

**ASSESSMENT REPORT ON THE  
WOOD MINERAL CLAIMS  
LOCATED ON CAIN CREEK**

**-for-**

**OPAL RESOURCES CANADA INC.  
BOX 298,  
VERNON, B.C.**

**-location-**

**N.T.S. MAP 82L/05W  
KAMLOOPS & NICOLA MINING DIVISIONS  
Province of British Columbia**

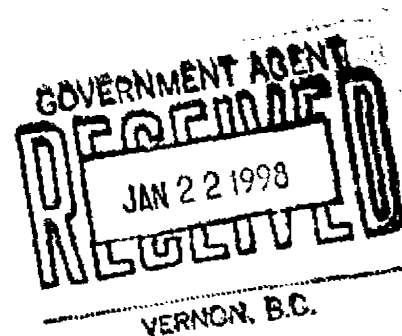
**-prepared by-**

**Y-H Technical Services Ltd.,  
Written by Brian Callaghan, B.Sc.  
Box 298  
Vernon, B.C.  
V1T 6M2**

January 13, 1998

**GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT**

**25,410**



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## **Introduction**

This report describes the 1997 work programme on the Wood Claims which has included a continuation of the preliminary work carried out during the 1996 field season. The programme has included further geological mapping and reconnaissance surveying to determine if precious opal occurs in host rocks similar to those that host opal on the nearby Klinker claims. A total of 8 man days of work was conducted between October 16th to the 30th 1997. The study was concentrated in those areas noted for abundant agate and limited occurrences of common opal in the vicinity of Cain Creek, as well as outcrop exposures at the boundary of the Wood 1 and 2 mineral claims.

## **Summary**

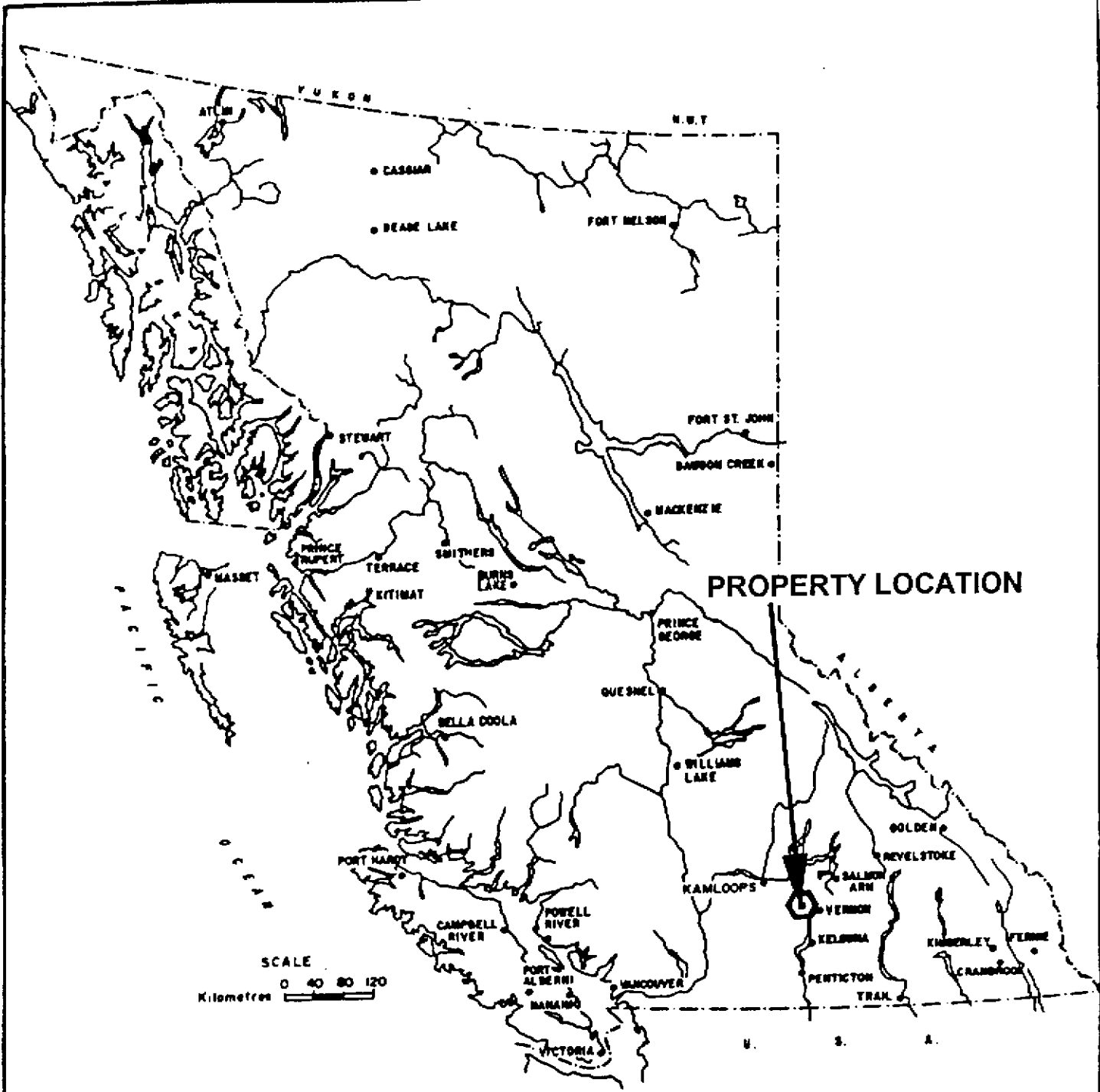
The Wood claims are underlain by a basal sequence of opal bearing clast and matrix supported lahars and sediments of the Eocene Kamloops Group which are similar to those that host precious opal recently discovered on the Klinker/Ewer claims to the south and east. A single occurrence of precious opal has been found in place on ground outside the area of the Wood claims which may represent the first documented recording of precious opal in this area. A programme of staking is recommended in order to further secure the ground which has the greatest potential for precious opal occurrences to the north and south of this showing. A programme of overburden removal is recommended using a small excavator in the most favourable areas once the ground is acquired which occurs on private land. Additional geological mapping is recommended as well as a preliminary airphoto interpretation to identify the most favourable structures on the Wood Claims associated with precious opal formation, keeping in mind, the potential for epithermal mineralization hosted in Tertiary volcanics.

## **Location and Access:**

The Wood property is located some 39 kilometres west-north-west of the City of Vernon, British Columbia and is situated over Cain Creek and Woods Lake. Woods Lake drains south into Cain Creek which in turn flows westerly into the Salmon River approximately 12 kms. south of the community of Westwold, B.C..

The property is accessible via the Ingram Main and Jimmy Lake forestry access roads off Highway 97 N some 13 kilometres west of Falkland B.C. via Hwy. 97. The L.C.P. for the Wood 1 and 2 claims is located approximately 30 metres south of Woods Lake which is accessed by road to the north off the powerline after turning onto the powerline at approximately 16 km. on the Jimmy Main logging access road which commences near the 11 km. mark on the Ingram Main logging access road. The claims are located in the Kamloops Mining Division - on map N.T.S. 82L/05E.

The property is presently accessible via two wheel drive during the period from early June until October. Snow cover often commences in mid to late October and lasts until May.



**PROPERTY LOCATION**

SCALE  
Kilometres 0 40 80 120

**WOOD PROPERTY**  
Westfold Area, B. C.  
Kamloops/Nicola Mining Division

**PROPERTY LOCATION MAP**

**Y-H TECHNICAL SERVICES LTD.**  
DATE: Nov 1996      SCALE: 1: 8,000,000      MAP No. 1

UPDATED 1997

**Physiography and Vegetation:**

The central portion of the Wood claim is situated over the ridge forming the north flank of Cain Creek. The claim extends to cover the ground from Woods Lake on the east, to the Salmon River on the west and south to the powerline located on the south side of Cain Creek. The highest elevation on the property is just over 1300 metres which is situated in the central portion of the 46 unit claim block.

The powerline crossing the southern portion of the property originates at the Mica Dam and comes cross-country from the north-east past Enderby, passing south of Pinaus Lake enroute to the upper Salmon River Valley and Douglas Lake area between Westwold and Merritt B.C. and then on to the B.C. lower mainland.

This powerline is situated along the south flank of Cain Creeek and is situated some 500 to 600 metres south of the creek. The powerline right-of-way is clear cut for widths ranging from 80 to 120 metres. Few rock outcrops occur along the powerline right-of-way except near the towers and in the steep walled Cain Creek drainage and its tributaries. Cain Creek, which cuts down through volcanic, basal sequences of the Eocene rock units, forms a steep walled canyon inside the claim block. Ingram Creek and the creek draining Woods Lake run into Cain Creek which effectively drains all of the area to the height of land just north and east of Jimmy Lake and the entire Ingram Creek drainage.

Much of the western portion of the property covers "un-developed private property" most of which has been recently clear-cut logged. The eastern half and northern portions are on crown land and have been selectively logged, probably prior to 1950. The crown land portions between Woods Lake west to the height of land has significant quantities of merchantable timber, mainly Douglas Fir with some Lodgepole Pine. Minor cedar balsam stands occur in low lying areas. Extensive steep rock cliffs and numerous other rock outcrops line both sides of Cain Creek.

**Property Description:**

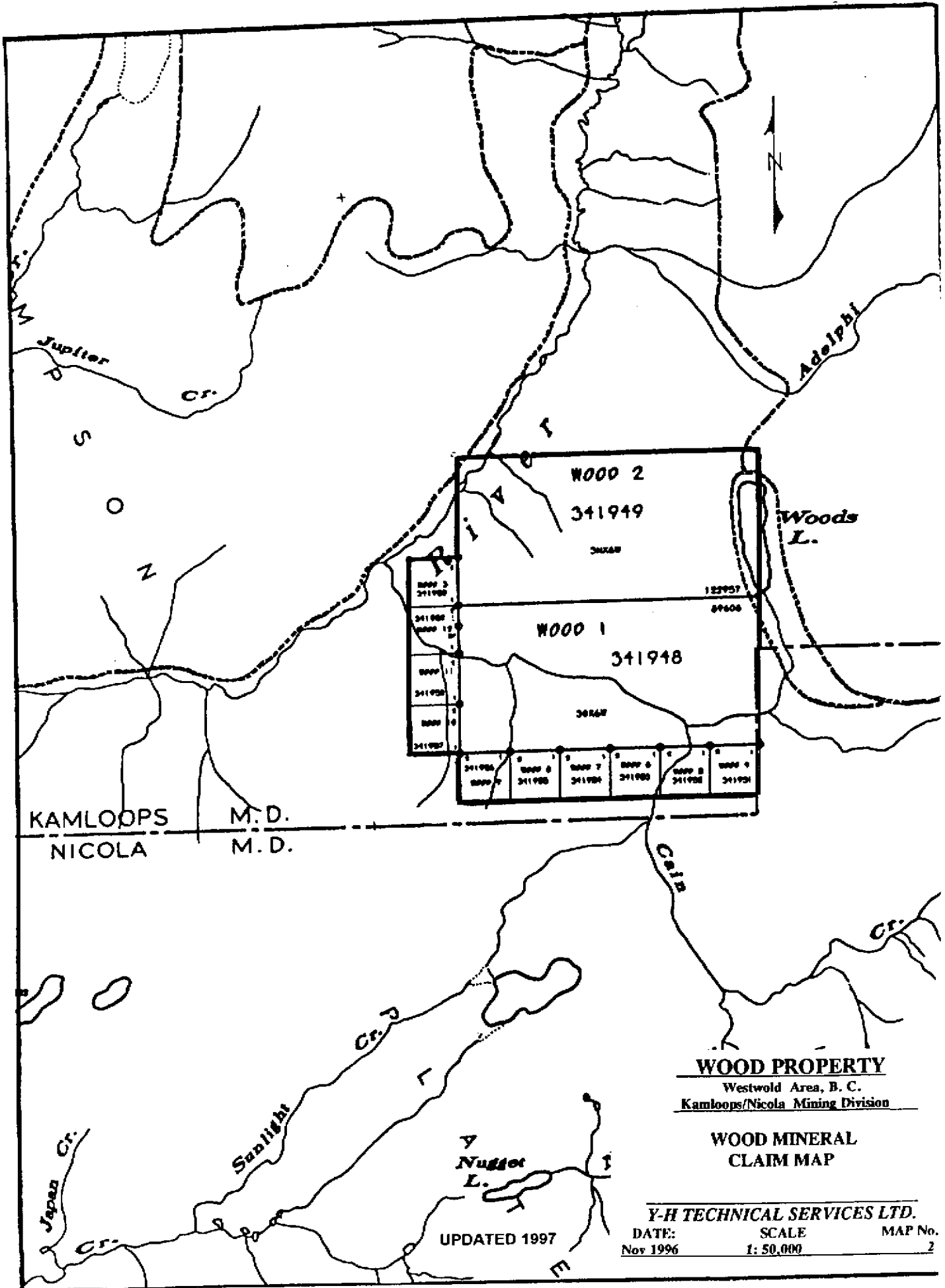
The Wood property is comprised of two 18 unit four-post mineral claims and 10 one unit two post mineral claims. The L.C.P. for the Wood 1 and 2 claims is located some 30 metres south of Woods Lake. See also the claim map (Map #2) for further information.

Claim Name	Units	Record #	Current Expiry Date
Wood 1	18	341948	October 30, 1998
Wood 2	18	341949	October 29, 1997
Wood 3	1	341950	October 28, 1998
Wood 4	1	341951	October 29, 1998
Wood 5	1	341952	October 29, 1998
Wood 6	1	341953	October 29, 1998
Wood 7	1	341954	October 29, 1998
Wood 8	1	341955	October 29, 1998
Wood 9	1	341956	October 29, 1998
Wood 10	1	341957	October 30, 1998
Wood 11	1	341958	October 30, 1998
Wood 12	1	341959	October 30, 1998

The "owner of record" for the Wood claims is R. W. Yorke-Hardy. He holds the mineral titles in trust jointly for himself and Paul Downing; with each of these individuals owning a 50% interest in the titles.

The expiry date shown herein reflects the recent application of work supported by the filing of this report describing the preliminary geological fieldwork conducted during the 1997 season. The claims are, with the exception of Wood 4, recorded in the Kamloops Mining Division of British Columbia. The initial post for Wood 4 is situated just inside the boundary of the Nicola Mining Division. The claims have been located in accordance with the requirements of the Mineral Act of the Province of British Columbia.

No work was applied to the Wood 2 mineral claim. It was allowed to lapse on its anniversary date.



**WOOD PROPERTY**

Westwold Area, B. C.  
Kamloops/Nicola Mining Division

**WOOD MINERAL CLAIM MAP**

**Y-H TECHNICAL SERVICES LTD.**

DATE: Nov 1996      SCALE: 1: 50,000      MAP No. 2

UPDATED 1997

### **Wood Property History**

Common opal and agate has long been known to occur in volcanic rocks along the Salmon River. References to finding coloured and perhaps even precious opal in the vicinity of Cain Creek have been made in the past.

The Wood claims were located in late 1995 as a result of prospecting work conducted by R. W. Yorke-Hardy who noted occurrences of agate and white common opal float and was aware of previous references to the possibility of colored and/or precious opal occurring in the area of the Salmon River around Cain Creek. Yorke-Hardy was also attracted to the area due to the close proximity of these claims with generally similar geology as the precious opal deposit located on the Klinker/Ewer property approximately 15 kilometres to the south-east and to reported occurrences of jelly opal on the Flash and Red Rock claims along the powerline approximately 7 to 8 kilometres to the north-east of the Ewer claims.

Okanagan Opal Inc., the recorded owners of the Klinker/Ewer property also hold the Alpo claims which cover an extensive Miocene aged(?) "lake basin environment" hosting layers of bentonite clay, diatomaceous earth and minor "opalized" sediments interbedded with rhyolite ash-tuff beds. The Alpo claims are located approximately 13 kilometres to the east of the Wood claims.

This entire region was heavily staked during a "staking rush" in 1988 which occurred as a result of gold discovered by Huntington Resources on the Brett property located farther to the south, on Whiteman Creek. No other mineral exploration has been noted in the area except on the Way 1 mineral claim located west of the Klinker/Ewer property. This area saw grassroots exploration for gold in 1988-89 because of the potential for the discovery of epithermal type gold mineralization in the underlying Eocene volcanics.



## **Regional Geology**

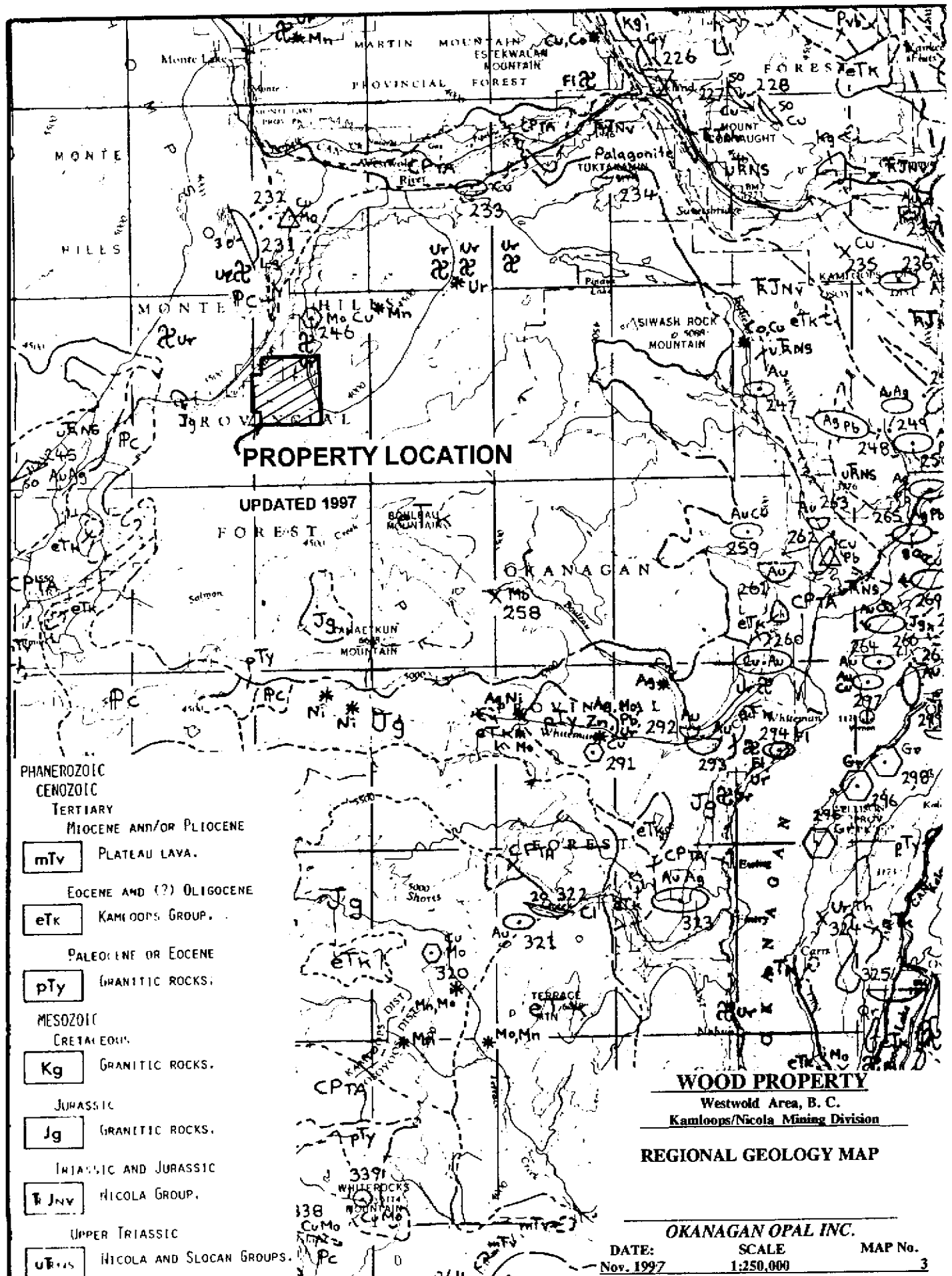
The Wood claims are underlain by an extensive basal sequence of crudely bedded clast and matrix supported lahars and ash to lapilli tuff units of the Eocene Kamloops Group. These basal sediments and waterlain volcanic rocks form a thick continuous basin that extends approximately 150 kilometres from Trepanier on the west side of Okanagan Lake to locations near Cache Creek west of Kamloops. The width of this volcanic sheet is approximately 25 - 30 kilometres and according to Read (1995) has a thickness which in places may exceed 600 metres as seen north and south of Falkland at Estekwalan and Tuktakamin mountains to the west of the Wood claims.

*They are opal bearing and are thought by Read 1995 to represent basal sequences of the Tranquille Formation that are overlain by tuffaceous sediments associated with rhyolite flows and tephra that may have generated the silica rich solutions for the formation of opal. It is believed by Read that exposures of metavolcanic and metasedimentary rocks of the Nicola Group outcrop beneath the basal units of the Eocene along the Salmon River valley west of Falkland and may represent the oldest sequences of rocks exposed in the vicinity of the claims. Also, that younging directions in sediments south and northwest of Falkland indicate that sedimentary rocks underlie the volcanic succession within the Nicola Group. The Nicola Group consists of crystal lithic andesites, basaltic tuffs, minor breccia and flows, interbedded greywackes and shales and grey phyllitic limestone. They are underlain by older greenstone and marble rocks of the Harper Ranch Group of Late Paleozoic age and consist of massive to foliated chloritized hornblende and augite porphyry, meta-andesite tephra and flows that are chloritized to the greenschist facies according to Read. The general structure of these Eocene rocks is that of an upright syncline. Eocene rocks are vesicular, amygdaloidal and contain fillings of calcite, zeolites and silica in the form of agate, common opal and rare precious opal.*

## **1997 Geological Mapping**

Mapping of portions of the Wood 1 and 2 mineral claims, using a Silva Ranger Compass and Topolite Belt Chain for control was carried out at a metric scale of 1:5000 over the common line between the Wood 1 and Wood 2 mineral claims and to cover rock outcrops exposed on steep sided bluffs overlooking the Salmon River and Douglas Lake Road. Any rock exposures along road cuts and the location of claim posts were plotted on a 1:15,000 Forestry Cover Map Sheet enlarged to a metric scale of 1:10,000 and to a scale of approximately 1:5,000 for the geological interpretations.

The field work portion of the programme on the Wood claims was conducted between the period October 16th 1997 to October 30th 1997 for a total of 8 man days. Four man days were spent on reconnaissance traverses which included surveying, mapping of roads, skid trails and claim posts in the vicinity of Cain Creek and the common claim line on the west side of Woods Lake between the Wood 1 and Wood 2 mineral claims. Four man days were spent on mapping the area to the south of Cain Creek in an area in which it has been rumoured that coloured and/or precious opal has been found.



### Property Geology

Outcrop exposures on the Wood claims are mostly confined to steep bluff exposures in the central and northwest portions of the claim block. Mapping was confined to those areas with the best evidence of outcrop exposure on the south side of Cain Creek on the Wood 1, 11 and 12 mineral claims where the majority of outcrop is confined to the steeper bluffs above the Salmon River. Several outcrops were mapped on a skid trail in close proximity to the common boundary of the Wood 1 and 2 mineral claims.

An outcrop exposure 100 metres to the south of the 3W 3N ID post along the common boundary line of the Wood 1 and 2 mineral claim consists of a fine grained, light brown, weathered possible pyroxene andesitic porphyry with fine grained vesicles lined with zeolite crystals. Similar volcanics were recorded in 1996. (See Drawing No4).

The area to the south of Cain Creek is characterized by northerly trending sequences of poorly sorted, low to high energy matrix and clast supported lahars, sandy ash to lapilli lenses and sill or dyke-like mafic rich lava flows. The total thicknesses of these units has not been fully determined which includes their depth to underlying basement rocks in this area to the south of Cain Creek and east of the Salmon River. Mapping indicates that these lahars are exposed from the Salmon River at an elevation of approximately 700 metres to an elevation of approximately 1300 metres in which, three lithologies were recognized. Similar lithologic units have been identified from the 1996 mapping programme in the vicinity of the Wood 1 and Wood 2 common line and are exposed in the canyon walls of Cain Creek to the north. This may mean, that the thickness of these basal units of the Eocene in the vicinity of Cain Creek is at least 600 metres.

The three lithological units include Units a, b, and c. Unit-a consists of a red oxidized friable coarse matrix supported lahar with up to 80% clasts in coarse matrix material that consists of 5mm to 1.5 cm brecciated clasts. Clasts are subrounded to sub angular up to 30 cms and average 7 to 10 cms. They appear similar in basaltic composition, size and degree of roundness. Bedding structures were not evident. Fractures are discontinuous and the most prominent orientation appears to be 020 degrees. Open space fillings are predominantly matrix fillings around the clasts and include white to yellowy opaque, powdery zeolite fillings or may possibly represent weathered, white common opal.

A clast supported basaltic lahar with abundant amygdules referred to as Unit-b occurs a little to the north and uphill from this unit and possibly overlies it and contains fillings of agate, yellow sugary zeolite and one occurrence of rare precious, white to grey, translucent to opaque opal with a bright green play of colour that infills a cavity along a micro fracture. Fractures within this outcrop strike 030 degrees and dip 75 degrees to the east. This occurrence of opal mineralization in this outcrop may be related to its nearness to the underlying contact with other lahars to the south of Cain Creek that appear to contain opal as seen in float samples at the base of the slopes to the east of the Douglas Lake road and south of Cain Creek. The showing is approximately 300 metres to the south of fairly old workings consisting of hand dug trenches.

Float samples consisting of scoriaceous reddish basaltic clasts with abundant cavities containing agate and very minor amethyst were found to the south of these trenches north of the new showing. One cavity is filled with both banded agate and common white opal.

Unit-b is underlain to the south by Unit-c, that consists of grey to maroon coloured basaltic flows that may be dykes or sills. They are scoriaceous with abundant stretched cavities. Open space fillings in clasts are lined with a green coating and contain most commonly agate, white powdery zeolite - possibly pectolite and rare purple amethyst. These basaltic dykes on the Wood claims appear to post date the lahar flows. Similar scoriaceous flows with stretched cavities along the canyon walls of Cain Creek are predominantly lined with a green-blue, earthy coating of possibly celedonite and infilled with grey agate. Other cavities are partly infilled with fibrous, white, soft, chalky altered zeolite. The mafic flows appear to pinch and swell laterally and vertically.

The sills or dykes appear to be overlain to the east by differentially weathered and eroded coarse matrix supported lahars with vesicular clasts up to 40 cms. The average size of the subrounded clasts is approximately 5 to 10 cms. Open space fillings include mostly vesicles that contain a yellow sugary zeolite and minor manganese. No common opal was seen. These lahars do not appear to be densely fractured. There is no evidence of bedding structures and they appear to be very similar in composition to Unit-a as described above.

Mostly coarse matrix supported lahars extend in a northerly direction for approximately 100 metres along a steep west facing slope below an old skid trail to the west of the Wood 11 mineral claim above the matrix supported lahars. Clasts consist of amygdaloidal basalt with fillings of mostly grey agate. These lahars are intermixed with massive basaltic dykes and sills with large cavities that contain agate nodules up to 7 cms in length. The dykes appear to crosscut or run sub-parallel to the margins of the lahars. Contact areas are irregular and pinch out. No opal was found infilling cavities at this location.

More abundant fracture fillings of calcite and manganese oxides as well as pectolite associated with calcite in vesicles were seen in outcrop exposures in the central portion of the Wood 2 mineral claim along the common line with the Wood 1 mineral claim at higher elevations. No common opal was seen in this location. There may be mineralogical controls for silica emplacement in these basinal sequences which are not, as yet determined.

Extensive overburden was encountered to the south of Cain Creek on the Wood 11 and Wood 12 mineral claims. Only minor basaltic flow rocks were mapped in road cut exposures to the north of the powerline on the Wood 1 mineral claim.

## **Conclusions and Recommendations**

Open space fillings of both agate and zeolite are widespread in Cain Creek and the immediate area to the south. Precious opal has been located in an outcrop to the east of the Salmon River just outside the property boundary of the Wood Claims and may represent the first recorded documentation of its discovery. Work to date has indicated that the more favourable areas for opal mineralization occur at lower elevations and in the vicinity of Cain Creek and it was therefore decided to allow the Wood 2 mineral claim to lapse on its anniversary date. It is recommended that additional staking should be conducted at lower elevations in the vicinity of this new showing, to cover ground that is located in an extensive basal unit of the Eocene that is comprised of opal bearing waterlain sediments and lahars.

Ground to the north of the Wood 3 may be a favourable location for precious opal if the northerly trending lahars extend to the north of Cain Creek. Similarly, ground to the immediate south may also be a favourable location for precious opal, if the clast supported lahars extend to the south. After staking, mapping should be conducted to determine if the clast and matrix lahars contain precious opal.

Removal of overburden with a small track mounted excavator is recommended to expose precious opal bearing outcrop. Any physical work must be conducted in a manner which recognizes that the surface of the land is privately owned.

The intersection of Cain Creek with the Salmon River may represent an important structural feature for the formation of precious opal near to the basement contact with Nicola Group rocks. It is recommended that a preliminary stereoscopic mapping study of the Wood Claims at an airphoto metric scale of 1:5000 be conducted. This would help in identifying the Cain Creek and Salmon River structures that are possibly associated with the formation of precious opal on the Wood Claims.

Mapped lahars and sediments on the Wood Claims are similar to the host rocks on the nearby Klinker/Ewer, Gram and Alpo mineral claims. Geological mapping should be completed to identify other areas on the Wood Claims that may host precious opal.

There is potential for ground covered by the Wood claims to host epithermal-type gold mineralization associated with Tertiary volcanics. Further evaluation of the possible gold potential of the property should be considered.

**COST STATEMENT****Management/Administration:**

R. W. Yorke-Hardy  
 2 man days at \$300.00 per day \$ 600.00

**Geological Work:**

Brian Callaghan  
 2 man days at \$300.00 per day \$ 600.00

John Young  
 2 man days at \$250.00 per day \$ 500.00

**Geological Field Assistant:**

Jack Zackodnik  
 4 man days at \$200.00 per day \$ 800.00

**Support Costs:**

Vehicle costs - 6 days at \$75.00/day \$ 450.00

Field Supplies - flagging, thread \$ 50.00

Room & Board - 4 man days at \$50.00 per day \$ 200.00

Misc. Field Equipment rental - \$ 25.00

**Report writing & Preparation:**

R. W. Yorke-Hardy  
 1 man day at \$300.00 per day \$ 300.00

Brian Callaghan  
 3 man days at \$250.00 per day \$ 750.00

**Drafting:**

Brian Callaghan  
 3 man day at \$250.00 per day \$ 750.00

John Young  
 1 man day at \$200.00 per day \$ 200.00

Typing and printing \$ 200.00

**TOTAL** \_\_\_\_\_ **\$5,425.00**

**BIBLIOGRAPHY**

- Read, Peter B. (1995) Industrial Mineral Potential of the Tertiary Rocks, Vernon(82L) and Adjacent Map Areas. Part of Geological Fieldwork 1995- A Summary of Field Activities and Current Research (Paper 1996-1).

### STATEMENT OF QUALIFICATIONS

I, Brian Callaghan reside at 989 Curtis Road, Kelowna, B.C..

I am presently self employed as a Geological Consultant and have practised my profession for eighteen years since graduation from Brandon University , Manitoba. with a Bachelor of Science Degree in Geology.

Part of my experience has included geological mapping , prospecting and report preparation related to exploration for opal on various properties in the Pinaus Lake region of South Central British Columbia over the last 5 years.

I am presently working under contract with Y-H Technical Services Ltd., of Vernon, B.C. and have been involved in the geological mapping and report preparation for the Wood Claims property located in the vicinity of Woods Lake and Cain Creek from 1996 to 1998. I have mapped the geology on the Wood mineral claims during the period from October 28th 1997 to October 30th 1997 .

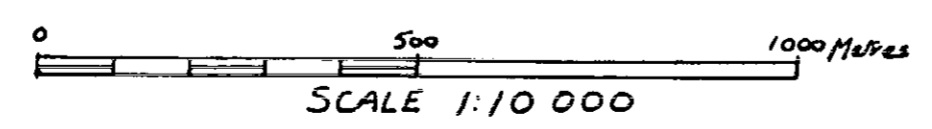
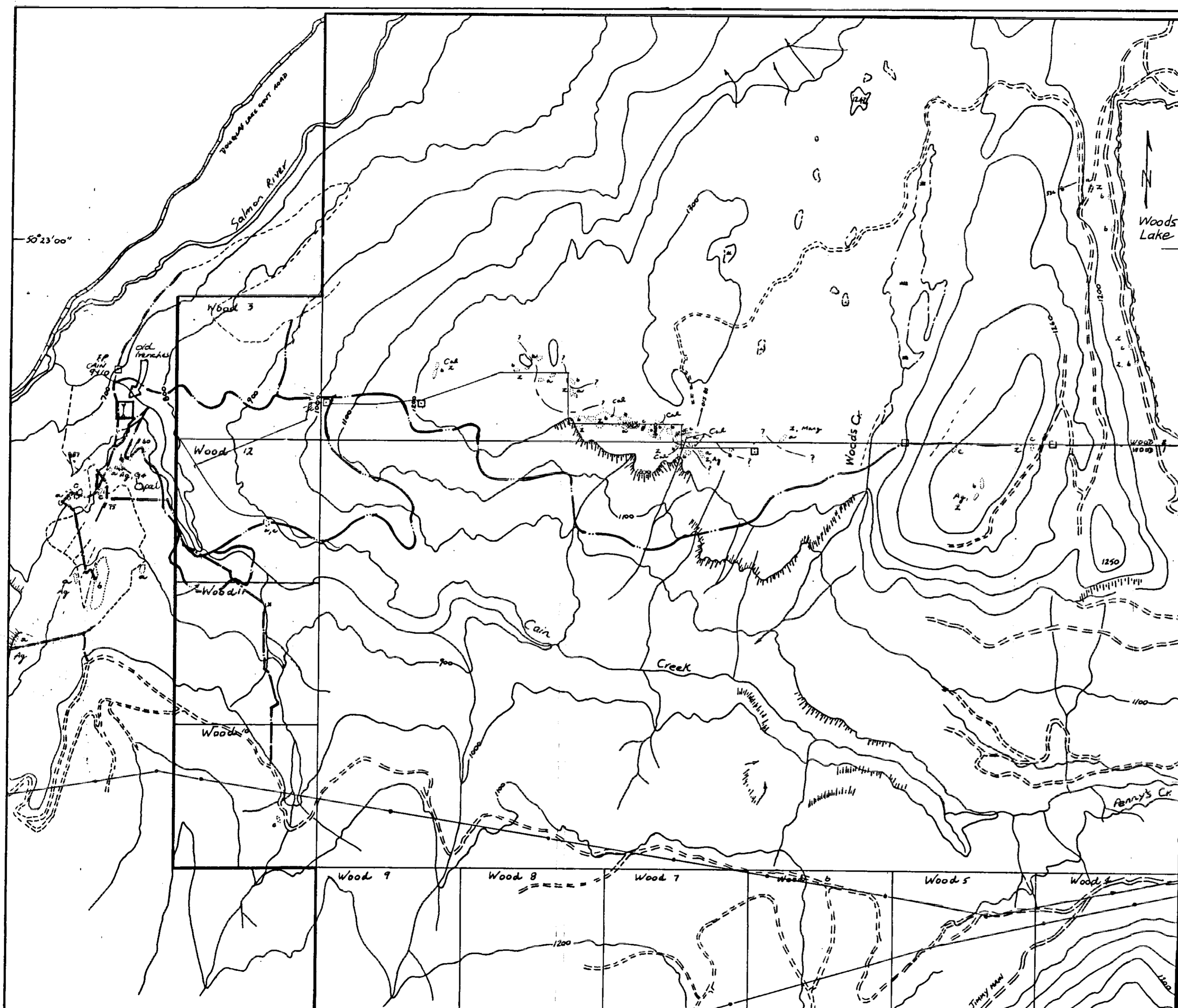
I have no interest, direct or indirect, in the Wood property or Y-H Technical Services Ltd.; nor do I expect to receive any.

Sincerely,

  
Brian Callaghan, B.Sc., Geology

January 13, 1998





**LEGEND**

**Tertiary**

**EOCENE**  
Kamloops Group

- a Low to high energy lahar, sandy tuffaceous matrix  
- maybe coarse matrix supported, clasts weathered, andesitic/basaltic
- b Low to high energy lahar, clast supported, clasts weathered, andesitic/basaltic
- c Grey black basaltic/andesitic flows - may be dykes or sills, scoriaceous, massive
- d Tuffaceous sandstone sediment, stratified

**General Legend**

- |                     |               |               |                  |                  |                       |
|---------------------|---------------|---------------|------------------|------------------|-----------------------|
| Roads               | -Public Road  | -logging road | Trails           | -old skid trails | -old skid trails-foot |
| Creek or Draw       | Definite      |               | Bluffs or Steep  |                  |                       |
| Lake/Pond           |               |               | Swamp or Muskeg  |                  |                       |
| Claim Boundaries    |               |               | Claim Post       | XP               | LCP                   |
| Topographic Contour | -w/ elevation | /200          | Contour interval | 20m              |                       |
| Powerline           |               |               | Towers           |                  |                       |

**Geological Symbols**

- |                                |  |  |       |
|--------------------------------|--|--|-------|
| Outline of outcrop             |  | Bedding ; Vertical, Inclined, Overturned | X/Y/Z |
| Fractures ; Vertical, Inclined |  | Opal Occurrence (type code) - 94, 45     |       |
| Assumed Contact                |  | Faults - inferred                        |       |
| Prospecting traverse           |  | Chain and compass traverse               |       |

Sample location x  
 Agate : Zeolite - Ag, Z  
**WOOD CLAIMS**  
 Westwood Area B.C.  
 Kamloops / Nicola M.D.

**GEOLOGICAL SURVEY BRANCH**  
**ASSESSMENT REPORT**

**25,410**

**GEOLOGY**  
**MINERAL CLAIMS**  
 Y-H TECHNICAL SERVICES LTD.  
 DATE: Nov. 1997 SCALE 1:10000 DRAWING No. 4