, and added the Chris cl (YB33290) and Dawn cl (YB33291) in Aug/90. The Chris and Dawn claims were allowed to lapse in 1991. V. Krickbaum prospected and sampled Bill's cl in 1991, added the Laura-Chris cl (YB35007) and Sarah-Dawn cl (YB35008) in Aug/92 and transferred a half share in all three claims to R. Krickbaum. V. Krickbaum and R. Krickbaum stripped ground on the Laura-Chris and Sarah-Dawn claims in Aug/93 and mapped and sampled in Aug/94.

In Jan/96 Cominco Ltd staked BL cl 1-56 (YB72555) 2 km to the northwest. In May/96 V. Krickbaum staked 7 Jesse claims (1=YB83032) around the occurrence. In Jun/96 Cominco surrounded Krickbaum's claim group with B1 cl 57-93 (YB84117). Cominco carried out geological mapping and soil and silt sampling programs in 1996 and 1997.

Capsule Geology

The area has not yet been re-mapped by the Yukon Geology Program however work completed by Cominco suggests the area is underlain by a sequence of Upper Devonian to Early Mississippian metasediments. In the east the sequence is intruded by massive, magnetic serpentinite bodies while to the west the sequence is intruded by a two mica granite.

The original occurrence consists of small lenses of spiky slip fibre asbestos in a sheet-like body of serpentinite and peridotite. The ultramafic bodies are cut by small, irregular bodies of gabbroic pegmatite and amphibolite. The fibre zones are less than 1 800 tonnes in size and consist of light green amphibole fibre up to 15 cm and averaging 2.5 to 5 cm in length. The gabbro contains up to 5% disseminated pyrrhotite but no copper or nickel. Several minor chrysocolla-chalcocite showings, each less than 0.25 square metres, were observed but not assayed.

Cominco staked the BL claims for their volcanogenic massive sulphide potential. Silt and contour soil sampling completed by Cominco identified a few single sample Cu (up to 167 ppm) and Zn (up to 425 ppm) anomalies scattered throughout the B1 claims. Follow-up sampling failed to identify any economic targets.

TARGET AREA 'A' LOCAL GEOLOGY

The YGS MapMaker Online website Total Residual Magnetic Field mapping function was used to restrict the selection areas for nephrite prospecting to contact zones within the ultramafic units which are shown on the geology maps. Aeromagnetic data narrowed the prospective ultramafic (**Dum**) areas to discrete targets where the total residual magnetic field is very high and undergoing rapid changes laterally. The best nephrite jade prospective ultramafic contacts have margin contact rocks that are silicious and possibly calcic (**DF** and **DKcp** in the target area).

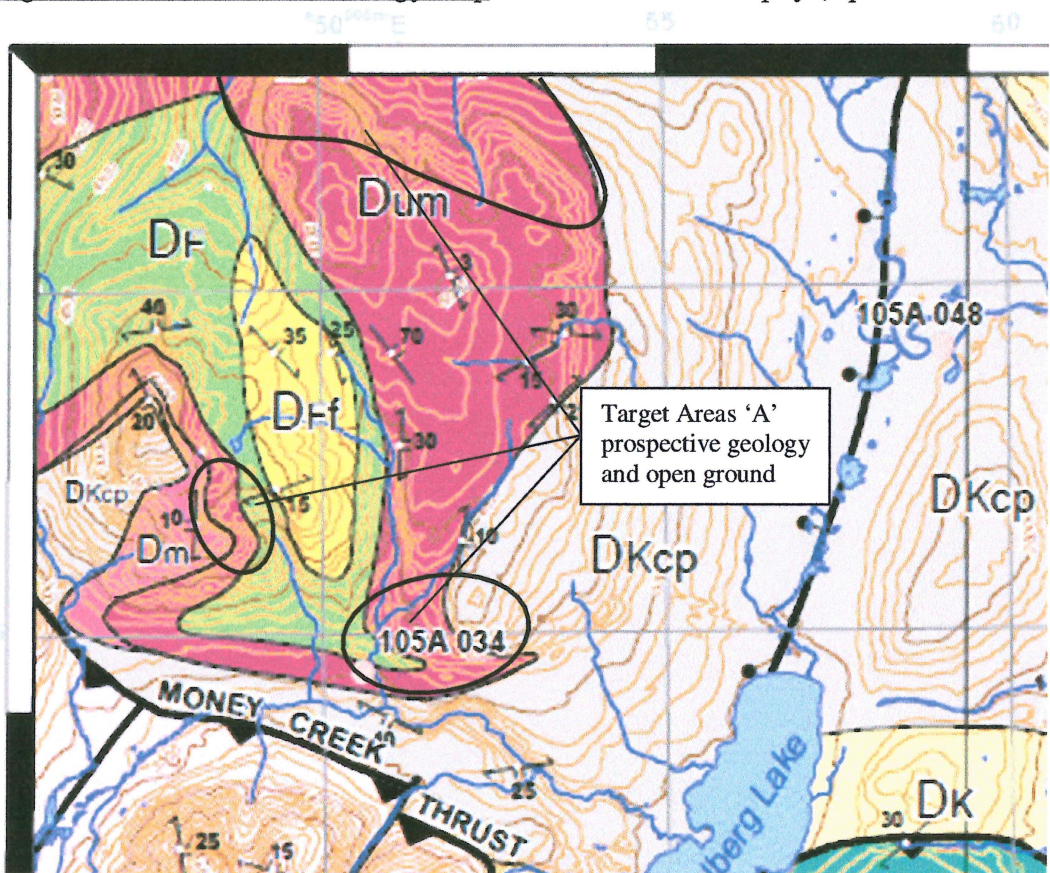
The previous Target Area 'A' MinFiles Capsule Geology section has

- shown almost all rocks in the area were metamorphosed under greenschist facies metamorphic conditions. These rock forming conditions are prospective for nephrite formation and are present in the Target Area 'A'.
- indicated the presence of large bodies of mafic and ultramafic rock. The MinFile capsule Geology states that the Target Area 'A' has "metaclastics overlain by mafic and felsic metavolcanic rocks (units DF and DFf) assigned to Upper Devonian Fire Lake formation. The Fire Lake formation is intruded by voluminous Late Devonian serpentinized ultramafic rocks (unit Dum)". It was also previously established that nephrite typically forms lenses near contacts between ultramafic and metasedimentary or igneous rocks.
- pointed out that some areas of the ultramafic rocks are strongly serpentinized and talc altered. This very often points to accompanying nephrite jade formation.
- presented evidence of many nephrite prospective regional faults in the general nephrite Target Areas 'A'.
- documented the known nephrite MinFile Occurrences in Target Area 'A'. The area at Mineral Occurrence 105A 034 has been mined for placer nephrite of variable quality. This is currently open ground and will be revisited for quality determinations of any remaining nephrite and likely staked. A winter cat road already exists to this site. The placer nephrite jade occurrence to the west of MinFile 105A 034 is also not currently staked and a winter cat road already exists to this site as well.
- pointed out that the largest nephrite jade deposits in Target Area 'A' are placer deposits and their sources are unknown. The probability is high that the jade sources are very close because there are so many nephrite jade boulders in such a small deposit area.

Detailed maps of local geology and aeromags established the presence and location of favorable bedrock and (favorable) faulting. Because the YGS MapMaker Online website does not have the latest geology mapping uploaded it was necessary to use the 1:50,000 NTS maps of Murphy and others to show accurate geology detail in the target area. The Target Area 'A' geological map follows on the next page.

The YGS MapMaker Online website was used to indicate major fault locations and digitized magnetic residual field strength and it is presented on page 16. Later the same mapping will be used to show the detailed choice of target areas and the work done for each target area.

Target Area 'A' - 105A 13 Geology Map - Mortensen and Murphy (Open File 2005-10)

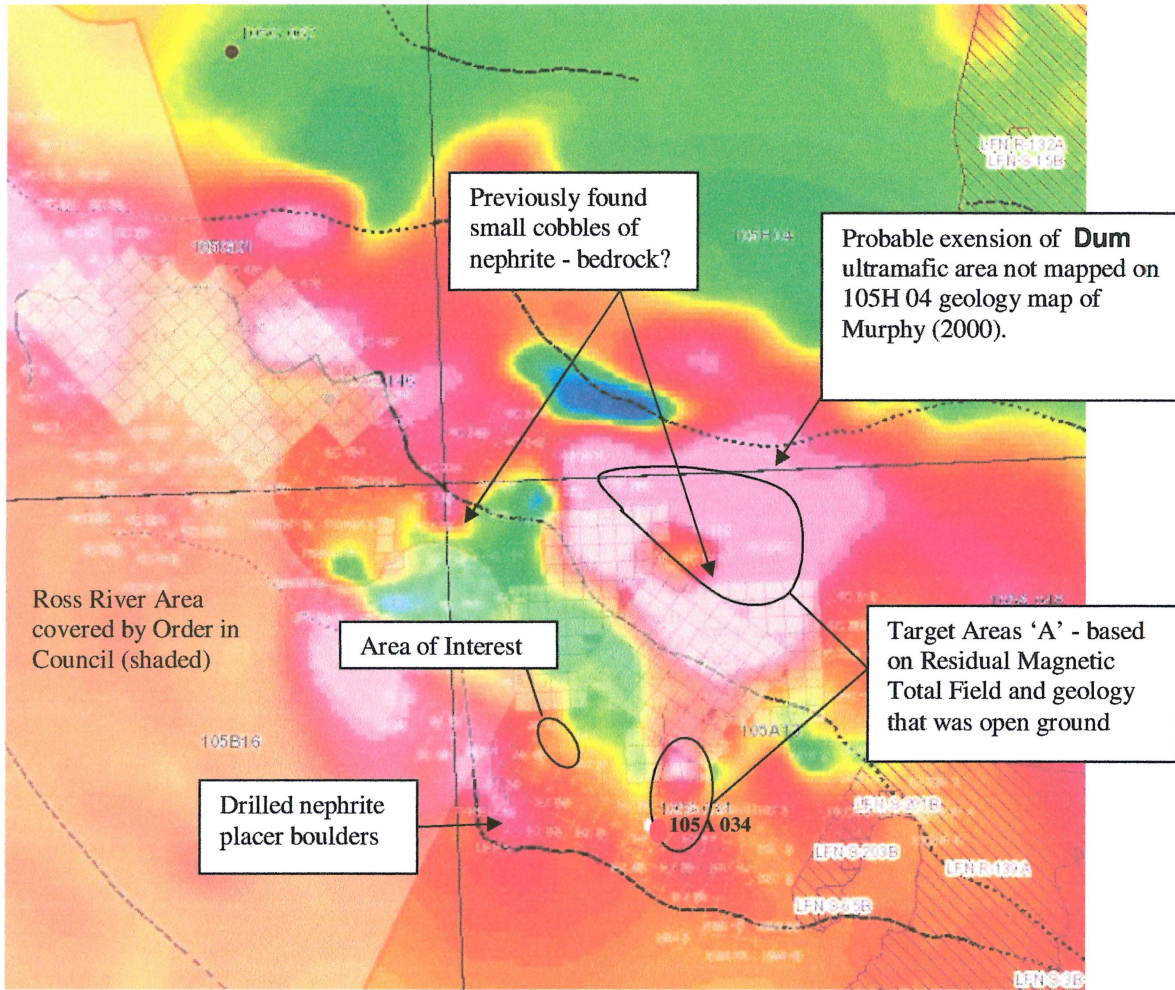


Map 4. Geology Map for 105A 13. *Ultramafic areas Dum are the targets for nephrite prospecting, in particular at the contact margins where rapidly changing total residual aeromag highs exist and contact rocks are silicious and possibly calcic (DF and DKcp).*

LATE DEVONIAN	
Dum	brown-weathering, dark green to black variably serpentinized ultramafic rock; the unit is generally spatially associated and inferred to be in intrusive contact with DF
LAYERED ROCKS	
UPPER DEVONIAN	
Grass Lakes Group	
Kudz Ze Kayah formation	
Dk	undifferentiated foliated feldspar-muscovite-quartz schist or phyllite, massive pale siliceous muscovite-quartz schist or phyllite, locally with quartz amygdules; feldspar- and rarely quartz-augen schist or phyllite (meta-porphry), interbeds of carbonaceous phyllite are common; magnetite iron formation occurs locally near the top of the unit in carbonaceous phyllite and thin felsic schist.
DKcp	carbonaceous phyllite and grey quartzite
Fire Lake formation	
Df	massive to subtly layered, plagioclase-chlorite phyllite or schist, locally with biotite and actinolite porphyroblasts; lesser carbonaceous phyllite

Table 2. Stratigraphic Units Legend for Geology Map 105A 13.

Target Area 'A' - Residual Magnetic Total Field Map



Map 5. Target Area 'A' - Residual Magnetic Total Field. *Known nephrite jade occurrences in the target areas are noted. The lightest purple coloured areas (within a red border) are the very highest magnetic field strength and usually associated with ultramafics. Existing claim boundaries are shown. Faults are shown as black solid or dashed lines, contacts are shown as black dotted lines.*

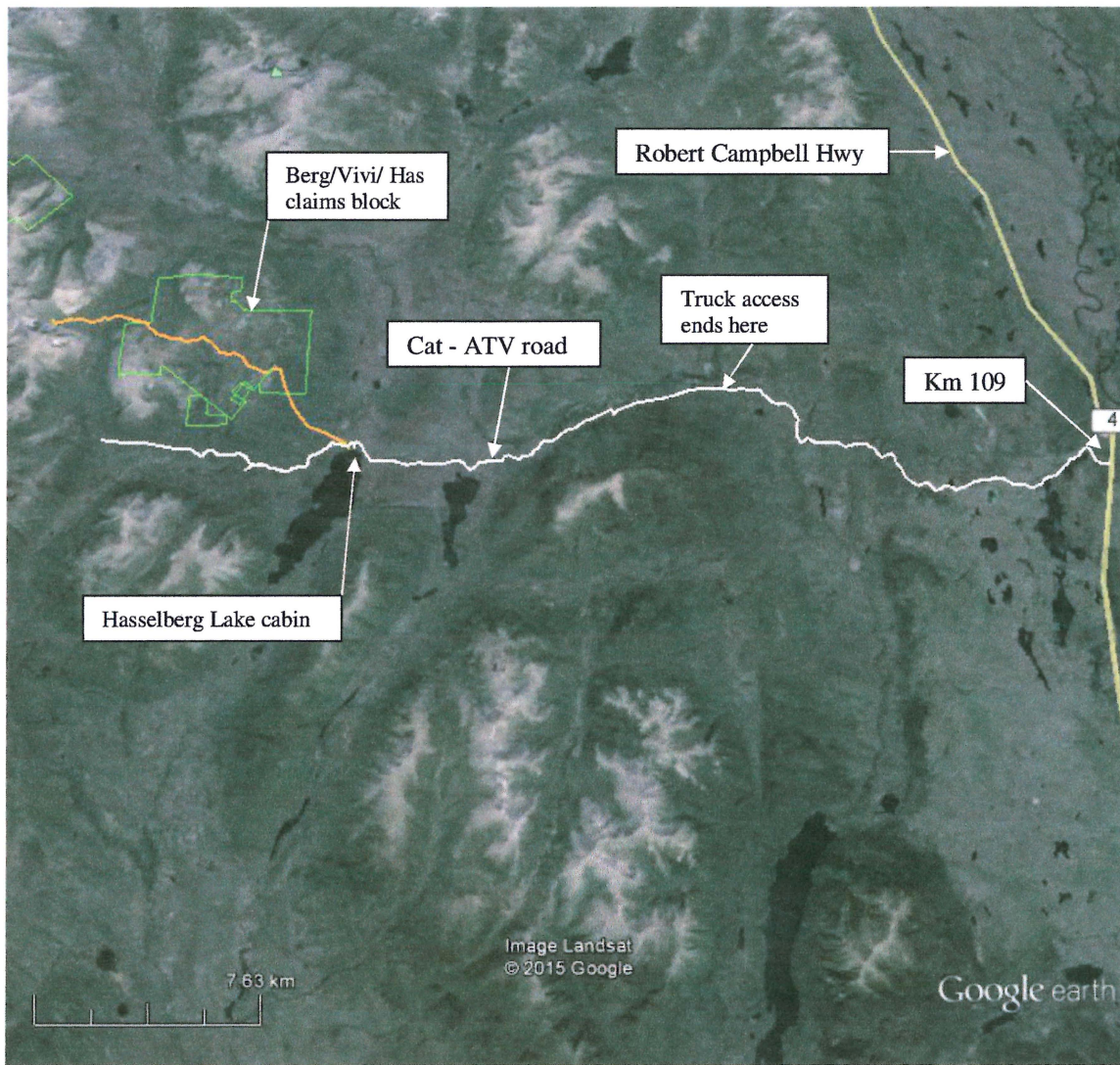
Most of the known nephrite occurrences occur on or near the aeromag high aureole and in close proximity to a major fault or contact. The aeromag high aureole is shown as a red border surrounding the strongest magnetic field coloured light purple (**Dum** ultramafic areas). This association of nephrite jade with **Dum** ultramafic rock contacts is well known and points to where field exploration focused.

Analysis of the observation that the major nephrite deposits occur in the southern portion of Target Area 'A' even though magnetic maps indicate there are a lot fewer prospective contact zones indicates there should be a much higher probability that nephrite will be found in the northern portion of the Target Area 'A' where contact zones are much more numerous.

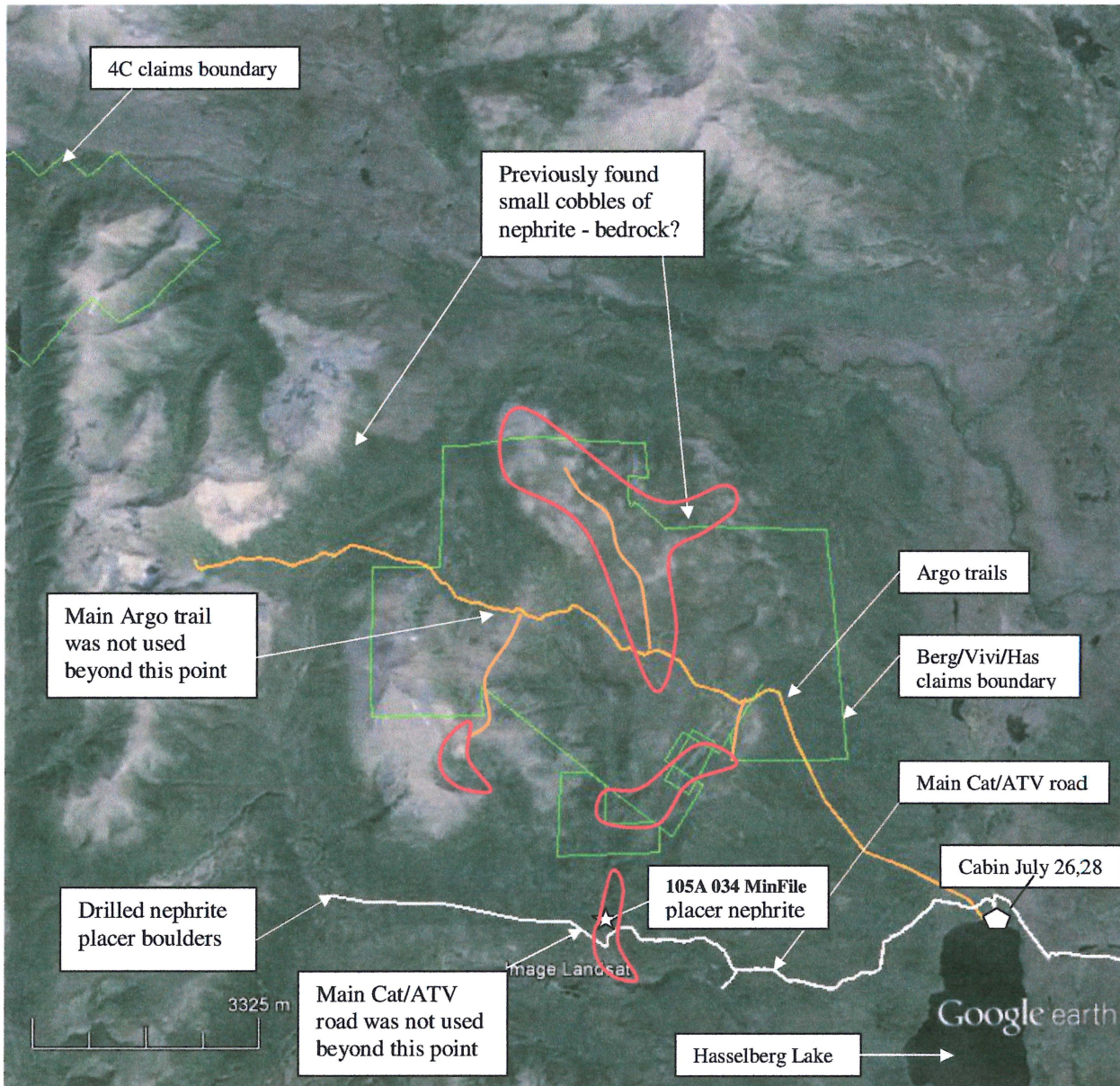
Target Area 'A' - General Grassroots Prospecting Plan

Cat and Argo ATV Access Routes

Please refer to the map below for the truck and Argo access route to Hasselberg Lake cabin and beyond.



Map 6. Primary Truck and Argo Access Route to Hasselberg Lake cabin. *The truck and main cat - ATV road is white, main Argo trail gold, claim outlines are green. The 'winter' cat road is sometimes not passable for quad ATV's in the summer when wet, and is better suited for Argo access. Google Earth mapping. View looking North.*

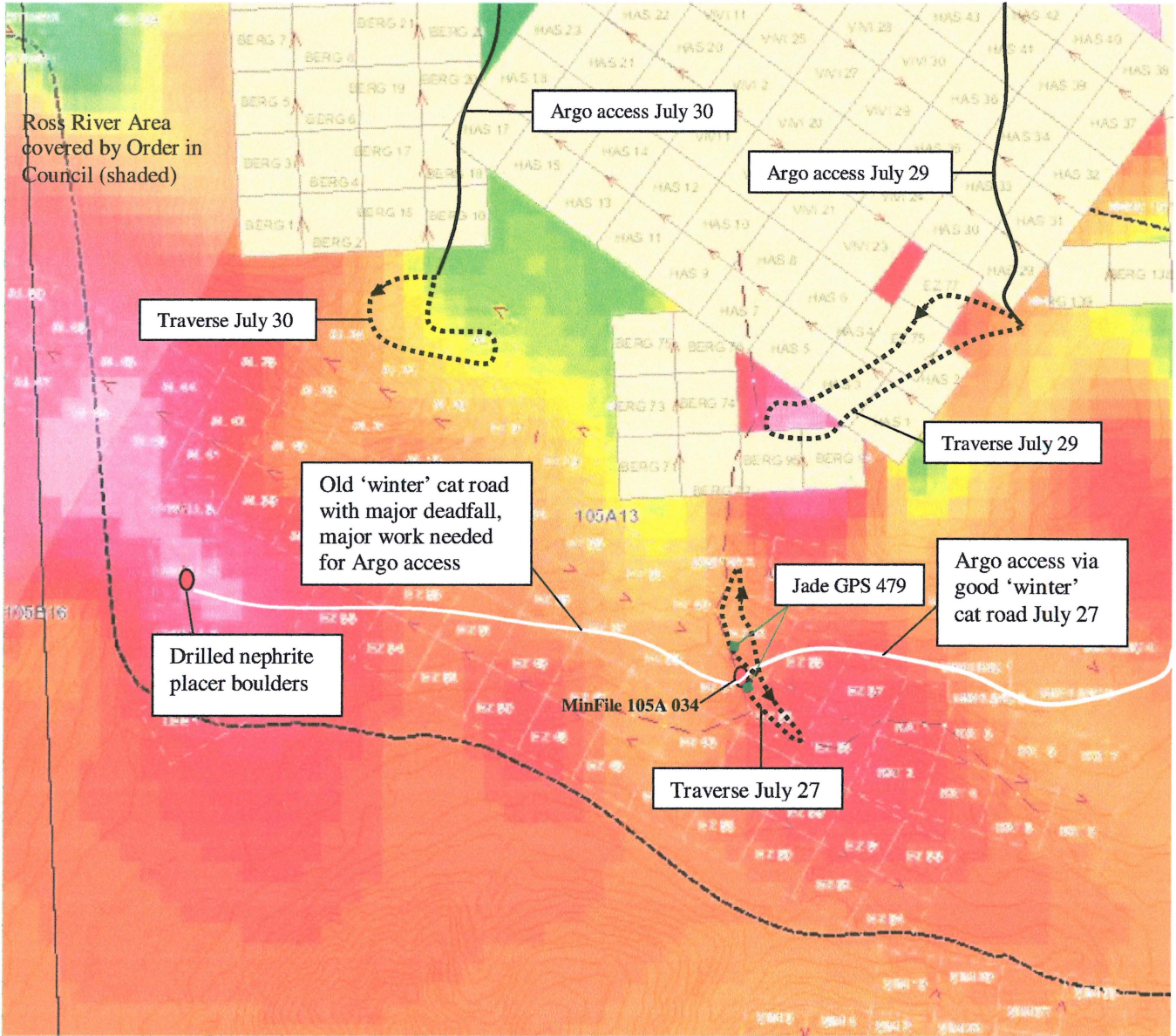


Map 7. Detailed Argo Access Routes Used for Target Areas 'A'. *The main Cat/ ATV road is white, Argo trails gold, grassroots prospected areas are red, claim outlines are green.*

There is good trail access to Target Areas 'A' by Argo, and very good cat and Argo access to the open ground placer nephrite occurrence (105A 034 Minfile). Many years ago there was an excellent quality nephrite boulder found on the south-facing slope just to the northwest(?) of Minfile 105A 034 (Monique Hearty, pers. com., 2012?). This nephrite boulder find had different characteristics and location than the placer nephrite boulders at MinFile 105A 034. This strongly suggests 2 different sources, and neither source was found. The site for the drilled placer boulders found west of MinFile 105A 034 was not visited because the 'winter' cat road west of MinFile 105A 034 had major deadfall and needed major work for Argo access, plus the long hiking distance required a major hike with camp, food etc. for 3-4 days duration.

The lengths of time needed to prospect the specific areas and return was estimated in advance for this Grassroots project. These estimated times were not achieved in the northern portion of Target Area 'A' due to particularly foul hypothermic weather conditions, and more time was needed for more in-depth prospecting at some of the locations.

Grassroots Prospecting for Target Area 'A' - Southern Portion

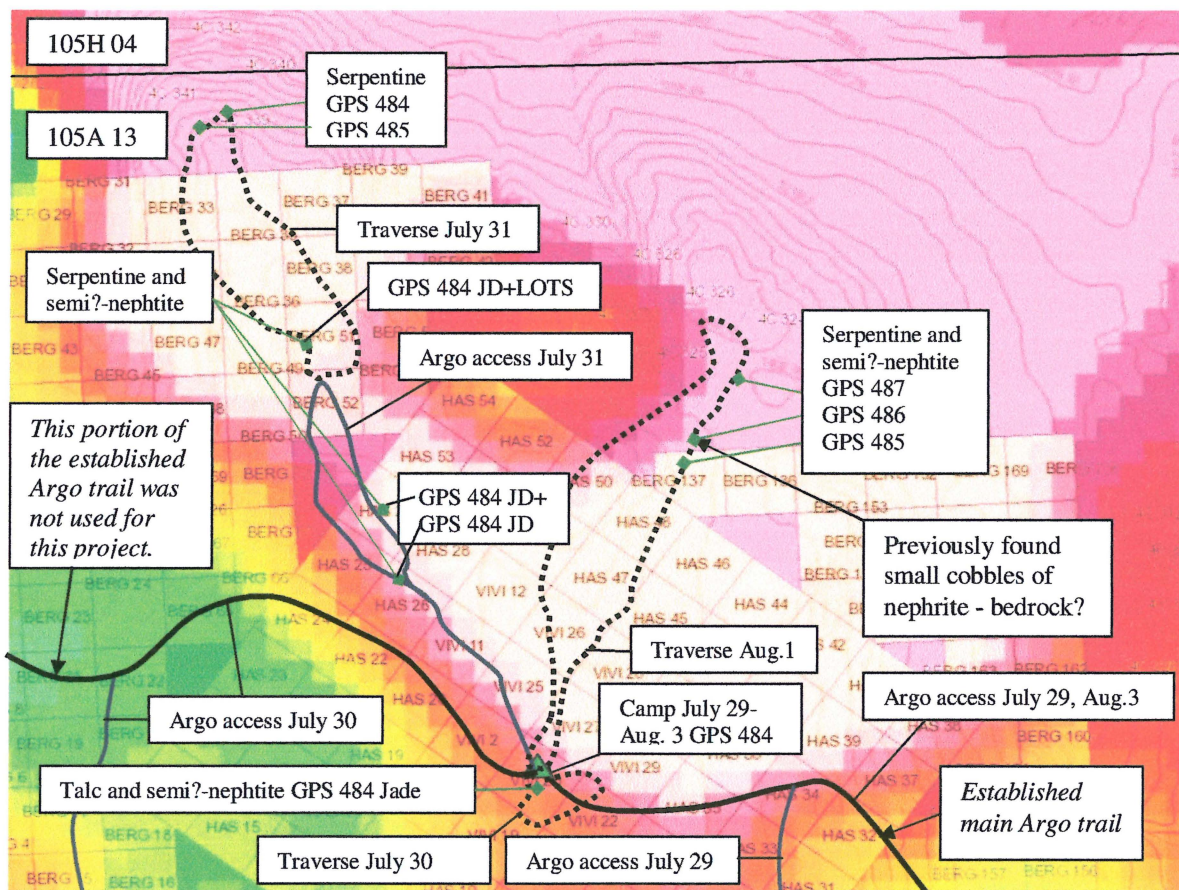


Map 8. Detailed Target Area 'A' - Southern Portion Grassroots Prospecting July 27, 29, 30. Placer nephrite deposits are red ovals, Argo access trails bold black, 'winter' cat road is white. 'Winter' cat road west of MinFile 105A 034 has major deadfall, major work needed for Argo access to the drilled placer boulders. Prospecting exploration day trip traverses are bold dotted lines. Residual total field aeromagnetics from YGS MapMaker Online.

Prospecting exploration results for nephrite for the southern portion of Target Area 'A' were negative for the discovery of commercial quality nephrite. The stream and dry streambed for the past placer boulder nephrite production site - MinFile 105A 034 - contained some small to mid size nephrite boulders of but the quality was poor. These were very pitted, indicating numerous soft inclusions, most likely iron black spots as this is typical of the nephrite at this location. Due to poor quality, this nephrite occurrence was not staked. No other nephrite was discovered in the southern portion of Target Area 'A'.

Grassroots Prospecting for Target Area 'A' - Northern Portion

Target Area 'A' - The prospecting traverses, Argo access, etc. for the Target Area 'A' northern portion of the Grassroots exploration work program is shown below.



Map 9. Detailed Northern Portion Target Area 'A' Grassroots Prospecting - July 29-Aug. 3. Established main Argo trail is bold black line. Minor Argo access trails are blue. Prospecting exploration traverses are dotted lines (see details of traverses in daily journal). Residual total field aeromagnetics from YGS MapMaker Online. Especially foul weather cut short proposed prospecting for the Northern Portion of Target Area 'A'.

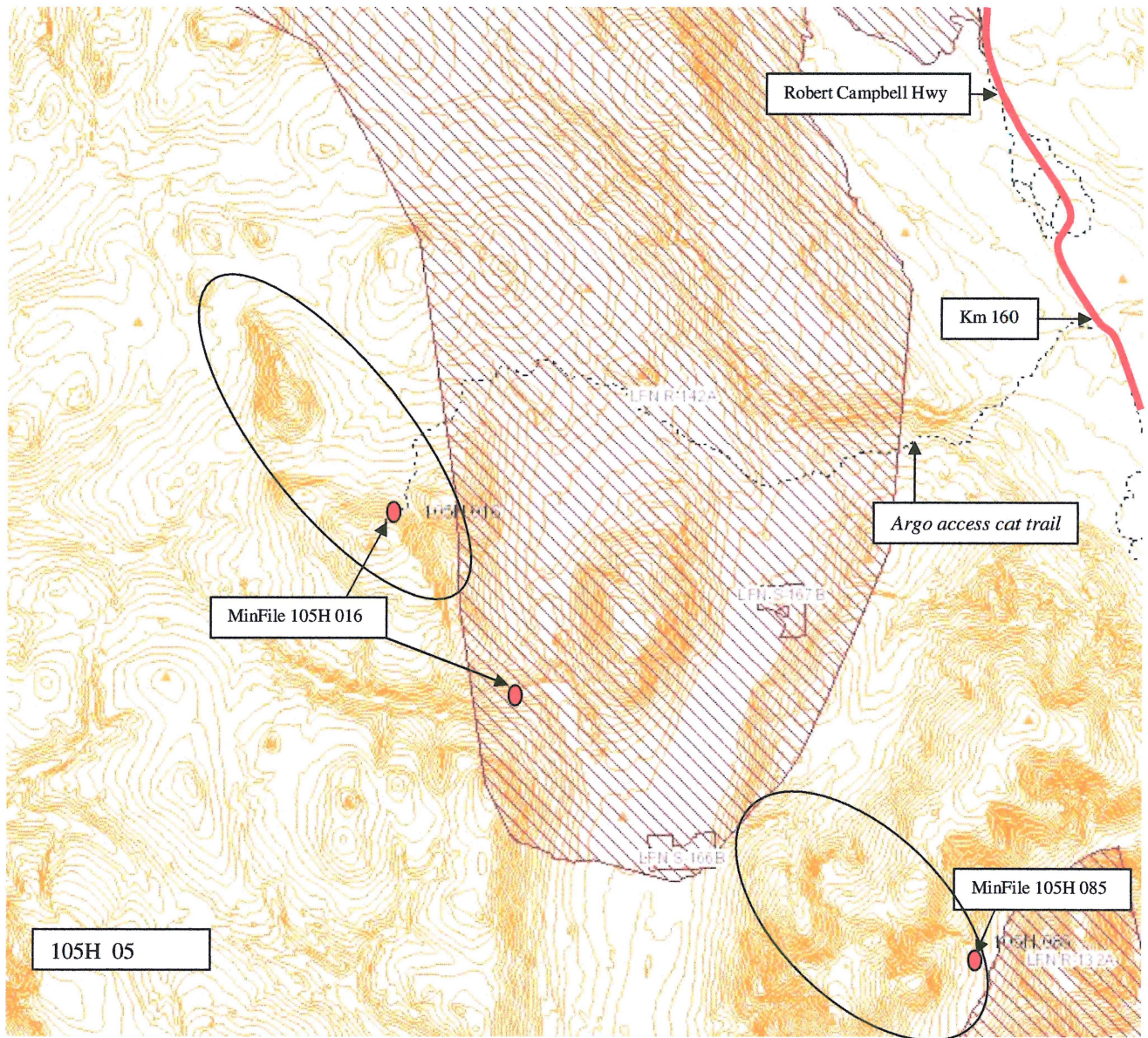
Prospecting exploration results for nephrite for the northern portion of Target Area 'A' were potentially positive for the discovery of marginally commercial quality nephrite. Nephrite was discovered in several places, and the marginal quality is due to low translucency and black spotting. The redeeming factor was the color, a pleasant lighter green. Most nephrite sites only had small quantities of placer/glacial? material, too small and marginal to claim. The Berg 51 claim had very many mostly mid/smaller size nephrite boulders. This almost certainly is a nephrite in-situ blockfield with a contact zone to the north (photo below). Though presently claimed, expiry is Mar. 1, 2016. It should be staked for nephrite if it becomes open.



Photo 1. Nephrite?/semi-nephrite blockfield. Low quality 'nephritic' blocks in the foreground, darker blockfield 'contact zone/reaction zone'? in the background. View looking north.

TARGET AREA 'B' - PREVIOUS WORK HISTORY and CAPSULE GEOLOGY

Target Area 'B' MinFile Occurrences



Map 10. Target Area 'B' Showing Minfile Occurrences. *General project Target Area 'B' has 2 encircled areas for exploration and is largely serpentinite/ultramafic rock. Minfile Occurrences are small red ovals and labelled with their Minfile Occurrence Number. Target Area B does NOT include the First Nations Interim Protected Lands or any of the Ross River Class 1 Notification Area currently covered by an Order in Council. An Argo/ATV access cat trail (gazetted?) exists to the northern-most MinFile Occurrence 105H 016.*

- MinFile Occurrence 105H 016 is a nephrite past producer.

Work History

The northwest end was staked as Porkpine cl 1-8 (74010) and EKO cl 1-8 (74018) in Oct/58 by J. Smarch and E. Hammer. The entire property was restaked as Gen 1-24 (74490) in Oct/59 by G. Rapson, E. Brodhagen and N. Zinchuk and examined by Cassiar Asbestos Corp Ltd later in the year. In 1960, the Dim cl 1-4 (75122) were added by B. Countryman and the property was optioned to Wescan Development Ltd, which hand trenched and drilled 19 x-ray holes (147 m).

Later staking includes Patsy cl (88723) in Jul/64 by H.C. Fromme at the southeast end; Sowden cl 11, 13 and 15 (Y42501) in Jul/70 by K. Ebner, who bulldozer trenched at the northwest end in 1971; and Green Stuff cl 1-6 (Y94476) in May/76 by G. Bouchard at the northwest end. The Green Stuff claims were optioned by Arctic Jade Ltd, which performed more trenching in 1977.

The entire property was restaked as Hiralph cl 1-8 (YA34742) in Aug/78 and Tisnot cl 1-16 (YA45097) in Aug/79 by Teslin Joint Venture (Cassiar Asbestos Corporation Ltd, Cominco Ltd and Exploram Minerals Ltd), which explored with mapping, sampling and a magnetic survey in 1979. The northwest end was restaked in Jul/85 as Sue cl 1-2 (YA73514) by G. Sckopke.

H. Caesar staked Beaver cl 1-8 (YB15344) 5 km to the east in Aug/88, and added Otter cl 1-6 (YB33628), Owl cl 1-4 (YB33642), Mudhen cl 1-8 (YB33530) and Pika cl 1-4 (YB33225) between July and September, 1990. In Apr/96 Caesar restaked Mudhen claims as Mudhen cl 1-4 (YB59283).

Between Sept and Nov/95 Westmin Resources Ltd. staked Hang cl 1-453 (YB69525) 5 km to the north and carried out airborne geophysical surveying later that year. The occurrence was restaked by Westmin as Tack cl 1-557 (YB78704) in Mar/96. The company then completed regional reconnaissance of the Hang and Tack claims by carrying out prospecting and geological mapping traverses across stratigraphy and soil, silt and rock sampling along claim lines. In 1997, Westmin carried out geological mapping (1:10 000) and geochemical sampling (rock, silt and soil) on the southern Tack claims.

Capsule Geology

Chrysotile veinlets up to 9 mm long occur in two showings at either end of a 3 km long serpentinite sill intruded between metavolcanics and argillite of Devonian-Mississippian age. Magnetic response suggests that the sill is continuous under overburden between the two showings.

The northwest showing also contains numerous jade boulders derived from alteration zones at the margins of rodingite dykes. Several tonnes of jade were shipped from the property between 1977 and 1979.

The Tuchitua Project, a regional reconnaissance program encompassing a large area surrounding the original occurrence was undertaken by Westmin in 1995 and focused on the volcanogenic massive sulfide potential of this portion of the Finlayson Lake belt. The Finlayson Lake belt is a layered sequence of mid Paleozoic, metamorphosed and deformed sedimentary and volcanic rocks of the Yukon-Tanana Terrane which host numerous massive sulfide occurrences, including the Wolverine and Kudz Ze Kayah deposits (Minfile Occurrence #105G 072 and #105G 117, respectively). Remapping of the area directly to the northwest, by the Yukon Geology Program (Murphy and Piercey, 1999) indicates that the area is underlain by Pennsylvanian to Permian rocks of the Campbell Range Succession which overly and are part of the Yukon-Tanana Terrane.

A number of scattered polymetallic base metal soil anomalies were detected in the north-central portion of the Tack claims and several Ag and Au spot highs were detected in the northeastern portion of the Hang claims. Specifically, two Ag anomalies up to 12 ppm Ag occur on the northern portion of the Hang claims. A single sample from the southeastern Hang claims returned a value of 50 ppb Au and one sample from the northern Tack claims ran 180 ppb Au. An area of anomalous Cu values occurs in the central portion of the northern Tack claims where values range up to 181 ppm Cu. To the southeast scattered high Cu values range up to 195 ppm Cu. Pb concentration in soil ranges up to 66 ppm, with most of the higher values concentrated in the north central portion of the Tack claims. Similarly, the highest Zn value, 350 ppm Zn, is located in the north central portion of the Tack claims.

Apart from a Zn soil anomaly (peak value of 1 125 ppm) on the southern Tack claims, only a couple of spot highs for Au (125 and 90 ppb) and an isolated Pb anomaly (1 600 ppm) were detected during the 1997 program. Geological mapping carried out in 1996 and 1997 led Westmin to conclude that the prospective stratigraphy hosting the Wolverine deposit does not extend onto the Tack claims and based on the lack of any significant alteration or mineralization detected on the property all of the claims have subsequently been allowed to lapse.

Some nephrite remained in the area and was open ground. It was revisited for nephrite quantity and quality determinations and **subsequently 2 claims were staked for nephrite jade on July 12, 2015 as a result of this Grassroots project.**

- **MinFile Occurrence 105H 085.**

Murphy (2001) reports nephrite jade is locally developed near the basal contact of the ultramafic body (unit PPum). I have seen a probable sample of this nephrite that a trapper showed me many years ago and the quality appeared good. The area is currently open ground.

Work History

Beginning in Oct/83 the occurrence was staked within various small claim groups including Beans cl 1 (YA70692) by J. and H. Caesar, Pika cl 1-4 (YA70700) by H. Caesar, and Jade cl 1 (YA91081) by B. McGeorge. T. Dickson staked Joe cl 1 (YA71347) 3 km to the northwest in Jul-Sep/84.

H. Caesar, T. Dickson and others staked Campbell cl 1-2 (YA73625) 2 km to the north in Aug/85 and Jun/86. G. Edzerza staked Lima cl 1-4 (YA99397) 1 km northeast of the Jade claim in Sep/86. J. Chief tied on Chief cl 1-2 (YB14552) to the south in Jul/88. Later in the

month, H. Caesar staked Gofpher cl 1 (YB14426) and D. Morris staked Trapper cl 1 (YB14427) beside the Jade claim. No assessment reports were filed for any of these claim groups.

Restaked within Tack cl 1-550 (YB78704) in Mar/96 by Westmin Resources Ltd, which explored with soil and stream sediment sampling later in the year. In Mar/98 Westmin was acquired by Boliden Ltd and in Sep/98 ownership in the claims was transferred to Boliden Westmin Limited. In Apr/99 the claims were transferred to Archer Cathro and Associates (1981) Ltd. The last remaining claims lapsed in Mar/2000.

Capsule Geology

The area lies within the Yukon -Tanana Terrane which in the Frances Lake area consists of several fault - or unconformity-bound successions. These rock packages are bound to the southwest by the Tintina Fault zone and on the northeast by the Finlayson Lake Linear. Recent mapping by Murphy (2000, 2001) of the Yukon Geology Program shows the Beans occurrence lying on or very close to the Jules Creek Thrust. In the occurrence area the Jules Creek Thrust sheet consists of a Mississippian intermediate volcanic unit (unit Mv) overlying two Pennsylvanian and/or Lower Permian units consisting of mixed sediments (unit Pcl) including carbonaceous argillite, chert, matrix supported diamictite and a massive to thickly bedded marble (unit Pc). The footwall of the thrust consists of Pennsylvanian and/or Lower Permian argillite and chert (unit Pch), ferruginous tectonite-clast pebble and cobble breccia and other siliciclastics (unit PPC?cgl) and Campbell Range Basalt (unit PPC?b) mafic meta volcanics (Murphy, 2000). Pennsylvanian and/or Permian meta gabbro (unit PPg) and variably serpentinized ultramafic rock (unit PPum) are found higher in the section.

The original claims were mostly staked over units located in the footwall of the Jules Creek Thrust. The area is underlain by a northwest trending ultramafic body (unit PPum) within a medium to coarse grained, foliated actinolite-plagioclase-chlorite meta gabbro (unit PPg) (Murphy, 2000, Terry et al., 1998). According to Murphy (2001) nephrite jade is locally developed near the basal contact of the ultramafic body (unit PPum) and is the presumed cause of the staking activity in the 1980's.

Wide spaced soil sampling by Westmin, searching for volcanogenic massive sulphide (VMS) deposits, yielded only spotty Cu (<195 ppm), Pb (<26 ppm) and Zn (<140ppm) values. Gold analysis returned only background values (Terry, 1997). Additional soil sampling by Westmin in 1997 yielded a small gold in soil anomaly (<90 ppb) over a chert - ultramafic contact (Terry et al, 1998). Spotty soil anomalies were returned for Cu (<105 ppm), Pb (<36 ppm) and a small coherent, multi sample, anomaly for Zn (<1125 ppm). Geologic mapping by Westmin in 1996 and 1997 failed to locate stratigraphy similar to that hosting the Wolverine VMS deposit (Minfile Occurrence #105G 072) and the Tack claims were allowed to gradually lapse.

TARGET AREA 'B' - LOCAL GEOLOGY

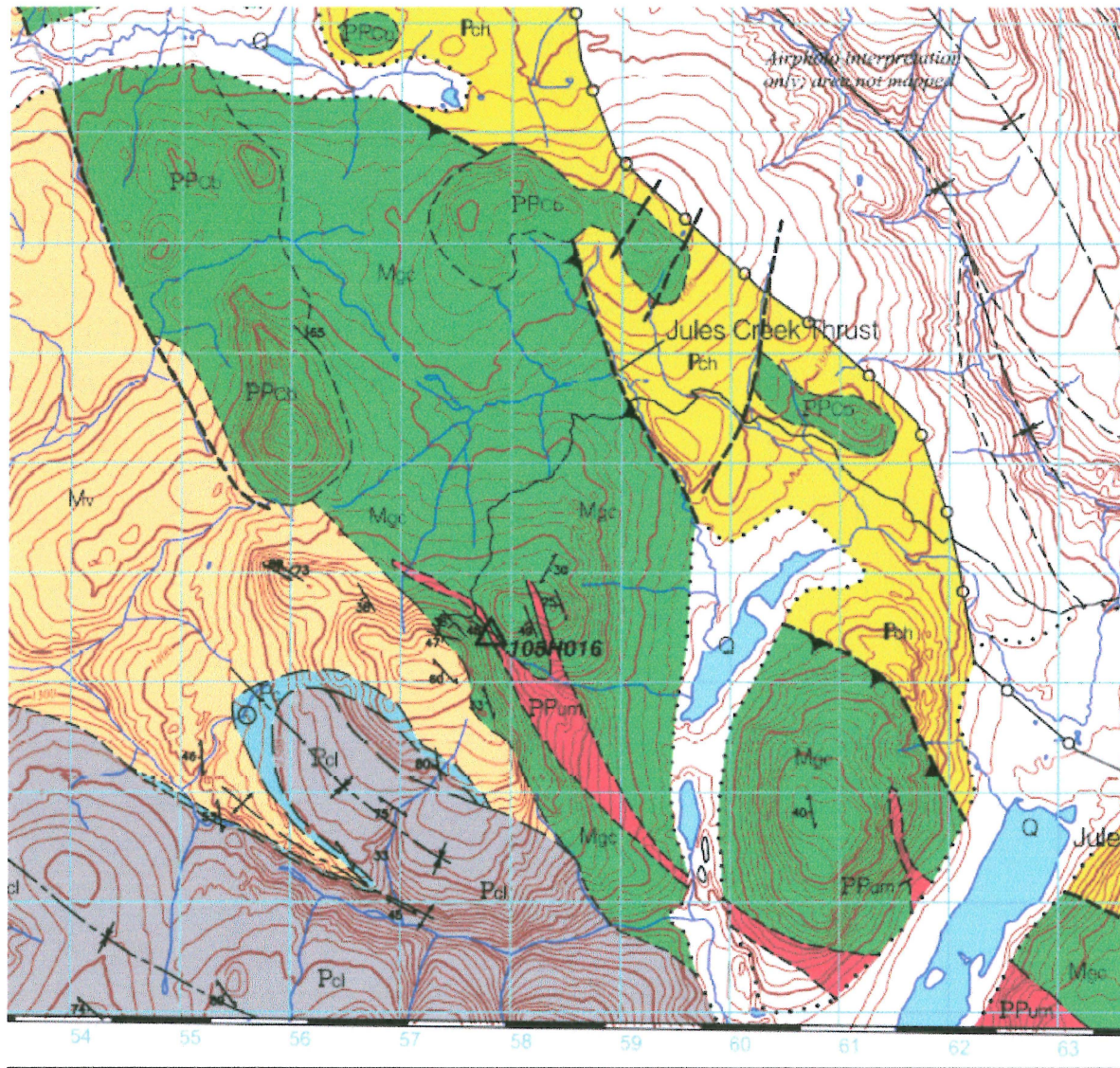
The Capsule Geology section of the previous Target Area 'B' MinFiles for this 'SE Yukon Nephrite Project' notes there are known nephrite MinFile Occurrences in Target Area 'B'. These known nephrite deposits are open ground. The presence of large bodies of mafic and ultramafic rock with serpentinite intrusions up to 3 km long is indicated, and it is reported some areas of the ultramafic rocks are variably serpentinitized. There are several fault or unconformity-bounded successions in close proximity to claims previously staked for nephrite. All of this indicated that the best chance to find nephrite is where nephrite was previously mined ("elephant country").

The likely discovery of additional nephrite occurrences was further enhanced by analysis of detailed aeromags from the YGS MapMaker Online website of Target Area 'B' that established the presence of favorable ultramafic bedrock and faulting. The location of favorable nephrite "contact zones" was established using the residual total field magnetics on the YGS MapMaker Online website. These pointed to specific targets to examine, and to known open ground nephrite occurrences in Target Area 'B' for quality determinations and possible staking.

Detailed maps of local geology for the Target Area 'B' northern and southern portions were also used to establish the presence and location of favorable bedrock, contact reaction zones and faulting. The 105H 05 geology map by Murphy (Open File 2000-17) and the 105H 04 geology map by Murphy (Open File 2000-16) were used in conjunction with the 105H 05 and 105H 04 geology maps' stratigraphic units legend for the northern and southern portions of Target Area 'B'

All of the above maps are found on pages 27-30.

Target Area 'B' (Northern Portion) - 105H 05 Geology Map - Murphy (Open File 2000-17)



Map 11. Geology Map for 105H 05. *Ultramafic areas **PPum** are the targets for nephrite exploration, in particular at the contact margins where rapidly changing total residual aeromag highs exist and contact rocks are silicious and possibly calcic (**Mgc**). The Jules Creek Thrust is nearby. The stratigraphic units legend for both Geology Map 104H 05 and 105H 04 is on page 28.*

INTRUSIVE ROCKS

PENNSYLVANIAN AND/OR PERMIAN

PPum

Yellow-green weathering, pale green to tan, variably serpentinized ultramafic rock. Texture varies from scaly and foliated to massive, with pseudomorphs after orthopyroxene. Intrusive contacts are locally preserved. Nephrite jade is locally developed near basal contact.

LAYERED ROCKS

MID-PERMIAN

mPcgl

Red-brown to pale green matrix- and framework-supported polymictic conglomerate, pale green sandstone and lesser dark grey shale. Conglomerate clasts include porphyritic basalt, aphyric massive basalt, chloritic phyllite, quartz-mica phyllite, siliceous carbonaceous phyllite, carbonate, white bull quartz and chert. Clasts of serpentinite, blueschist and eclogite have been reported from this unit elsewhere (Mortensen, Erdmer and Ghent, 1997). Mid-Permian conodonts have been reported from this unit in Watson Lake map area (J. Mortensen, pers. comm., 2000).

unconformity or fault

PENNSYLVANIAN and/or LOWER PERMIAN

PPCb

Dark green, grey-green weathering, variably foliated, meta-basalt; mainly massive, but locally fragmental and less commonly pillow textures are present. Gabbro and diabase, pink and green chert occur locally. Unit **PPCb** in the southeastern corner of the map area resembles this unit but a firm correlation can not be established. It ranges from highly foliated to massive and is characterized by mm- to dm-scale lenses of carbonate (amygdules?).

Pc

Massive to thickly bedded, light to medium grey, light grey-weathering marble. Locally crinoidal. Pennsylvanian to Early Permian conodonts have been reported from this unit elsewhere (Orchard, M. in Gordey and Makepeace, 1999).

MISSISSIPPIAN

Mv

Light to medium green, locally quartz- and feldspar-phyric, intermediate meta-volcanic rocks. A Mississippian U-Pb age has been reported for this unit (Mortensen, 1992).

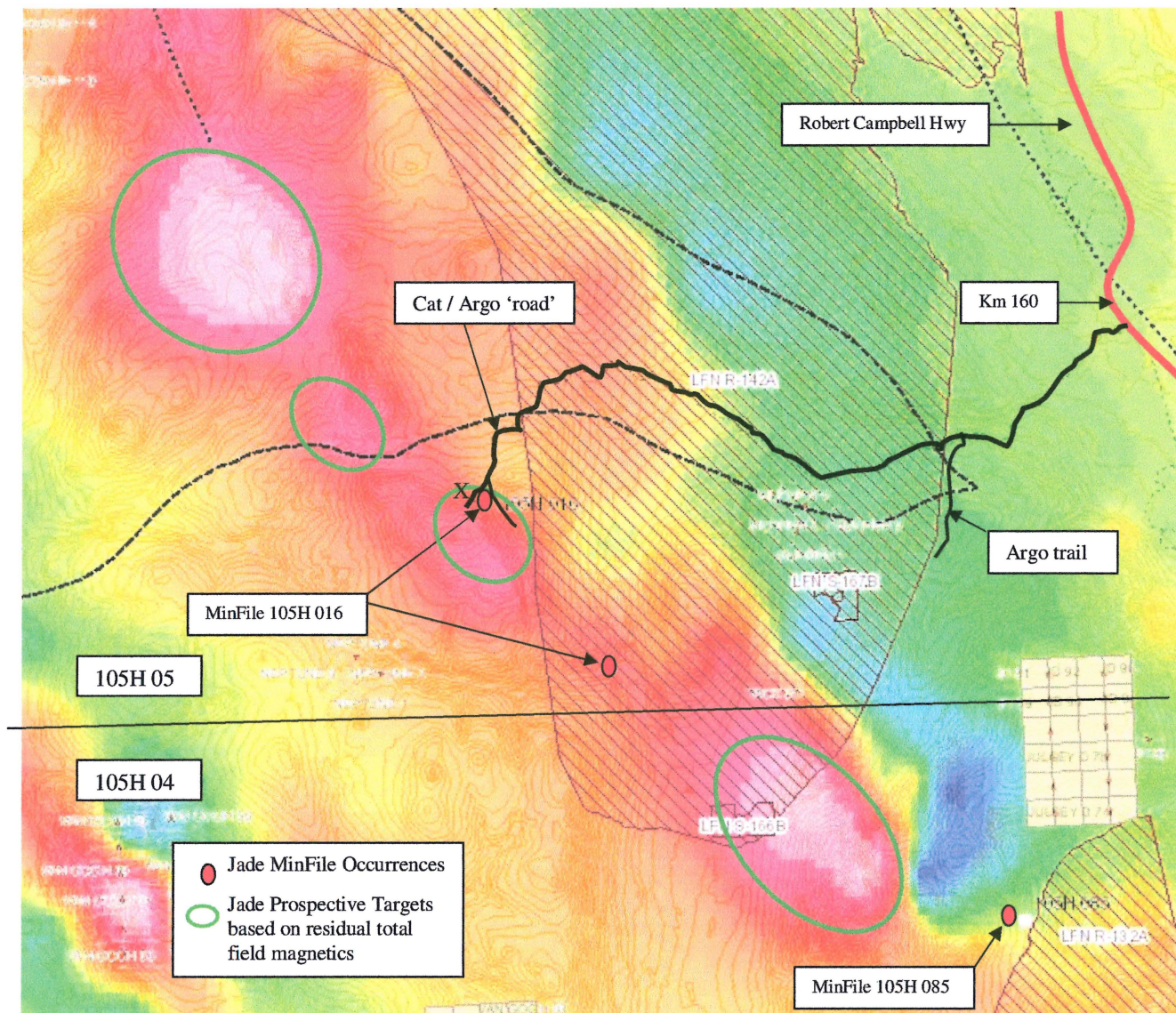
Mgc

Undifferentiated pale to olive green, locally magnetite-bearing chert and argillite, dark grey argillite and chert, and light grey-weathering, light to medium grey massive marble. Equivalent to units **Mgc**, **Mch**, and **Mc** in neighbouring 105H/4.

Table 3. Geology Maps 105H 05 and 105H 04 Stratigraphic Units Legend.

The previously active nephrite mining operation (marked 'X' on the map page 29) is present at the mapped contact between **Mgc** and **Mv**, not an ultramafic contact as is normally expected. This opened the possibility that either the geologic mapping by Murphy could have missed some ultramafic bedrock or the right contact conditions can be found at the **Mgc** and **Mv** contact. Both opened the possibility for further nephrite discoveries in the area.

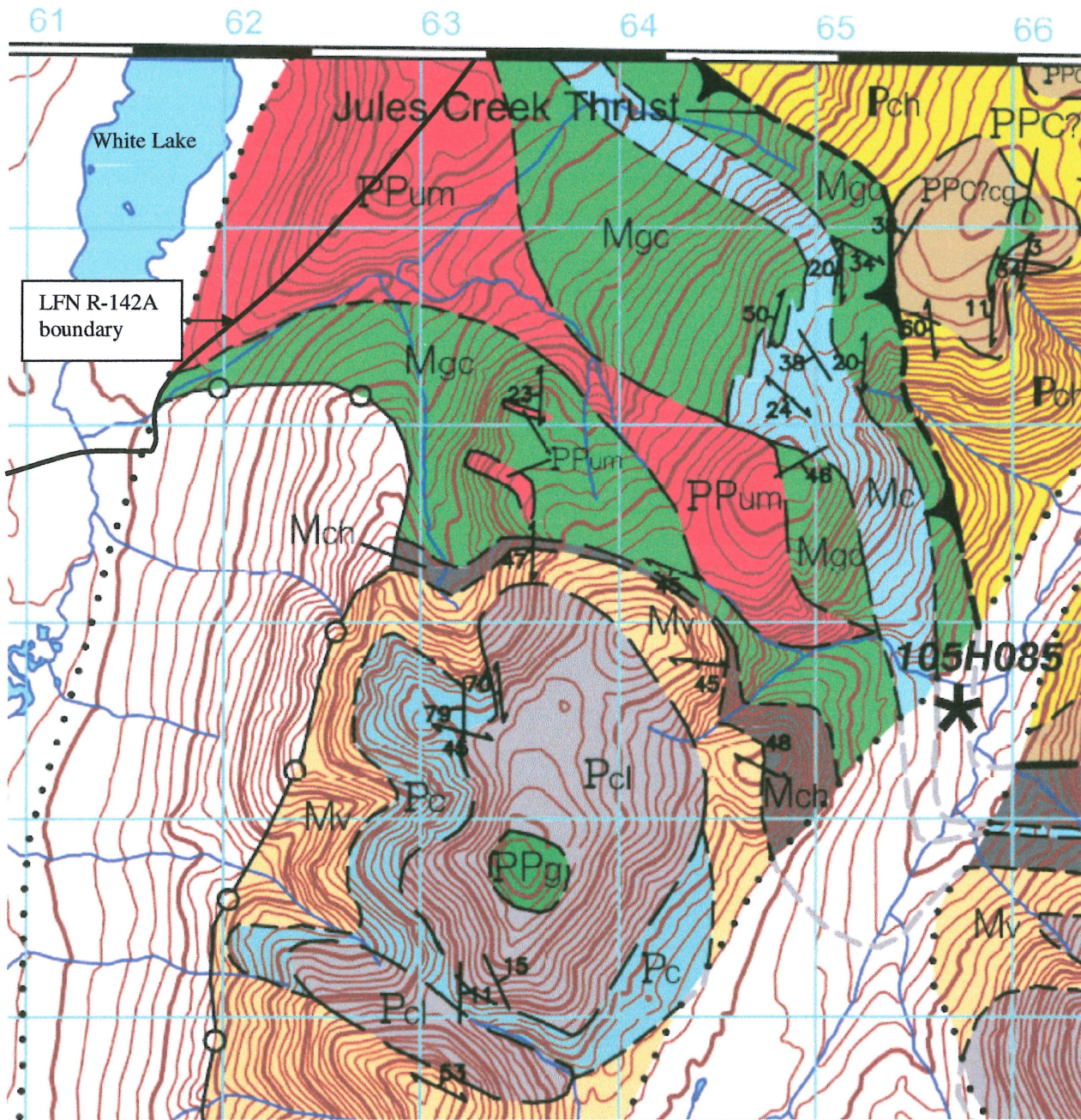
Target Area 'B' - Total Residual Field Magnetics Using YGS MapMaker Online



Map 12. Target Area 'B' - Residual Total Field Magnetics. *Known nephrite jade occurrences are small red ovals. The 'X' marks a previously active nephrite mining operation. Existing claims are shaded tan. The individual target areas encircled in green are the very highest magnetic field strength. Faults are shown as black dashed lines, contacts are shown as black dotted lines. Based on geology and aeromagnetics, the exact position of MinFile 105H 085 is doubtful unless it is placer nephrite.*

The 2 northwest-most areas with high magnetic field strength on the map above do not follow the detailed geology mapping by Murphy for ultramafic bedrock (see p. 27). The linear arrangement of ultramafic bedrock and high elevation landforms with high magnetism strongly suggests a continuation of ultramafic bedrock beyond that mapped by Murphy, or alternatively another bedrock source with very high magnetite content. The field observation for the mined 'location X' was ultramafic, so other small unmapped satellite ultramafic bodies remain a possibility.

Target Area 'B' (Southern portion) - 105H 04 Geology Map - Murphy (Open File 2000-16)



Map 13. Geology Map for 105H 04. *Ultramafic areas **PPum** are the targets for prospecting for nephrite, in particular at the contact margins where rapidly changing total residual field strength aeromag highs exist and contact rocks are silicious and/or calcic (**Mgc** and **Mc**). MinFile 105H 085 is marked with a large bold asterisk by Murphy. Based on geology and aeromagetics, the exact position of MinFile 105H 085 is doubtful unless it is placer nephrite.*

Analysis of the Geology Map for 105H 05 (Map 11, page 27) and Target Area B - Residual Total Field Magnetics Map (Map 12, page 29) indicates that the previously active nephrite mining operation (marked 'X' on the map page 30) is present at the contact between **Mgc** and **Mv**, and not at an ultramafic contact as is normally expected. This opens the possibility that the right contact conditions for nephrite formation can be found at the **Mgc** and **Mv** contact. Applying this analysis to the Geology Map for 105H 04 (Map 13, page 30) opens the possibility for further nephrite discoveries at the **Mgc** and **Mv** contact which is extensive in length for the southern portion of Target area 'B'.

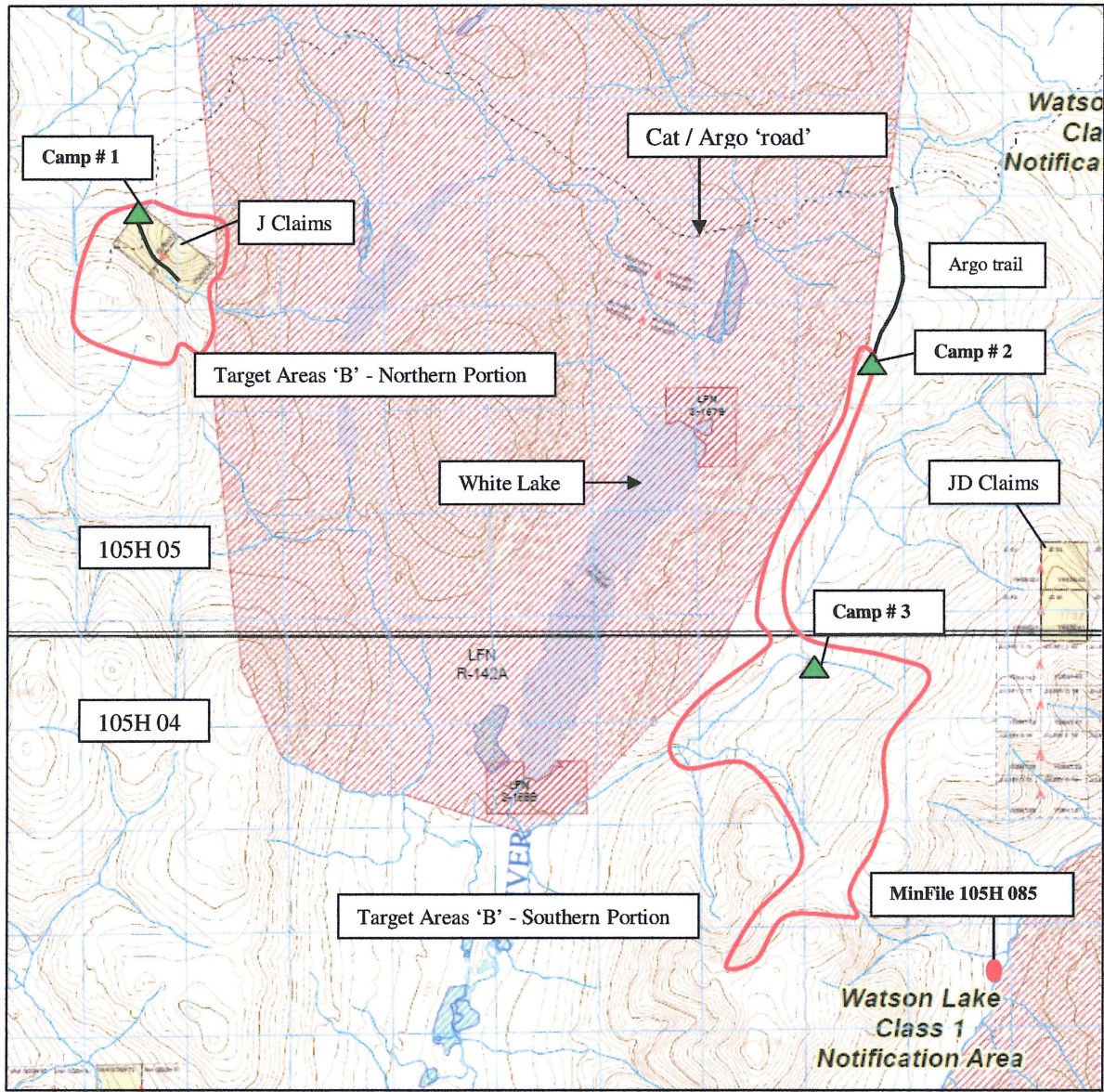
Target Area 'B' - General Grassroots Prospecting Plan

Cat and Argo ATV Access Routes



Map 14. Primary Argo Access Routes to Target Area 'B'. The main cat / Argo 'road' is white, Argo trails gold, claim outlines are green. The cat / Argo 'road' is sometimes not passable for quad ATV's in the summer when wet, and is better suited for Argo access. Google Earth mapping. View looking North.

General Areas Traversed

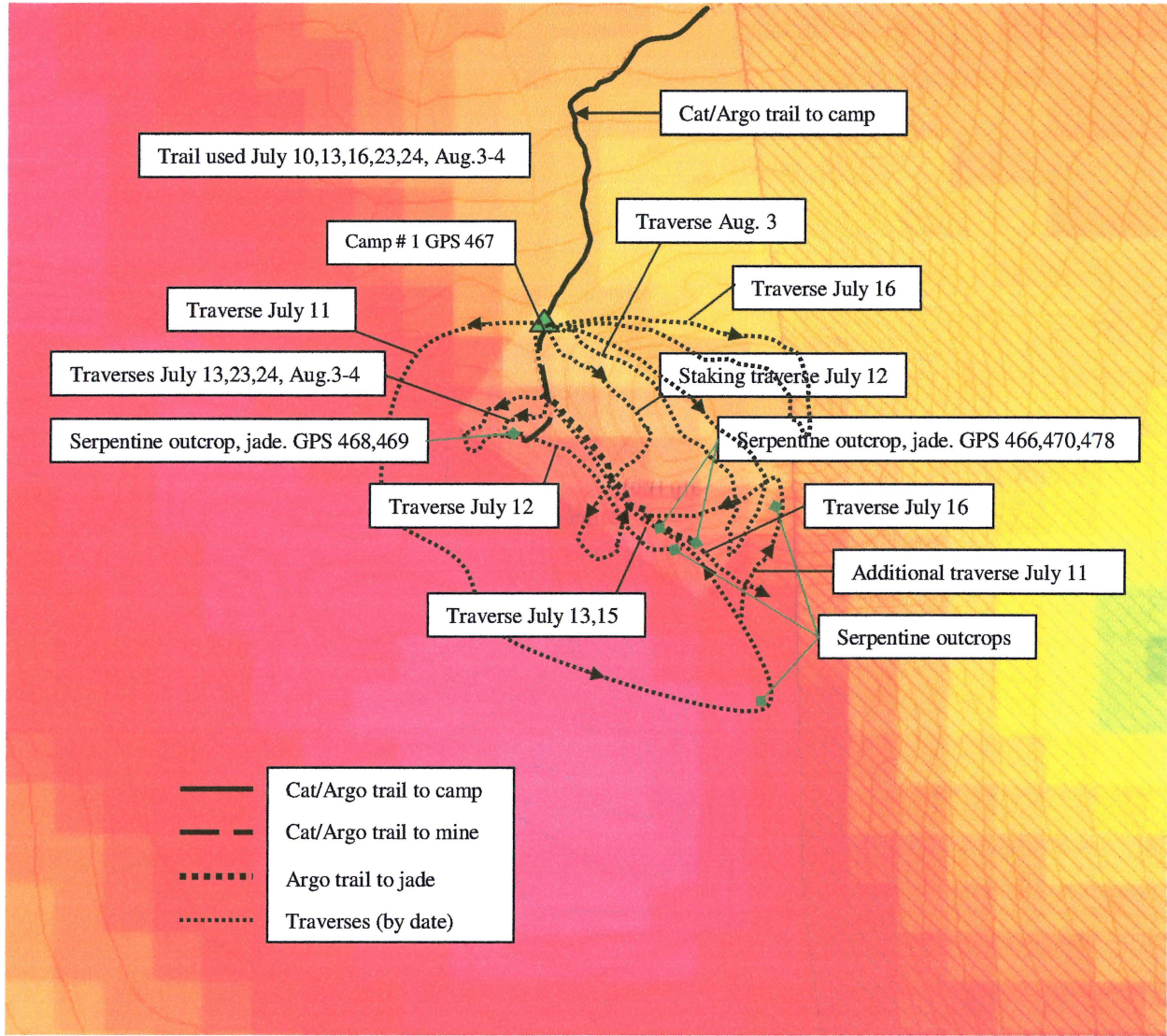


Map 15. Argo Access Routes for Target Area 'B' and General Areas Traversed. *The cat / Argo 'road' is black dash, Argo trails solid black, MinFile nephrite occurrence is solid red oval, grassroots prospected areas are red outlines, camp sites are green triangles, claims are shaded tan. The 2 'J' claims in the Target Areas 'B' - Northern Portion were staked for nephrite jade discovered as a result of this grassroots prospecting YMEP 15-095 'SE Yukon Nephrite Project' (Claim Maps 105H 04 and 105H 05).*

There is good cat trail Argo access to Target Area 'B' - Northern Portion for the past nephrite producer MinFile 105H 085, and rough Argo access to Target Area 'B' - Southern Portion. The traverse to set up Camp # 3 was extremely rough, and a better access will be needed if there is more grassroots prospecting to be done in the future for the Target Area 'B' - Southern Portion.

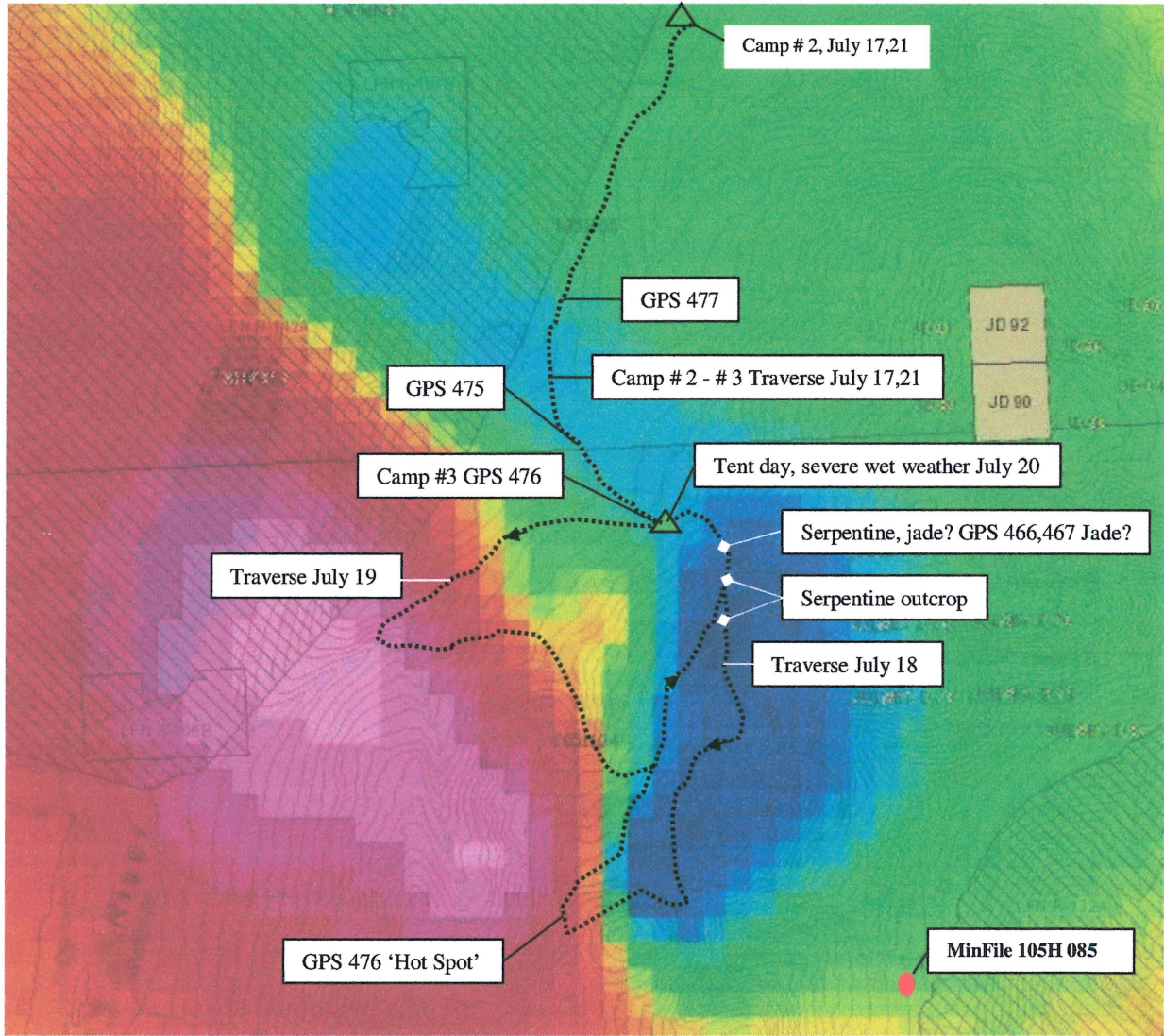
An alternate means of access for this area could be by helicopter to set in camp, or an Argo access trail is better established.

Grassroots Prospecting for Target Area 'B' - Northern Portion



Map 16. Detailed Target Area 'B' - Northern Portion Grassroots Prospecting Work July 10-13, 15-16, 23-24, Aug. 3-4 *The Cat / Argo trail is solid black and broken solid black, Argo trail is bold black dash, traverses are smallest black dash (see details of traverses in daily journal). Serpentine and nephrite jade discoveries are green diamonds. Two 'J' claims in the Target Area 'B' - Northern Portion were staked for nephrite jade discovered on both claims as a result of this grassroots prospecting YMEP 15-095 'SE Yukon Nephrite Project' (Claim Map 105H 05).*

Grassroots Prospecting for Target Area 'B' - Southern Portion



Map 17. Detailed Target Area 'B' - Southern Portion Grassroots Prospecting July 17-21. *Traverses are black dashes (see details of traverses in daily journal). Serpentine and Nephrite jade discoveries are white diamonds. No nephrite of commercial value was discovered as a result of this grassroots prospecting YMEP 15-095 'SE Yukon Nephrite Project'. Weather was very cold and raining, decide not to chance hypothermia going to MinFile 105H 085 due to very large vertical descent/ascent and long distance from camp. It is highly recommended that this MinFile site be visited in the future.*

Conclusions and Recommendations

To recap, and provide a historical aspect for the ‘SE Yukon Nephrite Project’, I wish to add the following. A decade ago China had little interest in B.C. jade – nephrite jade. It favoured a different jade, Burmese jadeite. But China had forgotten its history: nephrite was the traditional jade found in China - jadeite had been introduced into the country 200 years ago. The 2008 Beijing Olympics reignited China’s interest in nephrite because China used nephrite jade in Olympic medals and ran a campaign to remind its residents that nephrite is the country’s traditional jade. The subsequent surge in demand has resulted in skyrocketing jade prices. For example, an export-oriented, jewelry-grade jade currently (2016) sells for a price approaching \$800 a kilogram – a 40-fold increase from a decade ago.

The results of this Grassroots Module YMEP 15-095 were very positive, yielding many smaller nephrite and semi-nephrite discoveries considering the short time (1 month) spent prospecting for this project. Nephrite or semi-nephrite discoveries were made in all 4 areas grassroots prospected. Also, many of the prospective sites identified in this report were not visited due to the large area to be covered and the restricted prospecting season. Further intensive grassroots prospecting in these areas is highly recommended, and should yield many more discoveries.

Two nephrite jade claims were staked as a result of this Grassroots Module, and further recommendations are made in this report for additional staking of nephrite discoveries made during this project when the ground becomes ‘open’ for staking. Those areas should be further grassroots prospected and evaluated. I also know that nephrite exists elsewhere in the Ross River area covered by the YTG Order in Council of ‘no entry, no staking’ because I previously found them. Those areas in the Ross River area should be grassroots prospected, evaluated (and staked?) as well as soon as the O.I.C. is rescinded or modified accordingly.

All of the above are very promising for further nephrite discoveries and additional economic activity from jade mining in the ‘Frances Lake area’. B.C. jade producers have quadrupled pre-Olympics production levels to approximately 800 tonnes annually, and they’re still meeting only about half of Chinese demand. There is an opportunity for Yukon to join in with production of Yukon nephrite, as there are more nephrite deposits in southeast Yukon. Locally, jade mining can be important to Watson Lake. In 2015 jade mining on ‘Jade Mountain’ in Yukon employed at least 4 persons for 6 weeks and also involved local contractors and heavy equipment operators. It could be more. It would benefit Yukon to follow up on what Stan Leaming, in “Jade in Canada” (1978), reports that the Frances Lake area has a probable reserve of 500 tonnes and possible reserves of 1500 tonnes.

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STATEMENT OF QUALIFICATIONS

- ❑ 35 years experience doing geological prospecting in Yukon.
- ❑ Author of several Yukon YMIP reports on mineral property evaluations or grassroots prospecting programs, plus previous Yukon assessment reports.
- ❑ 13 years Geology teaching experience at first year University equivalent.
- ❑ Past operator of one mine property in Yukon (for Nephrite Jade).
- ❑ Current owner of 2 Yukon claims for nephrite
- ❑ Owner of 36 Yukon quartz claims.
- ❑ Many geological short courses including ones on diamonds, platinum, geophysics, glacial drift prospecting, VMS deposits, rare earth elements, MMI, exploration geochemistry, and several on gold exploration.
- ❑ Exploration manager and technical report writer for Crusader Gold in B.C. 2007-2015, including ARIS Reports 28546, 30293, and 31281.
- ❑ BSc degree in Biology, (including some university geology courses)

“Everett Van Krichbaum”, Jan. 25, 2016

Appendix

Google Maps GPS Waypoints Positions



Map 18. Target Area 'B - Northern Portion - GPS Waypoint Positions. *Google Maps*.



Map 19. Target Area 'B' - Southern Portion - GPS Waypoint Positions. *Google Maps.*



Map 20. Target Area 'A' - Southern Portion - GPS Waypoint Positions. *Google Maps.*



Map 21. Target Area 'A' - Northern Portion - GPS Waypoint Positions. *Google Maps.*

Table of GPS Points for Observations Made for this Project

YMEP Observations - GPS UTM Coordinates - Zone 9

Waypoint Name	Easting	Northing
466	457955	6794291
467 Camp	457723	6795007
468 Mine?	457568	6794642
469 Jade Mine	457555	6794692
470	457966	6794285
471	457970	6794286
472	457936	6794297
473	458006	6794643
474	457662	6794405
476 Camp	464315	6790314
476 Mag Hot Spot	463200	6788200
476	464552	6790090
477 Jade?	464587	6790061
477	463933	6791954
478	458013	6794237
479 End of Trail	450675	6754614
484 Drill Camp	451438	6759076
484 Jade	451424	6759157
484 JD	451223	6759972
484 JD+	450967	6760222
484 JD+ LOTS	450216	6761300
484	449721	6762650
485 Serp? V. Hard	449601	6762594
485	452188	6760627
486	452238	6760716
487	452620	6761290
488	471098	6757080

Table 4. GPS Coordinates for YMEP Report Observations GPS Waypoints.

Daily Journal (Photocopies)

July 10 / 2015 - rain ^{wet, muddy, long + tedious}
Campbell theory
- pack up, take road to Km 140
head for camp. (467)
- Arrive camp at 8.00 PM, set
up camp. Setup dry area
for wet clothes.

July 11 / 2015 Argo + trade
- Prospect "Jade Mountain",
the original one @ Jade Mtn
- Find 4 post ~~(467)~~ ^N
Post 2 YB 78754

6	7
4	5

 ↑
Post 2 " 5
Post 1 " 6
Post 1 " 7
Circle around to West from camp
looking for old road to jade site.
- did not find prospects @ Mac

Daily Journal (Photocopies)

- Several rainstorms on expedition route, some wet gear/clothes
 - Prospect south flowing creek going out of the notch after examining a serpentine flat further south - find Jade rock #46
 CP+ RK go up eastern serpentine "finger" to other mountain top to the East. Then they descend to the pass.
 - All go back to camp (close by) as a large rainstorm is seen coming. Take jade rock back to camp
 - Dry clothes after storm passes (before another one comes later) Very threatening for rain, add on
 - Record routes on (clean) maps

July 12 - AM Sun + cloud / PM cloudy
 - Rained a lot during the night
 Good tent, no leaks
 - Will try to find the "mine" road again. 6794400 / 457300 on the iPad. (46)
 Find old Jade Mine and skidder Road, also a secondary site (468)
 - Maybe try accessible if most is dry.
 - Expose and chip sample many jade pieces of "B" quality color, most are Achisty however.
 - Plan to carry some smaller pieces to Arpa and take out for jewelry
 - Move on toward prev days jade
 D. B. in east trail (46) with the Art Hill

Daily Journal (Photocopies)

- Check out serpentine outcrop upstream of 466, find 3 large pieces of nephrite jade, good color and not schisty. Stream pieces biggest ~ 600 lb, 2 others on bank are 400 lb and 250 lb. Site is ~ 15m upstream of 466.

(470) more nephrite along in stream 15m south (downstream) of 466 - Two 200# boulders.

(471) 1000 lb est. jade boulder in creek, another 10m downstream.

- Find 2 posts in pass

(472) YA 73514 post 1
 YA 73515 post 1

J1 09 V 0458007/6794644 (473)
 J2 09 V 0457662/6794405 (474)

Waypoints so far - List

466 - Jade discovery on creek/pass
 467 - Camp 457723/6795007
 468 - Mine? (Secondary area)
 469 - Mine + Skidder trail ⁴⁵⁷⁶⁵⁵ ₆₇₉₄₆₉₂
 470 - More nephrite in creek
 471 - " " " "
 472 - Old posts
 473 - J1 and J2 Posts #1
 474 - J1 and J2 Posts #2

- Stake J1 and J2 ^{455033.84} _{As of 7/13/2015}

July 13/2015 Sun + Cloud

- Chris & Rosh go back to old "Jade Mine" site, find cut (sawn) pieces, also uncovered more jade boulders, one very large (over 1 ton est.) in early AM

Furthest down is biggest for sure, others down more?

Daily Journal (Photocopies)

- Then back to Jade discovery in stream. Winched 800 lbs. pound solid piece of nephrite up bank 1/2 way, then battery was fully discharged despite constantly running the Argo at high RPM while winching.
 - Then Argo wouldn't start.
 - Waited, Argo started, but we didn't trust battery to start a cold Argo motor, so we went "out" with approx. 250 lb of nephrite samples (mostly from "old Jack Mine" site).
 - Returned to M.J. to rehab. Argo. with another battery.
- July 14 / 2015 4x4 truck
- Go to Watson Lake from Miers Junction (Km 108 Robert Campbell Hwy)
 - File 2 staked claims J1 and J2
 - Laundry, showers, grocery
 - Back to M.J., put another battery in Argo.
 - Prepare to go back to J1/J2 claims for more samples July 15 esp. from the stream site.
 - Prep. for tripod/chain hoist. of more/larger samples for saw testing (for quality) later.
 - Plan to explore the Ultramafics more extensively NW and SE of claims

Daily Journal (Photocopies)

- Weather forecast

	W	Th	F	Sat	Sun	M
Mainly	cloudy	showers	sun	cloudy	mix	mix
temp	16°	23°	23°	30%	40%	
conditions	cloudy	19°		rain	rain	
temp				23°	21°	

July 15 / 2015 4x4, trailers, Argo + trailer

- Leave in AM to go back into the "old Jade Mtn" area - get in to camp area at 12:30 PM
- Set up camp
- Go to "Jade Creek" site and which 800 lb nephrite rock (est.) to pick up site by Argo
- Sling 2 smaller boulders of nephrite to staging area
- Load 2 smaller nephrite boulders by hand into Argo, also pick up 1 more from "old Jade mine" site. Total approx. 450 lbs (200 Kg)
- Go back to "Jade Creek" and which 800 lb piece the remaining way to staging area
- Chain hoist ~ 800 lb nephrite boulder into Argo.
- Return to camp and plan to explore for "Jade Crevasse" site we heard about there (from 2 different people).

Daily Journal (Photocopies)

July 16/2015 ^{Trailer 4x4, Argo, Hoader}
- Prospected East ridge area of "old Jade Mtn" and also the SE slope.
- Reexamined the serpentine flat, specifically the southern slope.
- Explored "Jade Creek" further south than previously, find several more nephrite boulders, the largest est 1 tonne - pretty good quality. Also found a lighter green nephrite of good color and over 300 lb (the rest is hidden in the bank).
- Broke camp, loaded ~1000 lb jade and went to M.J. - unloaded.

July 17/2015 ^{4x4 w/ trailer, Argo + trailer}
- Repack for Jules Ridge area at M.J.
- Truck Argo to Km 160 Robert Campbell Hwy, unload
- Argo to hill top previous camp (alternate camp site)
- Hike to camp to primary area, make camp (476) @ 4864315 / 6790314

July 18/2015 ^{none?} Rain in AM until noon. Plan prospecting regarding wet "bush"
- good mag. pattern target selected 4863200 / 6788200 and NNW going N and NW going south of point

Daily Journal (Photocopies)

Follow left (East) fork up stream, much more serpentine but no nephrite. Follow until no more boulders, then decide to examine 2nd mag target more to the east.

- 2nd mag target of serpentine has many rocks approaching nephrite, but are not hard enough (same hardness as steel knife blade or slightly softer. Pretty dark green and low transparency. Conclusion - serpentine of good quality)

- NOTE: This 2nd mag target Serpentine (1km) is unmarked on the geology map.

- Decide to leave tomorrow if no rain

July 20/2015 ~~4x4, trailer, Arjo + Kuba~~

- Rain, steady rain starting @ 4:00 AM, tent is dry, everybody warm - clouds are all around - Fog

- Rain lets up for 1 hour, out to make coffee and Sid's bike plus Freeze-dried meals for brunch.

- Rain starts again, continues all day. No more food, just bars + candies. Much sleeping and movies. Cold and wet.

July 21/2015 4x4, trailer, Arjo + Kuba

- Rain continues, steady all night. Tent has enough condensation inside to start dripping. Gear + (clothes, sleeping bags) getting wet.

Daily Journal (Photocopies)

July 22 / 2015 Rain/Cloud

- Rain continues steady in AM. Decide to leave and head for Argo + MJ as rain continues unabated and FOG cloud is still there. Not nice food running lower and gear getting wetter.

- Start breaking camp @ 10:30 AM in the rain, make a big lunch of hot food, leave (hike) at 12:30

- Bush very wet, trail awful for first hour, then good or better

- Everyone is very wet, hike to Argo, then get even wetter on Argo trip to truck. Getting cold as soon as we stop moving.

- Warm truck ride back to MJ helps, but still cold - Make fire

- Go to Watson Lake to dry clothes. Buy supplies and do some computer work on the YMEP mapping.

- Take some of the nephrite jade from the YMEP project to town for future cutting ~ 1000 lbs.

- Talk to mining recorder re: staking triangular shaped open ground and placer staking over hard rock claims for the Hasselberg Lake part of the YMEP nephrite project.

- Buy gasoline for the Argo for the Hasselberg trip.

Daily Journal (Photocopies)

July 23 / 2015 4x4, trail, 4 hrs + miles
- Due to the fact that the rain was so heavy and the swamp road to Hasselberg Lake has not dried up this year yet, we decided to evaluate the nephrite find in Target Area B as the road is mostly gravel or rocky soil and still passable if (very) wet
- Drive to Km 160 "jade road" and take more tools to evaluate the nephrite potential
- Find small surface showing and excavate with pick/shovel and spud bar. Turns out to be a 700 lb large nephrite rock and another larger one (1000 lb?).

July 24 / 2015 ^{4x4 + trailer} ^{Assess location} Rain in AM/PM
- Using a chain hoist and tripod we get the 700 lb piece out of the ground. Appears light colored green (desirable quality).
- GPS survey the furthest south nephrite pieces (478)
- Determine size of another light green nephrite boulder by excavation - approx. 400 lb.
- Decide to take the excavated 700 lb nephrite for saw cutting load it after removing loose pieces to bring the weight to ~600 lbs. for the Argo. Also take 2 smaller pieces - total ~850 lbs for saw evaluation

Daily Journal (Photocopies)

- drive to Miners Junction and stop at Jack Mountain camp. They assist in cutting the largest nephrite piece.

- This mottled medium green with darker clonkites (not a desirable quality) the quality is probably B-, maybe marketable.

- Drive back to MJ, arrive very late (midnight).

July 25/2015

- Go to Watson Lake for lumber for ramp. Argo bearing set axes, grease, paper and weather report.

- Take saw and other nephrite boulders to town - ~1000 lbs.

Weather forecast

S	M	Tu	W	Th	F
Sun+	Cloudy	Cloudy	Cloudy	Sun+	Sun+
Cloud	40%		40%	Cloud	Cloud
23°	16°	18°	19°	20°	19°

July 26/2015 ^{2x4 trailer, argo + trailer}
Sun+ Cloud, warm

- Pack for and leave for Hasselberg Lake trip.

- Road to landing is wet but in decent shape. Need to 4x4 some.

- Argo in trailer on swamp road to Hasselberg Lake. Need to winch 6x (normal) but LOTS of blow down.

- cut 87 trees or remove from the trail.

- Prospect north shoreline of Hasselberg and find numerous nephrite pieces.

Daily Journal (Photocopies)

July 27/2015, A-trails

- Drive to end of Ross Rd to the #5 flowing stream where nephrite jade has been mined.

- Prospect downstream and see some "nephrite" boulders, though infrequent - up to 1 tonne, but most are pitted (iron spots/ blades (magnetic?) spots and evidence by pitting on outer surface

- Go downstream ~ 200m to confluence with E. flowing Bourgette Creek. Flow of combined streams is large enough to overflow all boulders, making boulder prospecting impossible.

- Go upstream on S. flowing stream, following the creek and the cat trail along the E. bank for 500 m. ⁽⁴⁷⁹⁾ from (North of) Ross Rd

- See evidence of mining (large pit ~ 5 x 5 m, saw tested boulder, and placer tagged posts at a few sites.

- Yukon Placer - post #2 - P23857

- " " " " P23716

- Yukon Placer - post #2 - P23863

- Quartz posts #1 - YB60248 (both facing N) - YB60249

- Use a Grizzly Sluice for possible gold and platinum as it flows from one of the best regional silts for gold and also from an ultrac mafic bedrock with good soil FT results (VVI claims) - some flakes of Au

Daily Journal (Photocopies)

- No nephrite boulders were found of sufficient quality to collect samples for saw testing
- Return to Hasselberg Lake camp

July 28/2015 ^{Aggie, trailer}
- Head out from Hasselberg Lake camp to go off on the Plateau for the main target to the north of the Plateau and one to the south.
- Have brake chatter immediately and discover the brake cylinder is leaking brake fluid onto the brake pad (left side brakes)

- Decide that going so far out from the highway is too risky due to long-hike back and equipment to carry
- Go out to Watson Lake and get spare brake parts from Ron Hearty, another local jade miner
- Come back from town and head right back in to Hasselberg Lake.

July 29/2015 ^{Aggie}
- Go up on the Plateau with the boys and prospect the Southern may target that is prob. the main source of jade for the entire south area (South of the Plateau)

Daily Journal (Photocopies)

Prospect creek along the way, in particular the EZ 75 and 77 that belong to Ron Hearty.

- Do not find much jade at all in creek, may some that are semi-nephrite (more soft and serpentine like).
- Arrive at my target for the south area south of the Plateau but find only very fine grained dark serpentine rock that is highly magnetic.
- On way back to the Argo we find another trail that looks like an Argo trail. Maybe it is a skid trail for Ron Hearty to haul nephrite jade?

- Make camp at old drill camp ^{made} by Whispering Mine 484 Drill Camp _{Site}

July 30/2015 A

- Argo west to examine the west plateau ultramafic target as a possible source of the drilled nephrite boulders on the (expired) Tipell claims of Ron Hearty.
- No nephrite found in the stream below or in the ultramafic rocks. Most all is brown to rusty druse opendote and not serpentine.
- The area doesn't appear to be the source of the drilled nephrite boulders.
- Find nephrite in talc area by camp.

Daily Journal (Photocopies)

July 31/2015 Argo
- Argo north/NW from camp and examine numerous rock fields. Several contain nephrite of low to low med quality because of numerous black or soft yellow spots. Several marked by GPS
- Appears to be less spotted than the south of plateau jade area and less rusty on the outside (basically none). Jade is better at ^{samples} (484)
- (484 + LOTS) has the most quantity of good color nephrite, however it is still black spotted. Some larger jade rocks to 1000 lbs. Samples
- NE end of plateau is unprospective as rock is very iron black spot and serpentine. One sample collected (485)

Aug 1/2015 Rain all night, AM, late PM
- Rain in AM almost scrubs the day for prospecting.
- Finally stops and we hike and prospect to NE mag target. Ridge
- Find some nephrite areas in rock fields (486, 487). Take sample from 486. Still black spots in all nephrite, but the green color is bright and light green. Lots of talc + serpentine
- No nephrite discovered in mag target (NE plateau) as the ridge is tree covered and few rocks are exposed. Most rocks are fine grained serpentine
- Return to camp before more rain.

Daily Journal (Photocopies)

Aug 4 - last day! 4x4, trailer, Argo ~~trailer~~
- Go back to old Jade Mine, load
more small samples and put
1500 lb. boulder in Argo trailer
- Take last pics of mine area + camp
- Drive Argo + Argo trailer out very
slowly, brakes are bad and
motor gets hot often, so stop
+ cool. Glad there weren't many
bugs this year - Best yet!
- Load up on 4x4 + Argo hauling
trailer + go to M.J.
- Unload the truck, decide to
unload Argo tomorrow. Tired!
- Have a feast supper to celebrate
a great prospecting season.